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DUBAI INNOVATION INDEX

The Road to Recovery Through Resilience and Innovation

2019-2020 Report



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Foreword



H.E. Hamad Buamim
President & CEO
Dubai Chamber of Commerce

The impact of the Covid-19 on economies and societies around the world has been unbalanced and unprecedented as governments and businesses tackle new challenges and find their way in the new normal.

The pandemic has spurred new thinking and ways of working and accelerated the adoption of digital technologies in nearly all economic sectors. Meanwhile, businesses with innovative ideas have been able to create new products and services, and new business models, not only to mitigate the adverse economic impact but also to grasp new opportunities.

We have seen remarkable innovations being utilised across various industries such as retail, logistics, communications, manufacturing, education and healthcare services. This is just the beginning. Longer term, the digital shift is expected to transform how we live and work, particularly in urban areas.

As the world innovates to overcome economic and social weaknesses exposed by the pandemic, knowledge sharing and cross-border cooperation will prove to be more important than ever. It is therefore my great pleasure to share with you the Dubai Innovation Index – 2019/2020 Report.

Developed around the theme The Road to Recovery Through Resilience and Innovation, this in-depth report examines the state of innovation in cities around the world at the start of a new digital era. Seven new cities have been added to the index, bringing the number of cities covered to 39. As part of the index, innovator and ecosystem surveys have been conducted to offer first-hand insights on innovation trends demonstrated by businesses around the world.

We hope that the report will aid public and private-sector stakeholders better understand the evolving global business landscape, deal more effectively with emerging challenges and enhance their preparedness for the future.

I am confident that policymakers, businesspeople and all those interested in innovation around the world will learn something valuable from these insights and apply such lessons within their organisations.



Dr. Anil Khurana
Global Industrial Manufacturing and Automotive Leader
PwC



Rami Nazer
EMEA Government and Public Sector Leader
PwC Middle East

PwC has been a partner of the Dubai Innovation Index from day one. Since the DII's launch in 2015 (the Year of Innovation in the UAE), the Index and the world around us have evolved. New ecosystems have gained stature and constant innovation has become normal in many places, accelerating the economic recovery from the pandemic.

Innovation is as much about people as it is about technology and digitalisation. We ourselves have embarked on the journey of technology-enabled people and businesses through our "New Equation" strategy – our global drive to harness the power of technology to benefit people and their lives by delivering sustained outcomes and building trust. The 2021 Edelman Trust Barometer, shedding new light on events worldwide, has greatly focused attention on the global epidemic of misinformation and the consequences of widespread mistrust in institutions and leaders. The successful organisations of the future will be those that begin by placing trust at the centre of all they do and working to rebuild that trust throughout society. This year's Index reflects this thinking: we have messages to share about society, attractiveness and the need to consistently invest in people and infrastructure, as well as in improving the regulatory environment for businesses and people.

We are glad once again to partner with the Dubai Chamber in producing this year's Index. Here in the hometown of the Index, we are witnessing a lot of innovation at EXPO 2020. Together, we have also sought to innovate in the report. In this edition, we have incorporated a timeline analysis of the key indicators, added new cities to enhance our understanding of the interaction of cities and innovation, and conducted an in-depth assessment of examples of innovation from leading cities through three new lenses: ecosystem analysis, sentiment analysis, as well as case studies.

We hope this report is an enjoyable and relevant read for all who are interested in innovation and in the role of cities in national economic recovery and social development. As we navigate the global pandemic, start-ups, family businesses, corporations, non-profits and the public sector are all separately and collectively finding new ways not only to survive but to thrive through this unprecedented period in history.

Key Takeaways



Digitalisation underpins the transformation and success of the most innovative cities across all pillars of the innovation ecosystem

The rapid emergence of new digital technologies has enabled cities to reimagine day-to-day life – for individuals, governments and businesses. Government and city leaders with keen foresight saw the potential offered by these technologies. They encouraged the development of digital infrastructure which allowed for the successful adoption of new ways of working and supplying goods and services.

Smart cities subsequently set about transforming the way they serve citizens and visitors, replacing paper and service counters with a growing array of online portals and services that allow citizens, visitors and companies to interact with them remotely, more quickly and more efficiently.

The Covid-19 pandemic that spread across the world in early 2020 threw into stark relief the advantages of robust digital networks and connected populations. These enabled many businesses and public services to continue functioning effectively despite lockdowns and other movement restrictions. Cities with strong digital infrastructure were able to respond more quickly and more effectively to the pandemic as flows of data enhanced their ability to assess and respond to the spread of the virus.

Meantime, many businesses and municipalities – across all sectors – ramped up their provision of services online, from grocery retailers and restaurants, which expanded their home-delivery operations, to schools and healthcare providers, who took to teaching classes and conducting medical consultations remotely. Notable digital transformation occurred in the heavily impacted tourism and hospitality sectors, which were forced to reimagine the way in which they connected individuals to new adventures through virtual means.

Another overriding lesson of the pandemic was the importance of agility to effective digital transformation, both in terms of keeping up with advances in technology and in providing the regulatory flexibility necessary to allow new solutions to be adopted in response to changed circumstances. Governments and state entities have to keep up with digital trends and tools. Their digitalisation strategies must be in step with those of the private sector to ensure seamless interaction and service delivery. Consistent revision of digitalisation strategies and policies is paramount, as is the willingness to update them in step with technological developments.

The availability of new digital tools and services for citizens, visitors and consumers also requires agility with respect to the regulatory landscape. Successful innovation ecosystems increasingly use regulatory ‘sandboxes’, which allow rapid trial and development of regulatory approaches to emerging digital tools and services. This further exemplifies the kind of administrative agility and flexibility required in city innovation hubs to accommodate and encourage new developments to advance digital capabilities.

Spurred by the pandemic, collaboration has accelerated innovation by offering innovators enhanced opportunities for knowledge sharing, funding and market access

Innovation is intertwined with creation as pioneers leverage city ecosystems to develop digital solutions that are transforming the way we live and work. Collaboration has been a key tool in supporting innovators across all stages of the value chain, from ideation to creation and commercialisation. Collaboration has emerged as a common denominator both within cities and across global economies in 2020. As individuals, businesses and governments linked up online they quickly realised the impact collaboration had on enhancing their output and reducing the time it took them to bring new products or services to market. Key stakeholders in the ecosystem are playing a prominent role in providing innovative firms with information, resources, funding and markets – enhancing innovation performance and benefiting us all.

Collaboration across sectors and entities has become central to identifying commercial opportunities and creating solutions, and new businesses, to fulfil them. Collaborative efforts often span several pillars of the innovation ecosystem. The most prominent areas for collaboration between sectors involve the provision of knowledge, funding and market access. For instance, partnerships between R&D labs / universities and industries have been essential in providing access to large pools of expertise and resources, especially during 2020. Such synergies were crucial in the development of vaccines and the production of personal protective equipment.

Another prominent form of collaboration has been through co-investment by the public and private sectors. Public-sector entities, which have often supported start-ups from an early stage, increasingly look to continue investing at later stages of companies' development. Collaboration not only gives public-sector investors a stake in the benefits when the company they have backed proves a success, but earlier private-sector participation allows the public entity to share the downside risk of investing in new intellectual property (IP) and preliminary proof of concepts (PoCs).

As innovation ecosystems have benefitted from the surge in collaboration among business environment stakeholders, public authorities in leading cities have invested to create dedicated spaces that facilitate collaboration, bringing together government officials, investors, innovators, corporations, academics and experts. Networking and collaboration among the various stakeholders gives rise to more – and more successful – businesses. These start-ups are able to leverage the relationships at later stages to access markets and industry expertise.

Leading innovative cities are those which also collaborate across borders. Increasingly, they are developing hub-to-hub networks and alliances. These benefit from competitive locations and facilitate the transfer of knowledge, and support the growth and scaling up of new businesses by making it easier for them to develop internationally.

In return for providing information and making it easier for incoming businesses to set up operations, cities thus provide their home-grown start-ups and innovators with the same opportunities to grow and scale up in other cities and countries.

Governments in leading innovative cities now do more to promote innovation than just set policies, oversee regulations and provide incentives

The role of national and city governments in creating a favourable business environment by setting the right policies and regulations and providing incentives has long contributed to the creation of new businesses and the development of novel products and services. Nevertheless, governments' roles extend beyond just that, as their influence on innovation within cities is also substantial through spreading a culture of entrepreneurship and innovation, as well as facilitating the formation of deals.

Cultivating an innovative mindset and entrepreneurial spirit within cities' societies as well as developing talent with the right skill levels and skill types, is essential in unlocking innovation potential. Education and training are innovation enablers. Public authorities overseeing successful innovation ecosystems have measures in place to encourage young people to pursue science, technology, engineering and mathematics (STEM) subjects, since these skills contribute to innovation performance. Some have also sought to promote positive attitudes to entrepreneurship and in particular have rolled out youth entrepreneurship programmes, promoting entrepreneurship as a viable career path. This can help with innovation, job creation and competitiveness.

Many of the most innovative cities are to be found in jurisdictions where governments also prioritise social tolerance and actions that promote trust – in institutions and between individuals. Public safety and security are also important ingredients for a successful business culture, in terms of attracting and retaining talent as well as encouraging collaboration, all of which lead to increased levels of entrepreneurship and innovation.

Moreover, innovative firms have been benefiting from increased access to funding and markets by securing deals that have been facilitated by the government. Many public-sector entities have been supporting high-potential businesses by becoming consumers of their new products or services, helping them showcase what their innovations can achieve. This generates investor confidence by improving these businesses' financial viability, making them more attractive to private investors.

While North America and Europe remained the leading regions for innovative cities in the 2019-2020 Dubai Innovation Index, cities in other regions have been closing the gap, especially those in the Asia-Pacific region

Singapore secured first place in the 2019-2020 Dubai Innovation Index, maintaining its lead in both years, with Hong Kong in second place in 2019 and 2020.

Overall, North American and European cities remain among the most innovative worldwide, taking eight of the top 10 places in 2019 and seven in 2020. The best-placed European city in 2020 was Stockholm, in third place, followed by Zurich (fourth) and Copenhagen (fifth). In North America, New York is placed sixth and Toronto is in 10th place. Nonetheless, cities in the Asia-Pacific region have consistently been improving and catching up, particularly Tokyo (ninth), Seoul (15th), Beijing (23rd) and Kuala Lumpur (25th). The region's progress in the rankings can also be attributed to the continuing stellar performance of Singapore and Hong Kong in innovation.

Cities in the Middle East, Africa and Latin America still need more targeted improvements to close the gap with the leaders as the majority of cities in the three regions have stagnated in their overall performance in the DII. Nonetheless, certain cities have showcased improvements across several pillars. For example, between 2019 and 2020, Dubai went up three rankings in Business Environment, while Johannesburg went up one ranking in Funding and two in Infrastructure.

Top Three:

Singapore retains the top spot in 2019 and 2020, reasserting the dominance it has established in the past five years. In 2020, the city ranks first against four of the five key pillars, including: Agile Government, Business Environment, Funding and Society. Although Infrastructure is the pillar in which it does not hold the leading position, it consistently remains in the top 10 of performers for this pillar as well, ranking sixth in 2020.

Hong Kong took second place in both years. In 2020, the city ranked among the top five in four of the five pillars, including: Agile Government (fifth), Business Environment (second), Funding (third) and Society (third). Business Environment is the pillar in which it performs strongest, as the runner-up for global lead, predominantly due to strong efforts in enterprise conditions, market capitalisation and total value of stocks traded (% of GDP). Infrastructure is seemingly the lowest performing pillar for Hong Kong, however it still ranks in the top 10, holding eighth place in 2020, up one ranking from 2019.

The Swedish capital, **Stockholm**, is also noteworthy, going up three rankings since 2019 to the third spot in 2020. The city was credited with a strong business environment and good access to funds in 2020. This is attributable to great improvement in its Business Environment and Funding pillars, particularly in GDP growth, services value added and inward FDI flow indicators.

Rising Stars:

Among the rising stars, Toronto (10th) and Seoul (15th) achieved the biggest increase in their scores between 2019 and 2020. **Toronto** rose seven places in 2020, doing particularly well thanks to a business and funding environment that remained relatively robust, even as others such as London and New York experienced extended lockdowns and over-burdened health services.

Seoul rose four places in our ranking from 2019 to 2020. The public authorities there were very quick and effective in their early response to the Covid-19 pandemic, successfully containing the spread of the virus in early 2020. The city's success in maintaining business-as-usual when others were in lockdown may well have contributed to its improved placing.

Dubai's Past, Present and Future



Dubai and its leadership strongly recognise the importance of innovation and its prominent role in contributing to the country's sustainable socio-economic development. The city places innovation, research, science and technology at the heart of its pursuit of a diversified, productive and competitive knowledge-based economy.

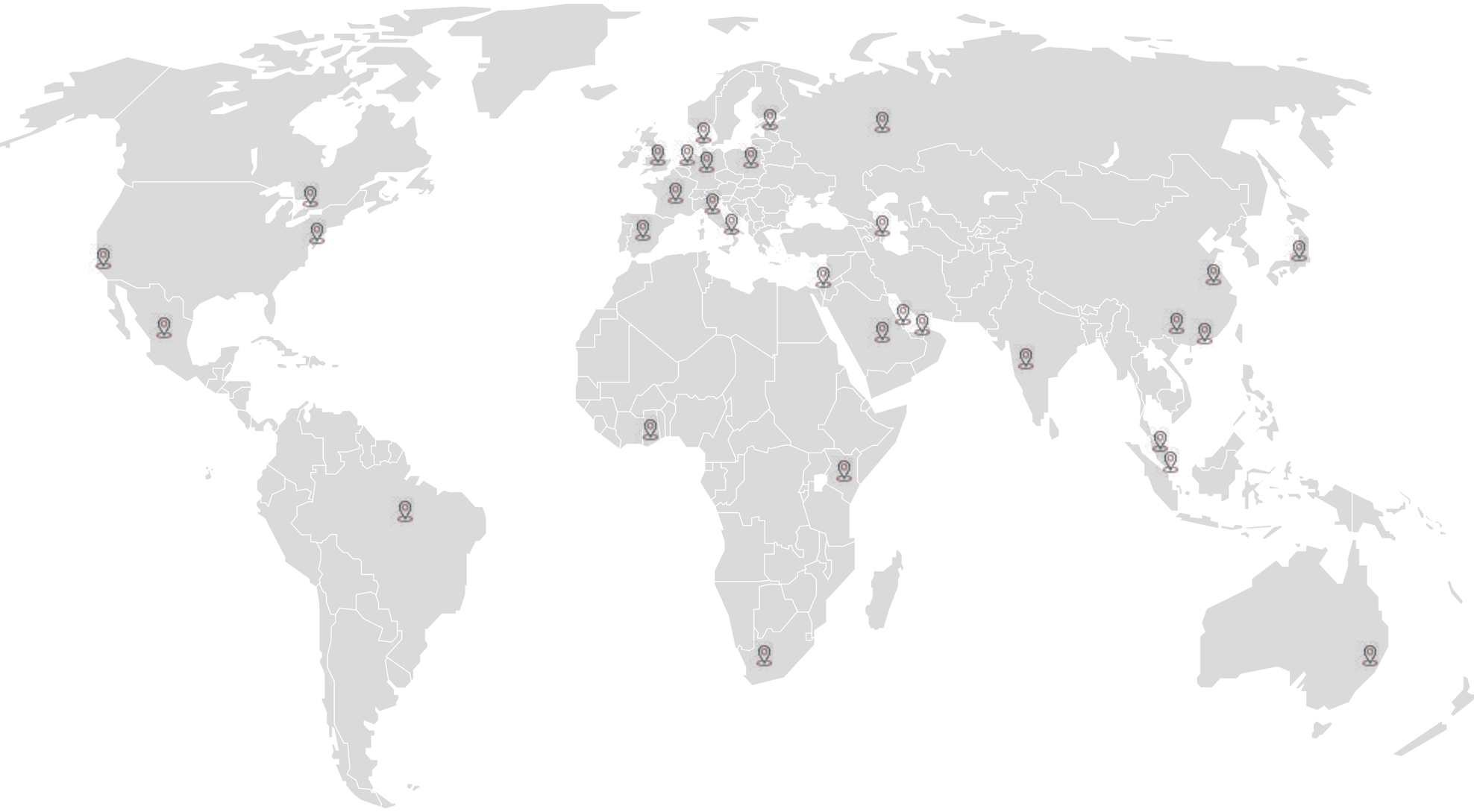
Innovation has always been running through Dubai's veins. Its importance in boosting the city's economic status has long been apparent, causing its leaders to make it a strategic priority. In late 2014, the National Innovation Strategy (NIS) was launched by His Highness Sheikh Mohammed bin Rashid Al Maktoum, UAE Vice President, Prime Minister and Ruler of Dubai, aiming to position the UAE among the most innovative nations in the world. Shortly afterwards, His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE, announced that 2015 would be the "Year of Innovation" in the UAE – testament to the country's commitment to innovation.

That year also marked the birth of the **Dubai Innovation Index** (DII), a first-of-its-kind city-level innovation report generating insights from leading innovation hubs across the globe. For more than five years, the DII has influenced the development of a plethora of strategies, policies and initiatives – ranging from private partnerships, artificial intelligence, robotics and blockchain to 3D printing and the Internet of Things – that have helped cement the city's growing status as an innovation hub.

These initiatives have helped embed a culture of innovation in the city – nurturing and attracting talent and educating all members of the community, including individuals, companies and governments, on innovation's importance and role in strengthening cities' competitiveness. The Dubai Government's progressive agenda and active role in spurring innovation has led the metropolitan city to become a leading hub for entrepreneurs and start-ups, providing them with the necessary guidance, infrastructure, access and connectivity to help them innovate.

Each year, the DII report has focused on the critical issues and prospects at that time. This year is no different: the theme of this edition is **The Road to Recovery Through Resilience and Innovation** and it aims to address multiple pressing challenges that require innovative solutions. The report explores how different ecosystems have reacted and performed during these troubled times. It thus remains a valuable tool to assess the forces driving innovation in leading cities.

Global City Ranking



CITY	RANK 2020	2019
Singapore (Singapore)	1	1
Hong Kong (China)	2	2
Stockholm (Sweden)	3	6
Zurich (Switzerland)	4	7
Copenhagen (Denmark)	5	5
New York (USA)	6	4
Amsterdam (Netherlands) *	7	8
London (UK)	8	3
Tokyo (Japan)	9	12
Toronto (Canada)	10	17
Sydney (Australia)	11	11
Berlin (Germany)	12	10
Paris (France)	13	9
Hamburg (Germany) *	14	13
Seoul (South Korea)	15	19
Vienna (Austria) *	16	15
San Francisco (USA)	17	14
Tel Aviv (Israel) *	18	18
Tallinn (Estonia)	19	16
Dubai (UAE)	20	20
Shanghai (China)	21	23
Madrid (Spain)	22	21
Shenzhen (China) *	23	24
Bejing (China)	24	25
Kuala Lumpur (Malaysia)	25	26
Doha (Qatar)	26	22
Milan (Italy)	27	27
Warsaw (Poland)	28	28
Turin (Italy)	29	29
Riyadh (Saudi Arabia)	30	30
Moscow (Russia)	31	33
Baku (Azerbaijan) *	32	31
Mexico City (Mexico)	33	32
São Paulo (Brazil)	34	35
Accra (Ghana)	35	37
Mumbai (India) *	36	34
Bangalore (India)	37	36
Johannesburg (South Africa)	38	39
Nairobi (Kenya)	39	38

* New City to DII

Framework



When the Dubai Innovation Index (DII) Report was launched by the Dubai Chamber and PwC in 2015, it quickly gained traction as one of the first reports to focus on innovation from a city, rather than country, perspective. As innovation in hub economies becomes increasingly important and as cities play a growing role in the recovery, resilience and sustainable growth of national economies, reinforcing this understanding of city innovation helps generate more meaningful recommendations. Evaluating innovation on a city level has enabled the DII to examine the progress of cities as hubs that maintain their own networks and lead the economic development of their countries.

It also offers us a fresh view of the contribution of city governance to countries' competitiveness at a time when urbanisation has been accelerating worldwide.

Five years after the DII's inception, the ability of data to generate deep insights is opening a new phase in the report's development. This coincides with unprecedented global uncertainty, which means the report must remain agile, dynamic and flexible to stay relevant.

In this version:

The Index embraces 39 cities, up from 32 in the previous edition, adding (in alphabetical order) Amsterdam, Baku, Hamburg, Mumbai, Shenzhen, Tel Aviv and Vienna. The additional cities expand the review or regions and showcase a wider variety of innovation contexts. More will be included as the Index grows and its value is increasingly recognised.

The analysis of cities seeks to identify trends over time. This will better reveal how cities' innovation landscapes have been changing over the course of the last few years and paint a clearer picture of the pandemic's impact on innovation – and on the cities' roads to recovery.

The micro-level analysis was revamped to enable a triangulated view of the innovation ecosystem, complementing our yearly Innovator Survey with two additional layers of analysis: an Ecosystem Analysis and a Sentiment Analysis (when available). The Innovator Survey captures innovation from the private sector's perspective, while the Ecosystem Analysis adds a regulatory point of view, embedding input from government entities closest to the innovation network. Additionally, city sentiment was incorporated when available to capture the perspective of residents and others affected by cities' innovations, providing a holistic view of the entire innovation ecosystem.

The micro-level analysis incorporates input from three more cities – Berlin, Mumbai and Warsaw – in addition to Dubai to enable hubs to be compared. It also includes a city case study in each of our five pillars, for a city that has either performed consistently well or improved its performance within the pillar. As the micro-level analysis matures, we will build larger datasets incorporating more cities, enabling an increasingly comprehensive view.

The Index has examined innovation in terms of issues that seemed particularly pertinent at the time of publication. This year, unprecedented events frame innovation through the twin lenses of resilience and recovery. The pandemic has caused massive disruption in business operations and supply chains, changing the way we view traditional methods of production and trade. This has triggered conversations about the need for a more resilient and innovative urban economy and more agile governance.

The DII theme for this year is **The Road to Recovery Through Resilience and Innovation**. This theme allows us to dive into topics most relevant to innovative cities as they focus on overcoming the impact of Covid-19 and plan investments in innovative technologies to aid economic recovery. Cities must make their funding, policies, regulations and infrastructure tools part of reviving their economies. Cities' resilience also depends upon their social fabric and cohesion; institutional trust, interpersonal trust and social capital have become more important. Evidently, innovation remains a vital driver for recovery. Cities that responded creatively to economic and healthcare disruption caused by the pandemic, in both the private and public sector, recovered faster.

In sum, innovation in cities arises from the interaction of several important elements. This year's report examines cities' performance in five key pillars:

1. Agile Government – the use of agile methods and the adoption of an experimental approach in all aspects of cities' governments. This can include formulating, implementing and reviewing policies and regulations and delivering high-quality, cost-effective urban services. This pillar allows us to measure the efficiency, responsiveness and effectiveness of cities' governments. Agile governments not only allow cities to respond to their environment and accelerate recovery, but also facilitate innovation and entrepreneurship within both the public and private sector.

2. Infrastructure – the state of cities' general infrastructure, digital infrastructure and ecological sustainability. This pillar allows us to obtain a general idea of the infrastructure supporting the innovation ecosystem. Strong, enduring infrastructure improves the attractiveness of cities' innovation ecosystems, encouraging and facilitating the flow of innovation. Sustainable infrastructure also facilitates innovation within the ecosystem as it builds self-sufficient cities.

3. Funding – the different types and means of funding available from organisations and governments to finance innovation across all sectors of the urban economy. This pillar allows us to measure the availability and effective allocation of funding within the ecosystem. Funding at city level is one of the most important tools in stimulating and sustaining innovation, especially when national governments' finances are under pressure.

4. Business Environment – the overall business landscape, taking into consideration factors such as enterprise conditions, market conditions, labour market regulations and partnerships between the public and private sector. This pillar allows us to understand the attractiveness of the environment for establishing, growing and developing businesses. A dynamic city business environment can attract, enable and spur innovation.

5. Society – the strength of cities' institutions and human capital, as well as the quality of life they offer residents and visitors, which includes factors such as social development, safety, happiness, cohesion and tolerance.

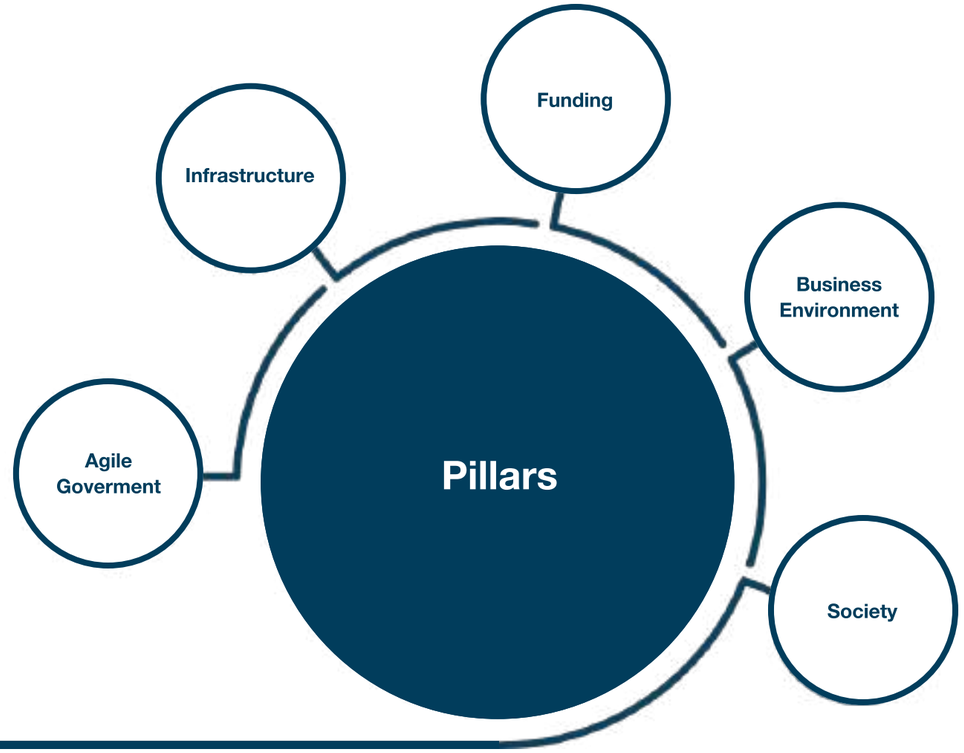
This pillar allows us to obtain an overarching view of cities' innovation capacities and residents' and visitors' trust and comfort in society. A strong talent pool and favourable quality of life drive innovation within the ecosystem as they offer entrepreneurial opportunities, as well as increase cities' ability to attract and retain talented people who spur innovation.

We have examined our theme and the five pillars upon which it rests from multiple angles. Our scoring takes into consideration global indicators and indices that form our macro-level analysis for each of the pillars. When applicable, some country-wide indicators have been scaled to the city-level using factors such as population and GDP. All indicators have been equally weighted. Supplementing the macro analysis with findings from our micro-level analysis has allowed us to form a comprehensive view of cities' innovation ecosystems and thus draw recommendations and actionable next steps that allow cities to unlock their innovation potential.

DUBAI INNOVATION INDEX

THE ROAD TO RECOVERY THROUGH RESILIENCE AND INNOVATION

2019-2020



PILLAR 1: Agile Government



Innovation is a highly iterative process. Governments must create an environment that both enables and drives innovation within cities. To do this, they must ensure city governance recognises emerging needs and adapts to serve them by reviewing policies and regulations and reshaping them or putting in place new regulations when necessary. Governments should innovate to better serve their citizens and stimulate innovation in the private sector by responding quickly and effectively to market needs.

In 2020, Covid-19 spread rapidly around the world. Governments were obliged to respond quickly and effectively to multiple imperatives. Besides managing a public health crisis, they had to manage an economic crisis, too. This involved introducing new policies to address the impact of the pandemic, providing stimulus packages to revive economic activity and adopting digital innovations so that people could carry on their daily lives under the new restrictions. Covid-19 revealed vulnerabilities in cities' economies, adding to the pressure on governments. But it also accelerated adoption of the long talked-about digital transformation of cities. It quickly became evident that governments which were able to respond proactively, with well-coordinated policies underpinned by innovation, contained the spread of the virus and limited the economic damage more effectively.

CITY	RANK 2020	2019
Singapore	1	1
Copenhagen	2	2
Stockholm	3	3
Amsterdam	4	4
Hong Kong	5	5
Sydney	6	7
Zurich	7	6
London	8	9
Berlin	9	8
Hamburg	9	8
Toronto	10	10
Tallinn	11	12
Vienna	12	11
Tokyo	13	13
New York	14	15
San Francisco	14	15
Paris	15	14
Tel Aviv	16	16
Madrid	17	17
Seoul	18	18
Dubai	19	19
Warsaw	20	20
Milan	21	21
Turin	21	21
Kuala Lumpur	22	23
Doha	23	22
Riyadh	24	24
Johannesburg	25	25
Moscow	26	26
Mexico City	27	27
Beijing	28	29
Shanghai	28	29
Shenzhen	28	29
Baku	29	28
São Paulo	30	30
Accra	31	31
Bangalore	32	32
Mumbai	32	32
Nairobi	33	33

In 2020, cities on average performed best in terms of e-government, scoring more highly by that measure than the other components of Agile Government that we analysed (*Figure 1.1*). Larger disparities between cities can be seen in the government effectiveness and integrity indicators, as well as in the regulatory quality score. The top 10 cities in the DII in 2020 averaged stronger performances in e-government development, government integrity and trade tariffs as % of duty.

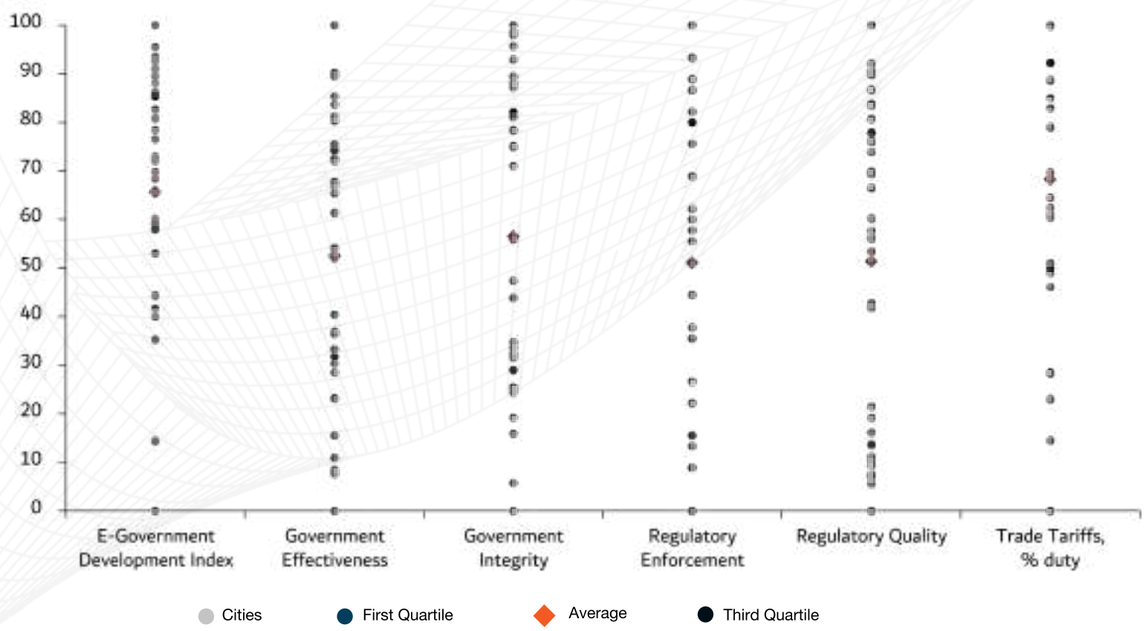
Regionally, North American cities had the highest average score in the Agile Government pillar, particularly due to their strong performance in e-government development, regulatory quality, government effectiveness and government integrity. European cities came second, showcasing great achievements in regulatory enforcement and trade tariffs as % of duty. Middle Eastern cities on average performed well across the different indicators, however their efforts in improving efficiency particularly stood out as per their performance in e-government development.

Although cities in Asia and Pacific on average did not top any of the indicators, they constituted the top 2 in regulatory quality and trade tariffs as % of duty and made the top 10 list in most other indicators.

As for Latin American and African cities, their strongest average performance was in e-government development and trade tariffs as % of duty, respectively. Nonetheless, they still have some room for improvement in other Agile Government indicators.



Figure 1.1. Agile Government Scores by Indicator* (2020)



Dubai Innovation Index- Macro Analysis
*For more information on the full list of these indicators, please see Appendix III

The past year has accelerated the shift to providing e-government services, helping private companies carry on business as usual during the pandemic and enabling citizens to fulfil their administrative obligations

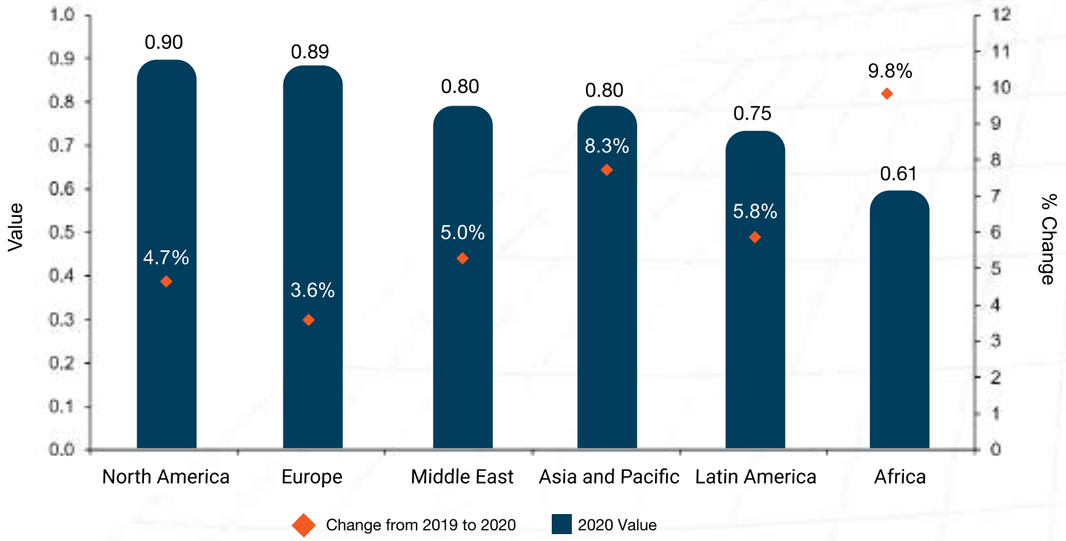
A global shift to working remotely and reducing physical contact between people put pressure on governments to rethink their interactions with citizens and to ensure that public services can be provided via multiple channels. E-government has become much more important in the past year. Of the measures considered in our Agile Government pillar, the e-government development index had the highest average score considering all 39 cities included.

On average, cities have witnessed a consistent rise in their e-government performance since 2015. However, this increased performance was exacerbated between 2019 and 2020 as cities nearly doubled their performance increase in the e-government development index. Although the digitalisation of public services is a long-standing priority for many cities, the process accelerated in 2020 as governments strove to maintain business as usual during abnormal times and enhance the quality and reach of services despite travel restrictions and other constraints affecting populations.

North America had the highest e-government development index score in 2020 (*Figure 1.2*), with Europe a whisker behind, marking impressive progress in both regions. Cities and regions with lower e-government scores to begin with achieved the biggest average increase in performance between 2019 and 2020 – the pandemic has clearly accelerated the migration of their government services to digital platforms.

This trend is illustrated by the performance of **Nairobi**, **Beijing**, **Shanghai** and **Shenzhen**, whose improvement was nearly three times the global average and twice the average of cities within their respective regions. In Europe, **Tallinn**, the capital of Estonia, rose three times faster than the European city average in 2020, surging 10 places to third. Tallinn has made great progress with its e-government agenda: 99% of its services are now available online. **Seoul**, in South Korea, is a model in the Asia-Pacific region as South Korea ranked top among OECD countries for the level and maturity of government digitalisation. Middle Eastern cities have also advanced: in **Dubai**, which plans paperless government by the end of 2021, 41 government entities have halved their paper consumption and are moving towards 100% digitalisation.

Figure 1.2. E-Government Development Index – Regional Performance vs Regional Average Growth (2019 to 2020)



Dubai Innovation Index- Macro Analysis

Shenzhen



Seoul



Shanghai



Bejing



Dubai



Recent city initiatives show that governments can innovate not only to better serve their citizens, but also to maintain and sustain their business ecosystem by removing barriers to effective business interactions with the government. Digital transformation has created a symbiotic relationship with the private sector: technology companies and innovative small and medium enterprises (SMEs) are playing a massive role in upgrading government's interfaces with citizens and businesses.

Innovation in public services extends beyond digitalisation: innovative governments take advantage of emerging technologies to rethink their processes, redesign the ways they interact with the public and reimagine how they design and implement their policies

The 2020 DII Ecosystem Analysis shows that government innovation has had a great impact on the private sector. Half of the public entities surveyed said that governments and public authorities are among the biggest drivers of innovation within the ecosystem. Governments can speed innovation by using and investing in emerging technologies. According to the 2020 DII Innovator Survey, 84% of innovators say that technology and communication investments helped improve their firm's innovation activity, innovation process and product development cycle in 2020, up 9% from 2019.

In recent years, governments responsible for leading innovation ecosystems have prioritised the adoption of frontier technologies. Many countries have rolled out strategies and initiatives taking advantage of developments in artificial intelligence (AI), blockchain and other technological innovations. China, for example, has unveiled a comprehensive AI development plan with the goal of becoming a world leader in AI by 2030, pushing the value of the industry to $150 billion. **Dubai** unveiled a blockchain strategy in 2019, cementing the city's reputation as a global technology leader. Since then, Dubai has adopted blockchain records in 24 applications in various industries. It aims to become the first city relying upon the exchange of encrypted and immutable digital blockchain records during 2021.

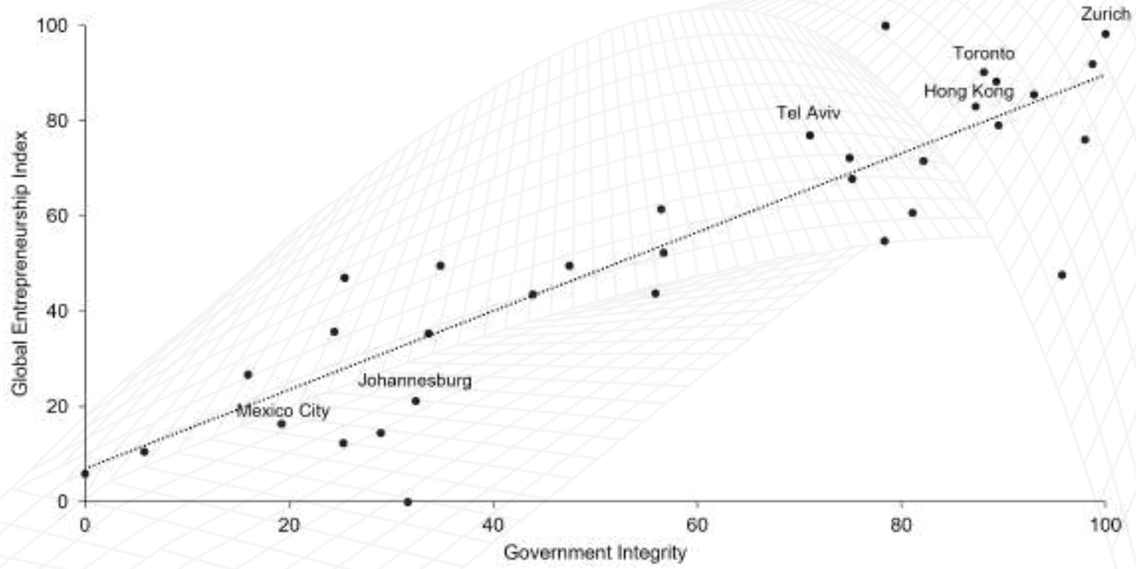
Emerging technologies are also triggering the overhaul of national strategies as they are increasingly incorporated into the fabric of cities. Blockchain technology, which involves encrypting records so they can be shared between partners in a project, is being adopted in all sorts of applications. In Malaysia, for example, tourist infrastructure will employ blockchain to integrate the city's services and keep track of tourist visas, travellers and luggage. Besides underpinning the security of these services, this will help position Malaysia as a technology hub and is likely to attract foreign investments and reinforce the country's innovation ecosystem.

Governments are encouraging investments in the technology sector, aiding their cities to develop an ecosystem that supports young technology companies. This helps firms operate and encourages them to keep innovating. The city of **São Paulo**, in Brazil, has given strong support to technology-based start-ups. The consequences are clear: it attracted big funding inflows and more than 40,000 of its citizens are now employed in tech companies. São Paulo has become an important hub for the fintech, adtech and healthtech industries.

Governments have also used digital technologies to improve the transparency of what they do and hence increase public trust. Open data policies and initiatives not only help reduce corruption by increasing public oversight, but also spur innovation as innovators and entrepreneurs use the government data to identify market gaps and establish new products and services.

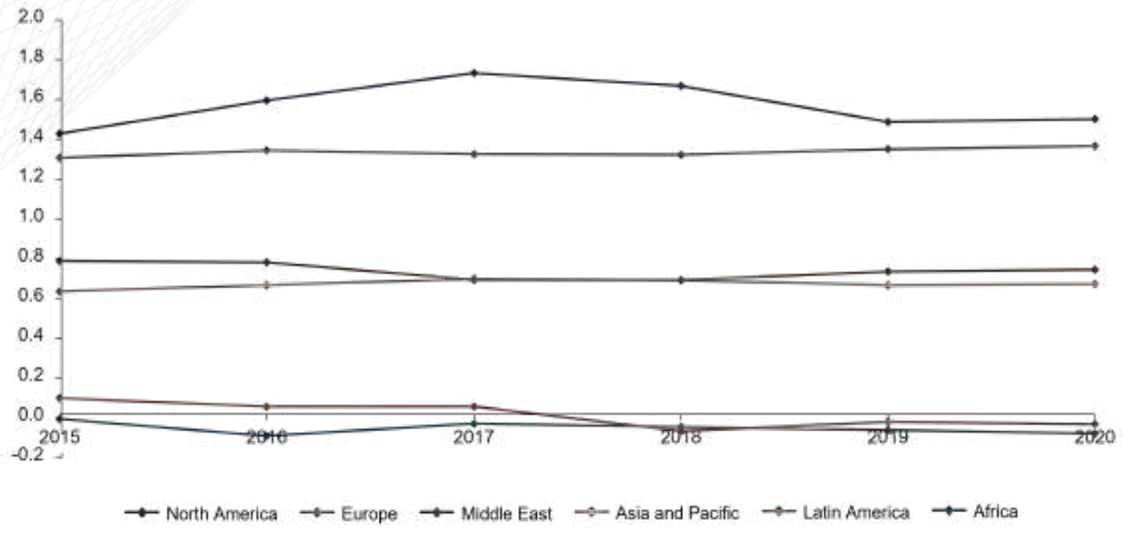
Toronto, a leader in government integrity, migrated its data to a new open data portal in 2019, making hundreds of public datasets freely available. The aim is to increase transparency, encourage accountability, improve accessibility and encourage participation by the private sector – all of which benefits entrepreneurship (*Figure 1.3*), contributing to Toronto's strong performance in the global entrepreneurship index.

Figure 1.3. Government Integrity vs Global Entrepreneurship Index (2020)



Dubai Innovation Index- Macro Analysis

Figure 1.4. Regulatory Quality Trend by Region



Dubai Innovation Index- Macro Analysis

Governments with successful innovation ecosystems have started to recognise the importance of embedding innovation by fostering an experimental culture and a nimble, iterative approach to formulating policies and regulations

As innovation by definition develops new ways of doing things, it introduces regulatory challenges that may not easily be addressed by traditional approaches to policy-setting. Innovative solutions often do not easily form part of existing industries and there may be no similar instances to provide models for regulation. Creating new regulatory frameworks requires government entities to shift their approach.

Creating a regulatory framework that encourages the development and growth of innovative solutions hinges upon the regulatory quality of the existing environment. North American cities have the highest regulatory quality, with European ones close behind (*Figure 1.4*). Both regions have set out to create a business environment that favours the development and growth of the private sector by minimising the burden of complying with regulations.

A more agile approach to defining regulations and policies that encourage innovative solutions is to introduce a 'sandbox', a special regulatory test-bed for innovative industries. **London**'s fintech sandbox shows the impact of this approach on an innovation ecosystem: one study suggests that the sandbox made it easier for companies to raise funds and found that the average amounts raised by innovators increased by 15%. A sandbox also shields innovators from regulatory ambiguity and future regulatory changes. Sandboxes have since been adopted for many other industries, including transportation and energy. Approaching regulation in a more agile way has helped modernise these industries and promote sustainable practices that allow cities to plan for the future.

Governments can also support and enable innovation, collaborating closely with innovators, operators, regulators and end users to co-create legislation which strikes the best balance between the interests of stakeholders. RegLab in **Dubai** does just that, enabling all sides to come together and develop a legislative solution iteratively. For example, to navigate the intricate details of setting policies for autonomous vehicles, RegLab has brought together a well-known private-sector leader in autonomous driving and Dubai's transportation regulator and operator to jointly design appropriate legislation for this emerging technology, keeping the best interests of citizens in mind.

Cities with more agile governments also tend to have higher scores on human development indicators (*Figure 1.5*). Government regulations and interventions – from physical infrastructure and healthcare to education, the creation of a good business environment and economic stability – directly affect the quality of life in a city. Administrative agility helps governments put citizens and residents at the core of their development of policies, regulations and programmes, and the effectiveness of their support helps shape the social fabric of cities and increases their populations' confidence in the public sector.

São Paulo



Tallinn



Effective governance through targeted policies and efficient processes enables policy-makers to respond appropriately to the external environment and protect the business ecosystem within cities, especially in times of disruption

The quality of governments' policy formation and implementation – and their credibility – are a crucial indicator of their effectiveness. Technological advances have enabled government entities to collaborate and coordinate as never before. This enables them to work more efficiently and makes life easier for those using government services. The integration of citizen data between different governmental databases greatly improves efficiency because less time is spent on data requests and data-related authorisation.

Tallinn is a leader in data integration: the city has invested in data architecture solutions that enable it to automatically integrate data from more than 70 public data sources. This access to clean, integrated data opens the door to targeted, informed decision-making and policy-setting based on accurate, up-to-date information.

Singapore has consistently ranked the highest of all selected cities in terms of government effectiveness as well as enterprise conditions (*Figure 1.6*), confirming the role of policy-makers in shaping cities' business environments. Singapore was particularly effective in ensuring business continuity during the pandemic. The city state quickly engaged its entire public sector, forming a task force drawn from diverse sectors spanning healthcare, trade and education and using its agility to make quick and effective decisions. Its first stimulus package was released in February 2020 and others followed throughout the year. The impact was clear: bankruptcies fell by 40%, reaching a five-year low despite the global surge.

Government responsiveness also depends on governance structure and the number of stakeholders involved in designing, issuing and implementing innovation-related policies. The 2020 DII Ecosystem Analysis shows a link between the number of stakeholders involved in the development of innovation-related policies and the time taken for policies to be approved and implemented. In one example, adding 10 new stakeholders increased the time to implementation by a year. Bureaucratic delays of this sort can negatively affect the innovation ecosystem.

Figure 1.5. Agile Government vs Human Development Index (2020)

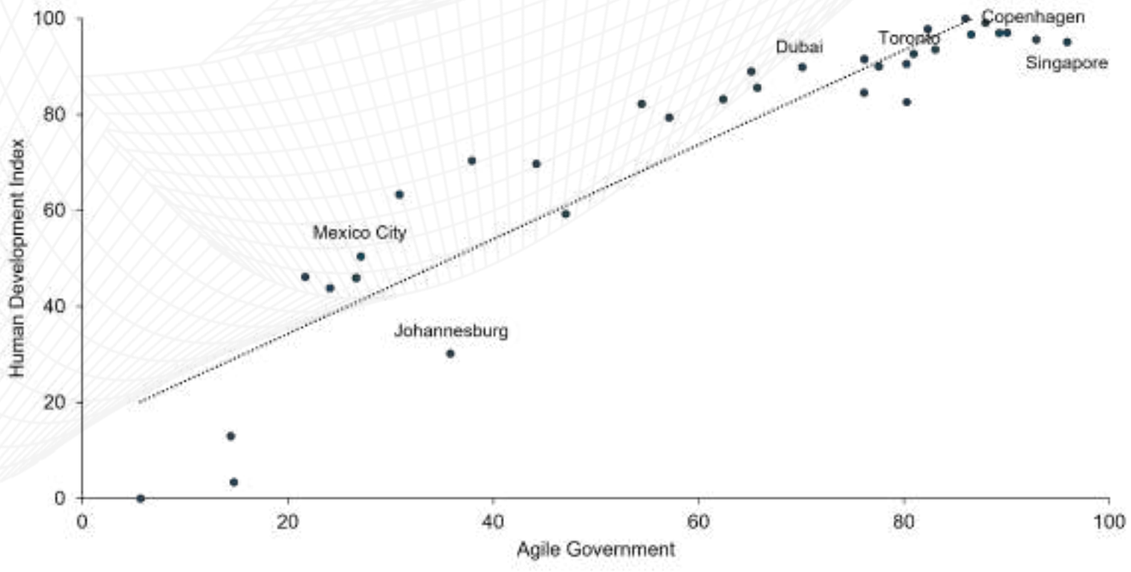
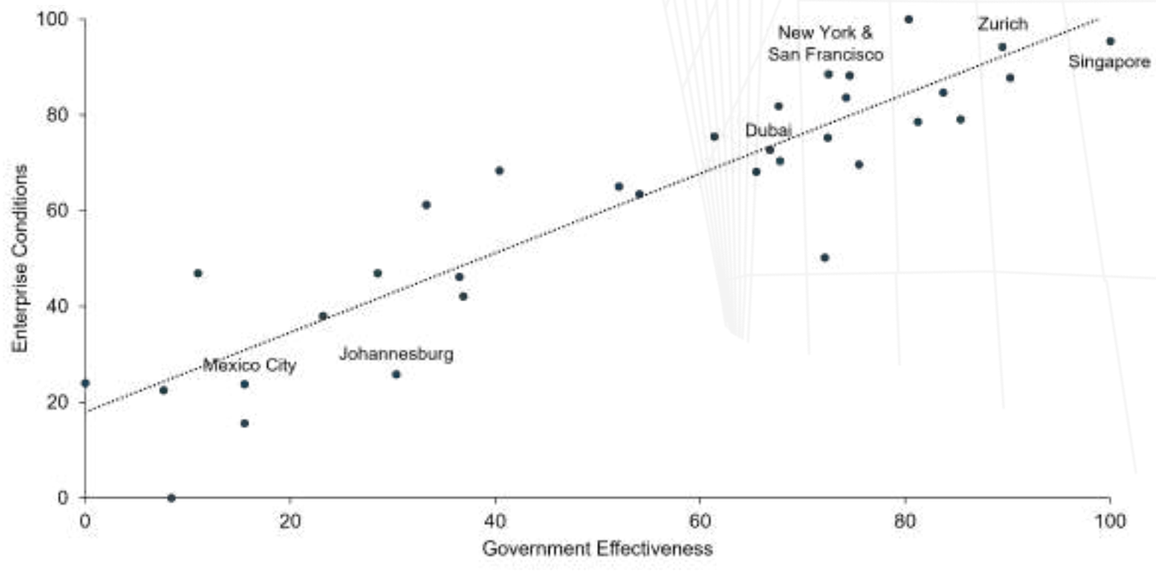


Figure 1.6. Government Effectiveness vs Enterprise Conditions (2020)



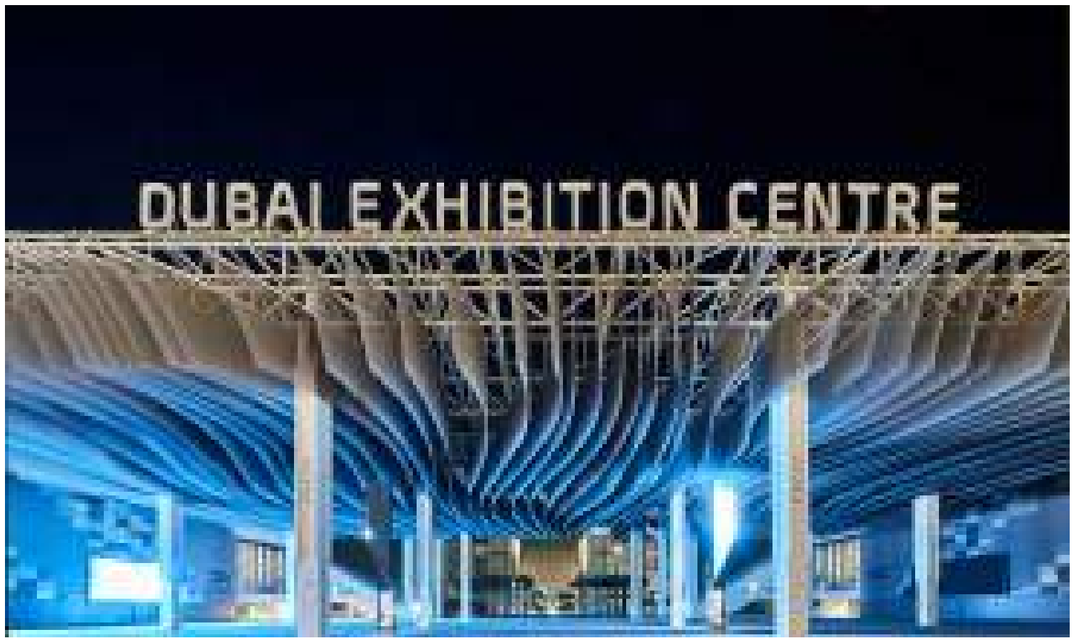
The benefits of government agility are clearly shown by our macro analysis, for example the link between government agility and new business density – the number of new businesses registered per 1,000 people aged 15-64. Singapore, which led the Government Agility score in 2019 and 2020, has increased its new business density by 20% since 2015. Seoul has improved on the Government Agility ranking since 2015 – and recorded a 30% increase in its new business density. A responsive political environment and simplified interfaces with government reduce the challenges faced by entrepreneurs and newly established businesses.

Overall, the impact of government agility on inciting and sustaining innovation is substantial. To build an environment that welcomes innovation, governments and cities should:

- **Enhance the quality and efficiency of public services, removing hurdles for innovators and entrepreneurs by leveraging ICT and prioritising the introduction of e-government**
- **Create frameworks, platforms and processes which allow the co-creation of policies and regulatory tools that best serve innovators**
- **Encourage and incentivise private-sector participation, of both sector leaders and innovative SMEs, in government transformation efforts and adopt private-sector best practices within the public domain where possible**
- **Anticipate and respond quickly to the needs of the ecosystem, especially in times of disruption, by embracing iterative and nimble approaches to formulating policies and regulations**
- **Increase the quality and efficiency of government processes by investing in emerging technologies like AI and blockchain, setting an example and creating a base that helps the private sector follow suit**



Case Study 1: DUBAI



Smart Dubai – the key to the city's smart transformation and government agility

Governments around the world have been energetically exploring how they can invest to create more connected cities that best serve the needs of residents and businesses. The Fourth Industrial Revolution has blurred the boundaries of traditional industrial practices, while emerging technologies have the power to revolutionise everything we do. As governments rush to become more agile, connected and efficient, Dubai has emerged among those cities leading the way.

A decision to digitalise government in Dubai was announced by His Highness Sheikh Mohammed bin Rashid Al Maktoum, UAE Vice President, Prime Minister and Ruler of Dubai, in 2000.

The goal was to create a government that uses technology to make processes more efficient and convenient for the Dubai population. The following year, an e-government portal was established to centralise government services and facilitate interactions between government and the people.

Digital administration has continued to evolve, progressively improving the lives of Dubai's residents and visitors. In 2014, Smart Dubai was officially launched as a government entity under the patronage of His Highness, with the aim of making Dubai the happiest city on Earth by embracing technology and innovation to provide effective services as efficiently as possible and ensure residents and visitors live safe, enjoyable lives to the full.

During the past two decades, Dubai has invested heavily in technology and today, the city has one of the highest rates of adoption of information and communications technology (ICT) in the world.

Smart Dubai is responsible for guiding and implementing the policies and frameworks required to make the government agile, digital and connected, and make interactions with the city administration seamless, efficient and sustainable.

The objective of Smart Dubai is to deliver better services, more quickly and at lower cost, to benefit the economy, mobility, the environment, governance and the way people live. Dubai's government wants to be quick to adapt and respond to changes in the surrounding world. This progressive digital agenda is helping to replace Dubai's economic dependence upon energy with a modern blend of services connected to a global market. New technology strategies are being implemented across healthcare, transport, tourism and more.

Setting the scene for innovation through effective strategies and legislation

Smart Dubai recognises the potential of emerging technologies to drive innovation and seeks to lead technology development and adoption. It wants to be a testbed for blockchain, artificial intelligence (AI), the Internet of Things (IoT) and other digital technologies that are rapidly transforming everyday life.

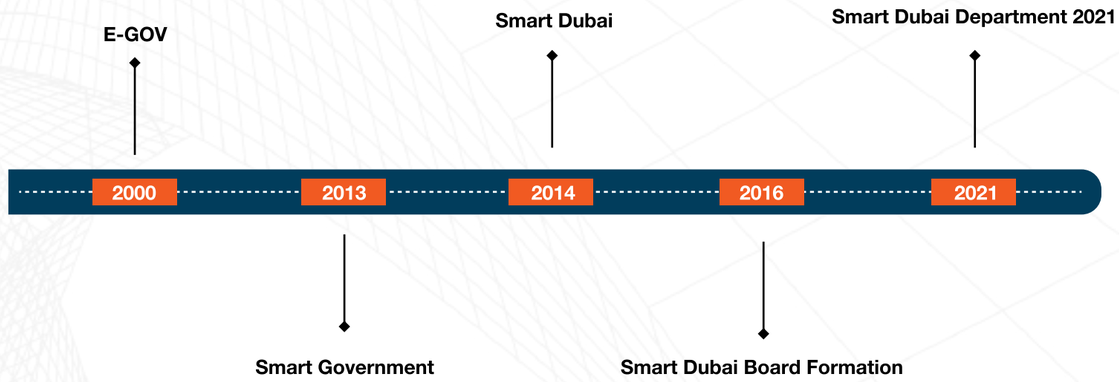
The Dubai Blockchain Strategy, launched in 2019, is an example. It will build upon the benefits of encrypted records to improve the quality and security of government transactions, benefiting citizens and providing an example for other businesses and industries.

Since then, there have been more than two dozen cases of blockchain implementations in sectors ranging from finance and education to real estate, tourism and commerce.

In finance, for example, the Smart Dubai office is among several entities in Dubai that have implemented blockchain payment settlement platforms. In education, Hamdan Bin Mohammed Smart University, Zayed University and Al Mawakeb schools all use blockchain to issue digitally accredited certifications. In commerce, HSBC and the retailing and hospitality organisation Landmark Group have used blockchain to build a global supply-chain management system for commodities.

To help provide a moral framework for the use of artificial intelligence, Dubai launched an AI Lab, providing a forum for discussion of the ethical implications of ways in which this emerging technology can be used. The lab seeks to bring together tech innovators, business leaders and lawmakers to develop legislation that governs AI technology.

In 2021, Smart Dubai also launched the Dubai Data Strategy to develop and implement a culture of evidence-based decision-making. This aims to promote transparency between the government, private entities and people. Its objective is to create a data-driven culture and encourage innovation that will lead to a better quality of life for residents and visitors.



84% **Reduction in paper usage**

One such initiative is the Dubai Paperless Strategy, which aims to eliminate paper-based administrative processes, saving time, cost and the resources needed to produce paper. To share its experiences and benefit from innovation elsewhere, Smart Dubai launched the Smart Cities Global Network – an international network of smart cities that serves as a platform for smart city stakeholders to connect and exchange views, knowledge, ideas and skills on topics in the field of smart transformations.

Bringing innovation to life by putting emerging technologies to work

Putting technology to work for a city's population requires new thinking and initiative throughout the administration. More than 100 smart initiatives have been launched across two dozen government departments to improve customer engagement and decision-making and drive operational efficiency. Today, more than 90% of the city's government services are available online, simultaneously making processes more efficient and using fewer natural resources.

A digital identity and authentication programme, the UAE Pass, gives citizens and visitors access to more than 5,000 government, semi-governmental and private-sector services and enables digital signatures, while the DubaiCareers app centralises job seeking in Dubai.

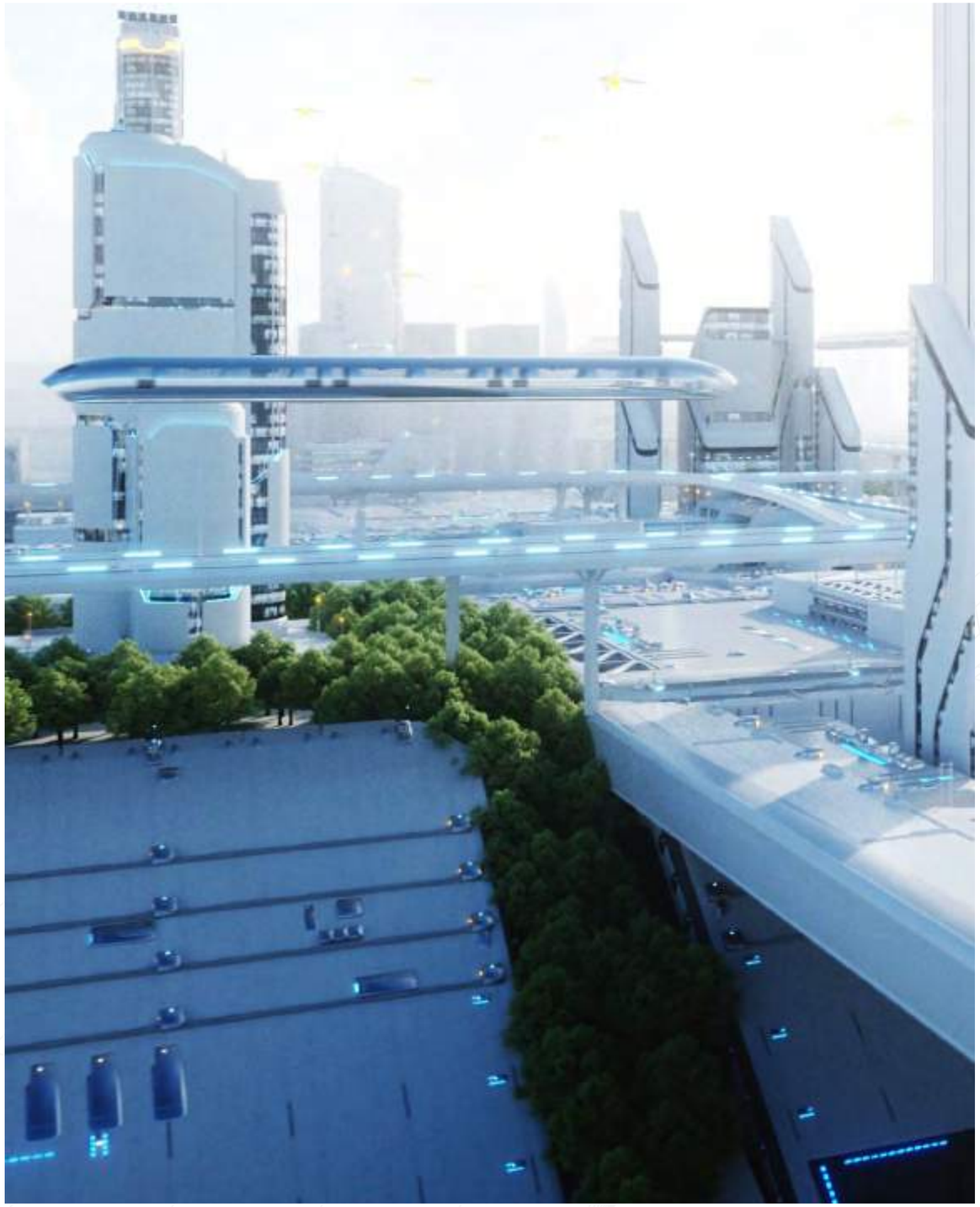
7.7 million **Man-hours saved through blockchain implementation**

Dubai is currently home to 114 blockchain businesses, which support the economy and employment. Blockchain technology now underpins more than half of government transactions. The Dubai Chamber of Commerce and Industry has also joined Digital Dubai's Government Resources Planning System, which was built on blockchain and is currently being used by more than 70 government agencies, managing 95% of the government's budget, saving in excess of AED 4.3 billion ($1.2 billion).

The Smart Dubai Department has had a wide impact. Its initiatives have rippled among business leaders, innovators and governments. Perhaps most strikingly, it has helped the city continue to function effectively during the Covid-19 pandemic and keep the city's population safe. Now it is delivering many other benefits, creating a culture of innovation, de-politicising urban decisions and reshaping the way residents and visitors live.



PILLAR 2: Infrastructure



In recent years, it has become increasingly evident that more innovation happens in places that have good infrastructure. The Covid-19 outbreak has forced both the public and private sector to rethink their planning, operating and monitoring models – reinforcing the need for governments to invest in the provision of high-quality infrastructure in their cities. This enables communities to benefit from technological advances and makes cities and their people more resilient in the face of unexpected challenges.

Infrastructure can take the form of tangible assets such as computers, telephone networks and technology infrastructure and intangible assets such as a healthy and sustainable economic ecosystem. Both are essential to the production and exchange of goods, services and ideas. Resilient and robust infrastructure underpins cities' innovation systems, helping innovators increase productivity, cut production costs, access markets and overcome unexpected events.

CITY	RANK 2020	2019
Zurich	1	1
Copenhagen	2	2
Paris	3	5
London	4	3
Vienna	5	7
Singapore	6	4
Stockholm	7	6
Hong Kong	8	9
Tokyo	9	11
Madrid	10	12
New York	11	10
Hamburg	12	8
Berlin	13	13
Amsterdam	14	14
Milan	15	15
Turin	16	17
Tel Aviv	17	19
Toronto	18	20
Tallinn	19	23
Sydney	20	21
San Francisco	21	16
Seoul	22	22
Dubai	23	24
Warsaw	24	25
Kuala Lumpur	25	27
Doha	26	18
São Paulo	27	26
Mexico City	28	28
Moscow	29	32
Riyadh	30	31
Beijing	31	29
Shanghai	32	30
Johannesburg	33	35
Shenzhen	34	34
Nairobi	35	37
Accra	36	36
Baku	37	33
Mumbai	38	39
Bangalore	39	38

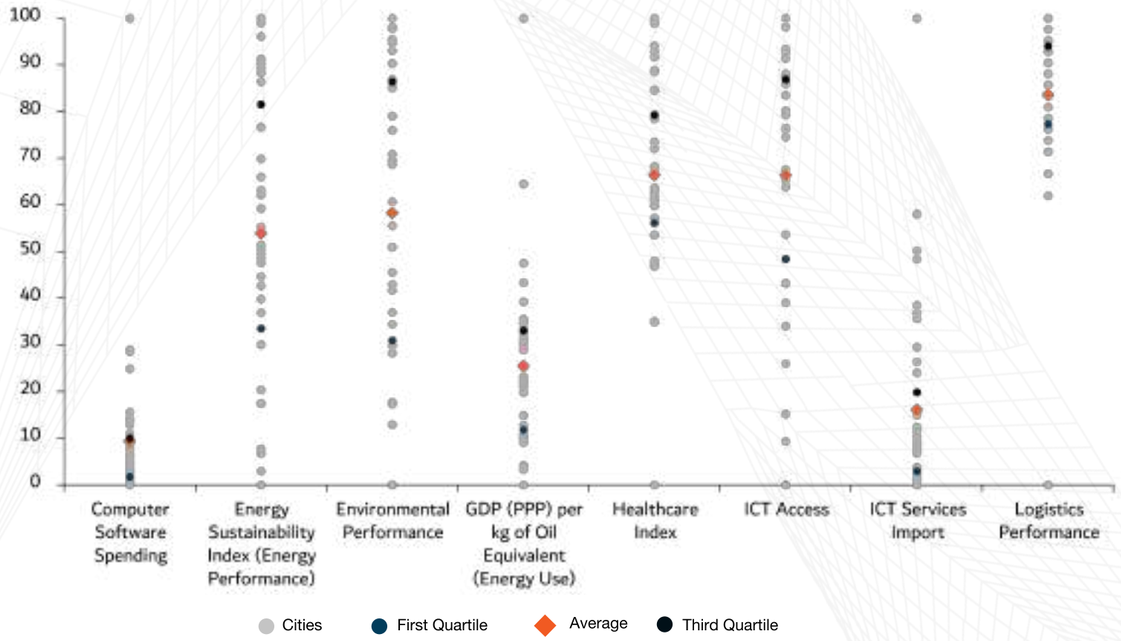
Our Infrastructure pillar explores how well cities perform in terms of their digital and physical infrastructure and how self-sufficient they are. Generally, the DII's most innovative cities in 2020 had the highest scores in computer software spending and logistics performance, showcasing the contribution of the two to their stellar performance. The highest averages in this pillar are observed in logistics, ICT and healthcare (*Figure 2.1*).

European cities outperformed cities in other regions in our Infrastructure pillar, particularly in ecological indicators. For instance, they occupied the top 9 ranks in environmental performance and energy efficiency and nine out of the top 10 in energy sustainability. This highlights their efforts in pushing the sustainability agenda and in being environmentally conscious. North American cities followed suit in the pillar, performing best in terms of technology and logistics.

North American cities' most notable strength is in computer software spending, as they are greatly ahead of competition. This demonstrates their strive to honor and advance digitalisation and technology. Middle Eastern cities generally performed well across the different indicators and on average led the scores in ICT services imports, showcasing their commitment to advancing ICT infrastructure.

Asian and Pacific cities also generally performed well, with at least one city from the region occupying a top spot in the majority of Infrastructure indicators. As for Latin American and African cities, they were on average weaker in Infrastructure. Cities in both regions averaged stronger performances on ecological indicators, yet fell short in other indicators.

Figure 2.1. Infrastructure Scores by Indicator* (2020)



Dubai Innovation Index- Macro Analysis
*For more information on the full list of these indicators, please see Appendix III



Investing in digital infrastructure is a prerequisite for economic progress, since it boosts productivity and propels innovation

Digital technologies have been an engine of economic growth and competitiveness within countries, regions and cities and become a focus of government strategies and policies around the world. One consequence of the Fourth Industrial Revolution (Industry 4.0) is that keeping up with emerging technologies is becoming indispensable to modern life. The world's most innovative cities are embracing the critical role that digital transformation plays in their economic competitiveness and have launched initiatives to develop their digital infrastructure. In particular, cities have been investing more in Information and Communications Technology (ICT) and improving ICT access.

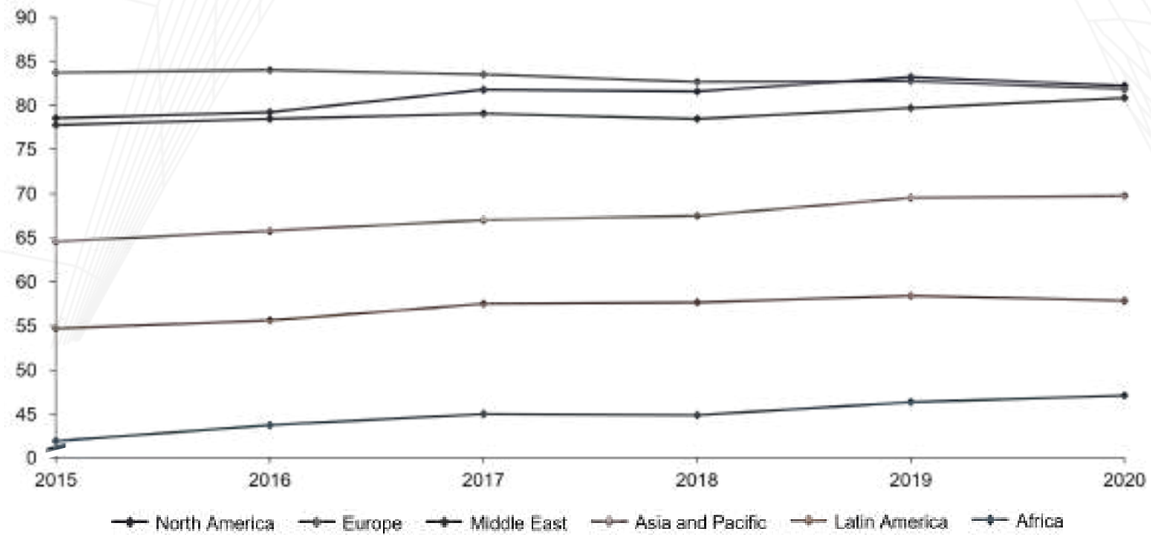
Leading Middle Eastern cities achieved the biggest improvements in ICT access from 2019 to 2020 (*Figure 2.2*) with **Riyadh**, for example, increasing by three rankings in the indicator. The launch of Saudi Arabia's Vision 2030 development plan spurred digital transformation initiatives in Riyadh and across the country.

The ICT sector now accounts for 4% of Saudi Arabia's GDP. According to the International Data Corporation (IDC), spending on ICT in Saudi Arabia reached $32.4 billion in 2020 and is expected to grow by 1.5% in 2021.

African cities also showed big improvements led by **Nairobi**, which achieved a rise of 8.6% in its ICT Access score (*Figure 2.2*). The city has been spearheading innovation in Africa in delivering financial services by mobile phone, helping the country achieve near-total financial inclusion and acting as a model for its neighbours and other developing cities. These achievements have been underpinned by large government investments in ICT, especially in internet connectivity and the development of digital transformation strategies and frameworks such as Kenya's Digital Economy Blueprint, National Information, Communications and Technology (ICT) Policy and National Broadband Strategy.

Asian and Pacific cities made only modest gains, but from a stronger base. **Hong Kong** has built a remarkable ICT infrastructure. Its Digital 21 Strategy has seen it to the top spot on our index for ICT access. South Korea's Ministry of Science and ICT has earmarked $8.7 billion for developing digital technologies including Big Data, artificial intelligence and 5G.

Figure 2.2. ICT Access Trend by Region



Dubai Innovation Index- Macro Analysis

Riyadh



Hong Kong



Singapore



Zurich



Amsterdam



In 2020, Chinese cities devoted much of their pandemic stimulus packages to digital infrastructure, such as data centres and 5G networks. Digitalisation in China will likely be spurred by the launch of the digital yuan in 2021, resulting from collaboration between the Chinese central bank and city leaders.

The top performing cities this year include **Singapore**, **Zurich** and **Amsterdam**, which have all invested in becoming smart cities. They are leading the way in using digitalisation to make their cities more efficient, liveable and sustainable. Amsterdam, for example, continues to reinforce its smart city credentials by making its city data public, consolidating information from 33 sources on to a single platform, accessible by all.

Using emerging technologies and mobile data helps cities address current and future urban challenges

The pandemic showed the importance of strong digital infrastructure to allow many everyday business activities to move online. Movement restrictions turbocharged digitalisation. Citizens were obliged to adopt new ways of achieving day-to-day tasks and the public and private sectors were forced to adjust their work methods. The rapid transition to remote working, remote education, e-commerce, process automation, digital socialising and even digital healthcare put cities' digital infrastructure to the test, highlighting shortcomings and demonstrating that they needed to up their game.

As a result, demand for contactless services, cloud solutions and collaboration tools made possible by emerging technologies surged. Providers have been seeking more effective and cheaper ways to deliver their services. In our Innovator Survey, 84% of respondents said that technology and communication helped improve their firm's innovation activity, innovation process and product development cycle in 2020, compared with 63% in 2019.

The use of population data available from digital infrastructure has helped shape policies to manage the pandemic, to model its development and predict potential outbreaks (*Figure 2.3*). **Singapore** and **Hong Kong**, for example, quickly developed contact-tracing apps that track people gathering in workplaces, malls, schools and healthcare facilities to help curb the spread of the virus.

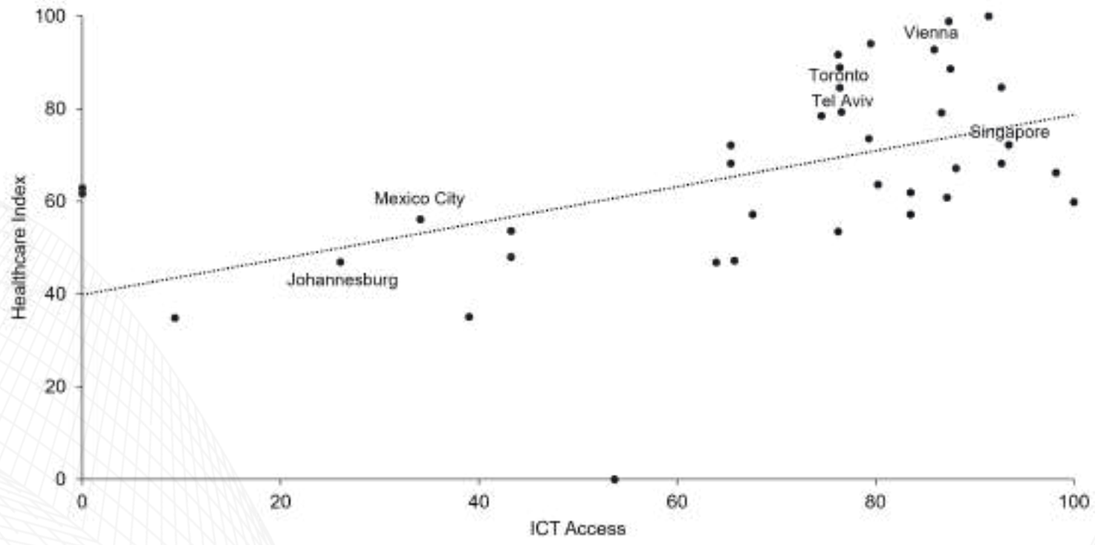
New York and **Tel Aviv,** meanwhile, created interactive online dashboards to make information easily accessible to the public. Developing tools such as these required the ability to collect, process and analyse data. Cities lacking strong digital capabilities fell behind. Nonetheless, lower-income cities such as **Accra**, the capital of Ghana, have begun to use anonymised mobile data to respond to the pandemic. The city has been gathering and analysing data from mobile network operators to understand population mobility patterns to shape its responses to the pandemic.

The most innovative cities provide business support services such as incubators, accelerators and co-working spaces to help start-ups and early-stage firms grow and innovate

Many cities encourage start-ups and other firms in particular industries to locate in clusters because this can promote creativity and innovation. London, Berlin and New York are strong examples of cities that have become innovation hubs with accelerators and incubators that provide support services to a wide variety of industries.

London, for example, is home to over 100 accelerators and incubators. Some are sector-focused; others are open to all. Programmes run for varying durations. Services offered range from mentoring to networking with other entrepreneurs and office space. In **New York** co-working spaces are widely available and are very popular among entrepreneurs and startup employees. As for **Berlin**, the city had a total of 170 co-working spaces in 2020 and around 1-2 incubators and accelerators per 1000 new start-ups according to our 2020 Ecosystem Analysis.

Figure 2.3. ICT Access vs Healthcare Index (2020)



Dubai Innovation Index- Macro Analysis

Figure 2.4. Number of Universities in Top 200 QS World University Rankings by City (2020)



Dubai Innovation Index- Macro Analysis

Another way Berlin supports innovation within it is through an online dashboard detailing the city's innovation ecosystem, from the number of start-ups and scale-ups to job openings, companies present, investors, accelerators, workspaces and more. The platform launched by Berlin Partner - an entity responsible for marketing the German capital to the world - helps innovators and entrepreneurs find the support they need.

Dubai has reinforced its start-up support infrastructure by setting up a new-economy Dubai Future District, which includes a research centre, incubators and accelerators and an innovation space for future economy pioneers.

Academic institutions, including universities and R&D centres, can boost innovation by sharing their resources with start-ups and entrepreneurs throughout the innovation value chain: from early-stage research to the development and commercialisation of new products

Leveraging existing institutions' research capabilities and databases can greatly facilitate the development and commercialisation of innovations. IBM, Siemens, Amazon and General Electric, as well as many other leading companies, have been collaborating with universities for decades. Universities in **London** and elsewhere have been seeking partnerships with companies to accelerate innovation and pioneer progress. For instance, Imperial College London has partnered with energy group BP over many years, contributing to the company's technology capabilities in the fields of energy storage, reservoir modelling and more.

To succeed, partnerships need strong universities with the right resources and capabilities to help corporations and governments innovate and experiment. Leading universities are centres of research and development as well as education: **New York**'s two top universities invested nearly $2 billion in R&D in 2019 alone. Nearly half of universities ranked among the top 200 worldwide are in Asian and Pacific cities, notably **Hong Kong**, **Tokyo**, **Seoul** and **Sydney** (*Figure 2.4*).

Doha



Copenhagen



Berlin



Sydney



Tokyo



Europe is a close second with just over 40%, led by **London**, which shares first place with **Hong Kong**. Although universities in Middle Eastern and African cities fall just outside the top 200, cities like **Dubai** and **Doha** have attracted foreign investment in their education sectors. For example, the University of London's Bayes Business School (formerly Cass Business School) and the University of Birmingham set up campuses in Dubai, and Texas A&M and University College London have campuses in Doha. The Kingdom of Saudi Arabia has also recently cleared the way for international universities to open campuses. This is expected to help enhance the quality of education available in **Riyadh** and educate a generation of future innovators.

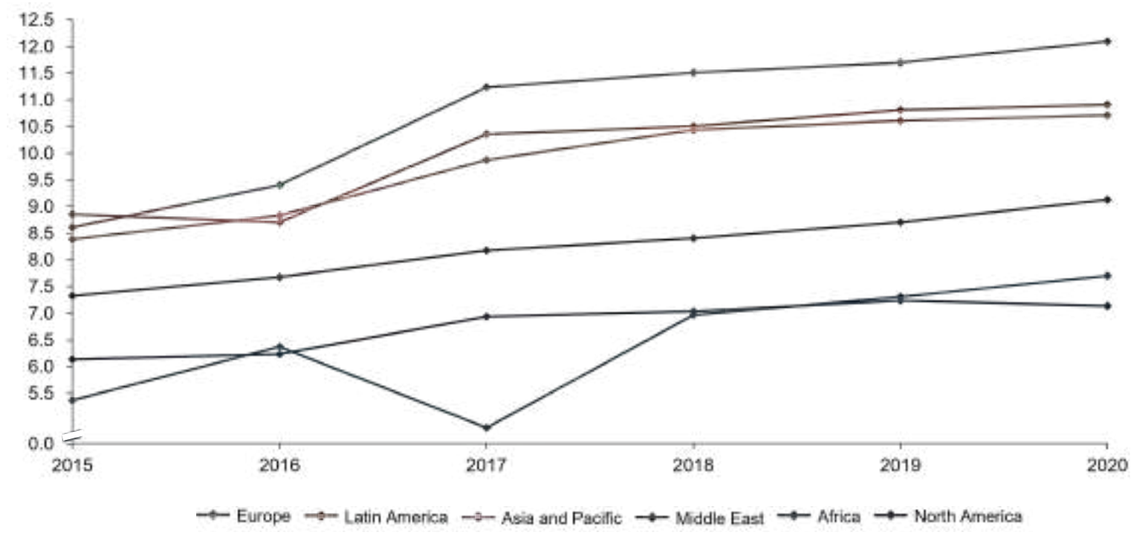
Our Innovator Survey shows that respondents in **Berlin** are much more likely to collaborate with academic institutions than those in Dubai. In Dubai 39% of respondents often or very often work with academics: in Berlin, 62% of respondents work closely with academics to develop, test and implement innovative ideas. The strong research performance of Berlin universities may explain the difference. The German capital has three decades-old universities that rank among the top 200 globally. City efforts to develop the research capabilities of their academic institutions and encourage more research also benefit innovation by the public and private sectors.

The Covid-19 pandemic and the increased frequency of extreme weather events confirm the importance of developing cities that are better able to withstand economic shocks

The growing impact of human activity upon our planet, including climate change, has encouraged policy-makers to seek more sustainable paths for cities. Energy intensity can be used as a proxy for sustainability. Clearly, many cities need to improve their performance.

In terms of energy efficiency, European cities are the leaders (*Figure 2.5*). **Zurich** in Switzerland ranks second overall, aided by long-standing efforts to enhance energy efficiency.

Figure 2.5. GDP (PPP) per Kg of Oil Equivalent (Energy Use) Trend by Region



Dubai Innovation Index- Macro Analysis

Copenhagen, which plans to become the world's first carbon-neutral city, by 2025, also performs well. The city's sustainability efforts are clear in every aspect of its urban planning. It has extensive green spaces and advanced cycling infrastructure.

Yet it is **Hong Kong**, in the Asia-Pacific region, that tops our ranking. Its government has rolled out many initiatives to promote efficient use of energy, such as the Feed-In Tariff Scheme which allows people who install wind and solar power generation systems on their premises to sell the renewable energy to one of the two power companies in the agreement – at up to five times the normal electricity tariff. This initiative both promotes system resilience and spurs a switch to generation from renewable sources. Hong Kong has also established a $100 million Sustainable Development Fund to help finance sustainability initiatives.

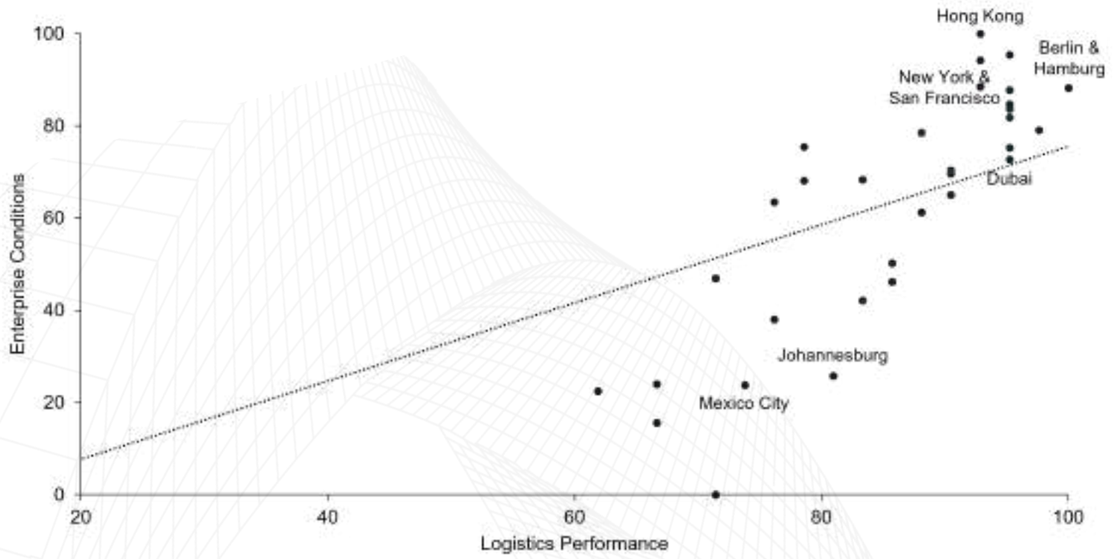
In all three cities, the availability of appropriate infrastructure allows residents to make eco-friendly choices such as opting for public transport, cycling and using renewable energies. But this requires investment in public transport, cycling lanes and renewable energy infrastructure.

The Covid-19 pandemic has shown that robust healthcare infrastructure can also be essential to business continuity during disruptive events.

New York lost over half a million jobs during 2020 as the number of Covid-19 cases surged and lockdowns were introduced. In Mumbai, which was also hard-hit by the pandemic, the poverty rate surged and average incomes in some districts fell by as much as 47%. The city of São Paulo has also been enduring the tragic impacts of Covid-19 on its economy and population due to the high number of fatalities, partly resulting from the slow rollout of vaccines. Consequently, its healthcare infrastructure was overwhelmed, as reflected in its performance in the healthcare index in 2020, with the city witnessing the largest decline in its performance, falling by 12.5% from the previous year. Some cities need to invest in making their healthcare infrastructure resilient.

The pandemic has badly affected some global supply chains, putting pressure on them to become more resilient. All regions experienced a decline in their logistics performance in 2020, after steady improvements in previous years. A closer look at the relationship between logistics performance and enterprise conditions helps us understand how cities' business environments are affected by supply-chain disruption.

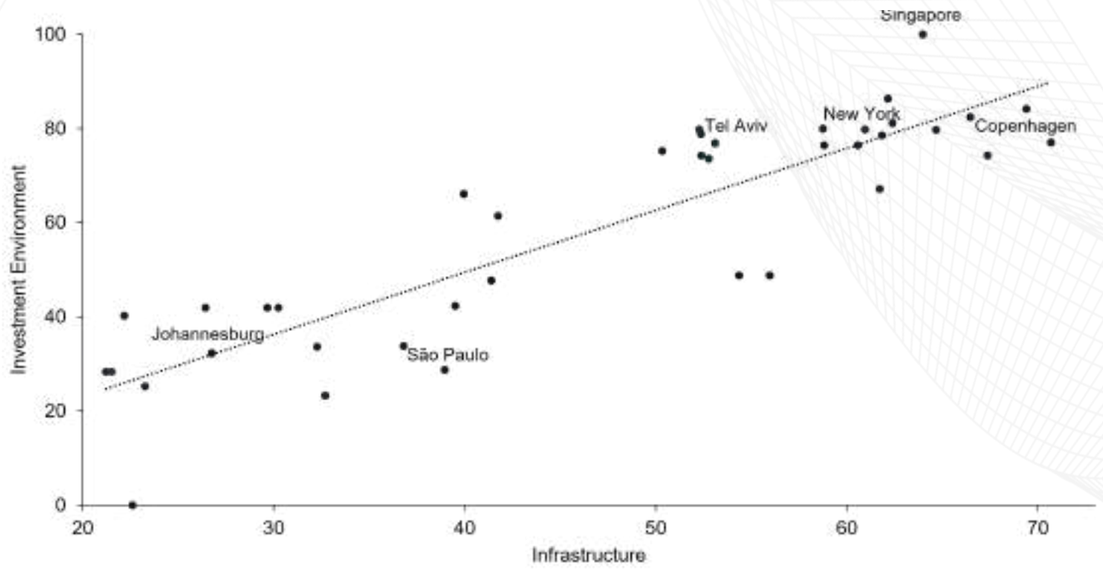
Figure 2.6. Logistics Performance vs Enterprise Conditions (2020)



Dubai Innovation Index- Macro Analysis

Cities with stronger logistics performances tend to have better enterprise conditions (*Figure 2.6*), because efficient supply chains benefit business performance. Global and domestic supply chains may need to be reconfigured or strengthened to support cities' economic recoveries.

Figure 2.7. Infrastructure vs Investment Environment (2020)



Dubai Innovation Index- Macro Analysis

The quality of city infrastructure correlates with the city's investment environment (*Figure 2.7*). The investment environment is shaped by various elements: the availability of finance and venture capital; capital controls and the prevalence of foreign ownership of companies; the insolvency recovery rate and the extent of shareholder governance; and the strength of property rights and intellectual property protection. Cities with stronger innovation-enabling infrastructure therefore have better investment environments, which ultimately leads to greater investor confidence and appetite.

Overall, building robust and resilient infrastructure is essential to support and stimulate innovation within cities. Cities should:

Develop their ICT infrastructure and facilitate the adoption of emerging technologies and smart solutions

Develop and promote environments that are conducive to entrepreneurship, such as accelerators, incubators and co-working spaces

Invest in academic institutions' R&D capabilities and encourage more university-industry partnerships

Enhance their self-sufficiency by encouraging the adoption of sustainable development practices and optimising domestic supply chains

Mitigate the detrimental effects of healthcare crises by ensuring their healthcare infrastructure is resilient

Case Study 2: PARIS





Case Study Supported by Station F

Station F – the start-up supporting start-ups

Located in Paris, the capital of France, Station F is ideally positioned for start-ups that want to use France as their launchpad to compete in European markets. Under the leadership of President Emmanuel Macron, a strong advocate of entrepreneurship and innovation, France has made big strides in fostering start-ups and encouraging innovative companies to tackle France's social and economic challenges and create lasting jobs and prosperity.

Housed in a former rail freight depot, Station F is physically the world's largest incubator. It is home to the European hubs of Microsoft, Facebook and Amazon, as well as hundreds of start-ups. It was founded in 2017 by French businessman and philanthropist Xavier Niel and attracts and supports both French and international start-ups. It rivals YCombinator in Mountain View, California, and the worldwide Plug and Play incubator network in the race to create the optimal start-up ecosystem.

Breaking boundaries

Station F seems determined to break free from national and social constraints, adopting revolutionary approaches to achieving its aims. Three examples highlight its willingness to challenge conventions and take a fresh approach. First, it held its launch event abroad – in London, a rival start-up capital – signalling its determination to transcend national borders. That was reaffirmed in its decision to make English the mandatory language on Campus, even though France invented the word entrepreneur. Thirdly, it appointed a woman, Roxanne Varza, as CEO, implicitly challenging male dominance in the tech space.

Leveraging partnerships and alliances

Many private-sector entrepreneurship initiatives offer support through a combination of co-working, incubation and acceleration programmes. Station F, in contrast, focuses upon incubation. This is complemented by offering a variety of post-incubation services provided by highly capable partners within the start-up ecosystem.

Aided by companies including Microsoft, Schneider Electric and L'Oréal, Station F is establishing sector-specific growth programmes. By tackling sector-specific challenges, these programmes build expertise and offer a flow of potential deals to participating companies. Alliances have also been formed with more than 150 leading French and international venture capital firms, ensuring ample funding is available to high-potential start-ups.

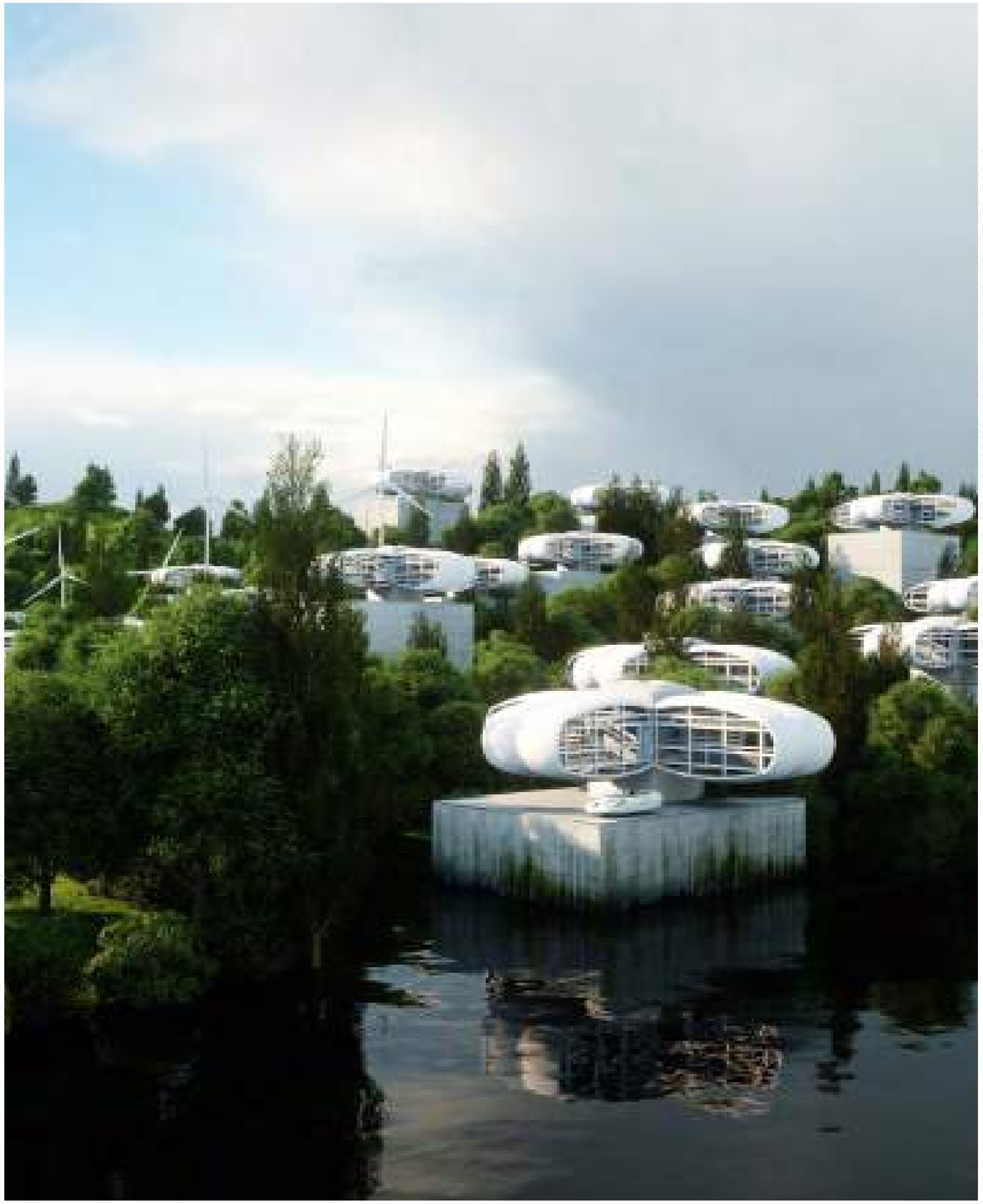
Unlocking substantial impact

With capacity to support 1,000 new companies each year, Station F has strength in depth and breadth, aiding a multitude of firms at different levels of maturity and in many different sectors.

Successes are already emerging. One was Recast.ai, which participated in an accelerator programme co-hosted by Microsoft. This helped win wider recognition for the capabilities of this French start-up in developing chatbots, powered by artificial intelligence. This led to its purchase by multi-national tech company SAP.

To date, Station F has supported more than 4,000 international start-ups and has succeeded in positioning itself as one of the biggest and most effective incubator systems worldwide.

PILLAR 3: Funding



Funding is one of the most critical factors in enabling innovation and entrepreneurship. It supports high-potential innovative businesses by facilitating research and development (R&D) and providing the means for entrepreneurs to turn their ideas into realities, from prototypes to revenue-generating products or services that can disrupt entire industries. Our Funding pillar explores availability of varied funding sources, foreign direct investment and the overall investment environment in a given ecosystem.

In 2020 the Covid-19 pandemic triggered budget constraints in both private and public-sector entities. This made it essential for the two sectors to collaborate to maintain or gain access to funding for high-potential companies. The crisis highlighted the importance of allocating funds responsibly and the role of investors in ensuring the success of their investments.

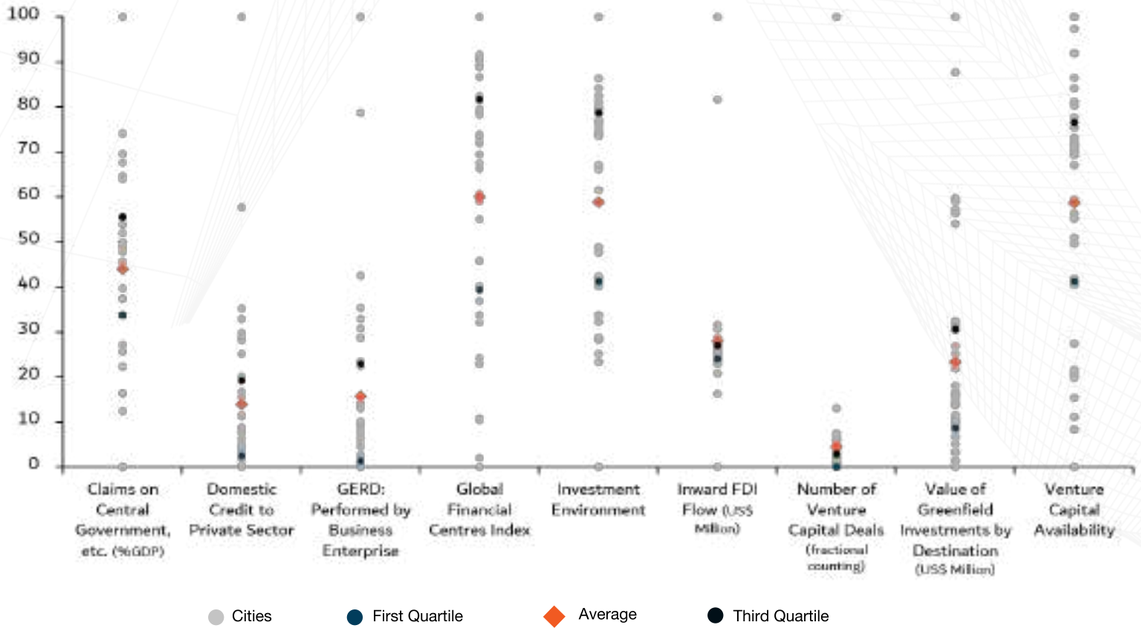
CITY	RANK 2020	RANK 2019
Singapore	1	2
New York	2	1
Hong Kong	3	4
Tokyo	4	7
London	5	3
Paris	6	6
Toronto	7	14
San Francisco	8	5
Sydney	9	12
Seoul	10	17
Tel Aviv	11	10
Shanghai	12	9
Beijing	13	11
Stockholm	14	16
Berlin	15	19
Hamburg	16	15
Amsterdam	17	8
Dubai	18	13
Shenzhen	19	18
Copenhagen	20	20
Zurich	21	22
Kuala Lumpur	22	21
Vienna	23	25
Mexico City	24	24
Tallinn	25	29
Baku	26	30
Warsaw	27	28
Riyadh	28	35
Madrid	29	26
Doha	30	23
Moscow	31	31
Mumbai	32	27
Bangalore	33	33
Milan	34	34
Johannesburg	35	36
São Paulo	36	32
Nairobi	37	37
Accra	38	39
Turin	39	38

Many cities nonetheless worked hard to support their investment environment, suggesting a focus on: the availability of finance and venture capital; capital controls and the prevalence of foreign ownership of companies; the insolvency recovery rate and the extent of shareholder governance; and the strength of property rights and intellectual property protection. Innovative cities' strong performance across the board in venture capital availability and investment environment suggests that these are focal points for cities looking to provide robust funding offerings in the ecosystem (*Figure 3.1*).

The top 10 cities in the DII in 2020 are also leading performers in the investment environment, pinpointing it as a notable factor in the success of cities with respect to innovation.

Regionally, North American cities consistently performed highest, on average, in Funding. Efforts made by North American cities to incentivize the investment in R&D and early stage startups are evident, as they notably outperform cities in other regions in gross expenditure in R&D: performed by business enterprise and number of greenfield investments. Asian and Pacific cities generally followed in second among the regions for performance in funding and even took the lead in a couple of aspects, such as foreign investment and venture capital deals. European and Middle Eastern cities followed suit, with the latter performing significantly well in venture capital availability, placing just under North American cities for that indicator. While Latin American and African cities generally ranked below the rest, they respectively had a top 2 performance in the value of greenfield investments and claims on central government.

Figure 3.1. Funding Scores by Indicator* (2020)



Dubai Innovation Index- Macro Analysis
*For more information on the full list of these indicators, please see Appendix III



Successful ecosystems evolve their provision of funding to the innovation space through more versatile and timely support mechanisms

Successful ecosystems offer a comprehensive range of funding mechanisms to support innovation. This helps ensure that appropriate funding is available to companies at different stages in their lifecycle. Comprehensive funding ecosystems source finance from personal savings and government grants; from lenders in the form of microcredit and bank loans; and as equity financing from accelerators and venture capital. These instruments can all contribute to an environment that breeds and sustains innovation and entrepreneurship.

Access to finance is particularly important for smaller businesses that rely heavily on external financing, venture capitals being a heavily sought out channel of funding for entrepreneurs. In the 2020 DII Innovator Survey, 72% of businesses said it was "challenging" to access innovation funding 2019 and 2020, within which 61% said it was "very challenging".

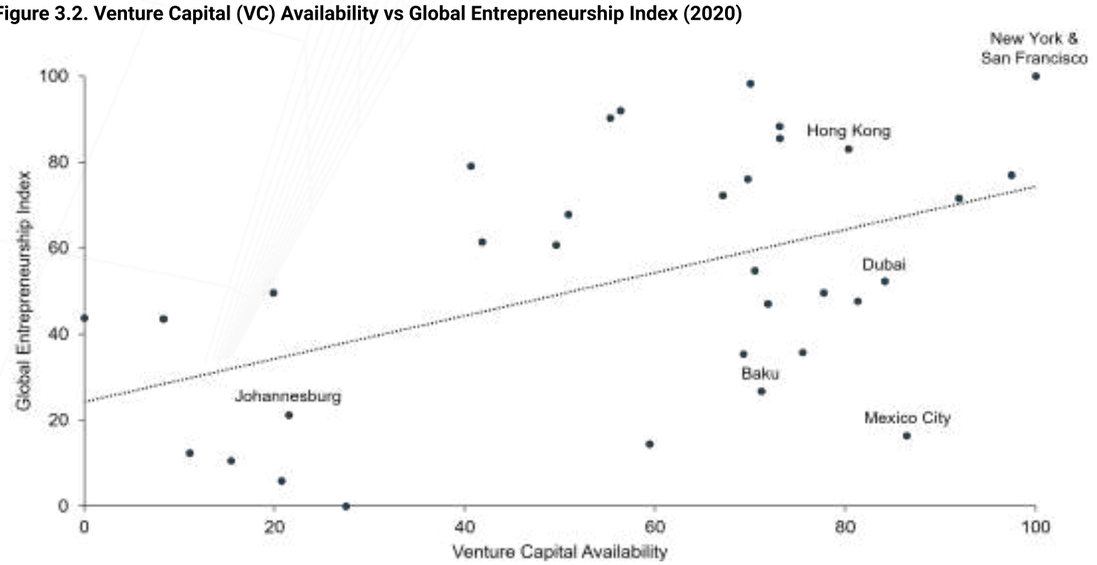
Venture capital funding has been a long-standing popular channel for seeking investments as early, middle and late stage start-ups look to continue scaling.

A correlation has been established in which a city's venture capital availability positively impacts the entrepreneurial outputs and innovation in said city (*Figure 3.2*). During the past six years, cities in the Middle East have maintained relatively strong performances with respect to venture capital availability – outdone solely by New York and San Francisco.

Dubai and **Tel Aviv** ranked in the top four for VC availability in 2019, due to government incentivisation and support of global VCs looking to enter the market and those already invested in the market. Incentivisation approaches used in either or both cities include: tax incentives for VC funds, public-sector matching of investments and government support of early and mid-stage start-ups through additional services. Both cities further the attractiveness of funding availability and channels in their ecosystems through ensuring a diversity of offerings that accompany the VC funding opportunities.

Dubai's offerings, meanwhile, range from government-backed guarantee schemes like the Mohammed bin Rashid Innovation Fund to venture capital deals, angel investments, peer-to-peer lending and crowdfunding. The Dubai Next platform, launched by the Dubai government in 2021, should further enhance financial access for the city's innovators.

Figure 3.2. Venture Capital (VC) Availability vs Global Entrepreneurship Index (2020)



Dubai Innovation Index- Macro Analysis

Tel Aviv



Baku



Berlin



Dubai



Singapore



Baku, the rising star of the Asia-Pacific with respect to overall funding performance, earned its place in the spotlight based on its four ranking rise from 2019 to 2020 and 10 ranking rise from its 36th position since 2015. The capital of Azerbaijan benefitted from a strong focus on financial inclusion, accelerating the spread and sophistication of mobile banking services and expanding access to microfinance. A deal in 2020 between the Central Bank of Azerbaijan and the International Finance Corporation (IFC), a member of the World Bank Group, will further enable funding accessibility through increased support of digital payments in the country and the provision of a regulatory sandbox that will facilitate the introduction of instant payments and ease access to electronic banking services.

Innovators do not just need access to money: they need enough money to innovate effectively. **Berlin** illustrates the point. According to our Ecosystem Analysis, in 2020, the average value of financial support to firms in Berlin was higher across almost all sources of funding than in 2019. The biggest percentage increases were in disbursements from governments and venture capital (VC) firms, followed by corporations and banks. Although the overall number of VC deals fell in 2020, companies raised a record amount of capital. Increased uncertainty arising from Covid-19 led investors to concentrate their investments in well-established and less risky companies. Funds must therefore ensure that their capital allocation could support numerous high-potential companies and that their average ticket sizes are enough to help them fulfil their purposes.

Speedy evaluation of funding requests and rapid disbursement of funds are critical to providing effective support to innovation. A robust digital infrastructure can also help this process. Cities like Dubai focus on making funding faster and smarter through the development of digital peer-to-peer lending and crowdfunding platforms such as Beehive and Eureka, which connect investors and entrepreneurs efficiently. The duration of the overall process should thus not be a factor in hindering innovation within companies as being too slow could have a considerable impact on them, especially in times like 2020 when obtaining such funds is often a lifeline to start-ups' continuity.

Funding needs are evolving and governments are putting greater emphasis on utilising funds to facilitate deals and market access for start-ups, in co-operation with the private sector

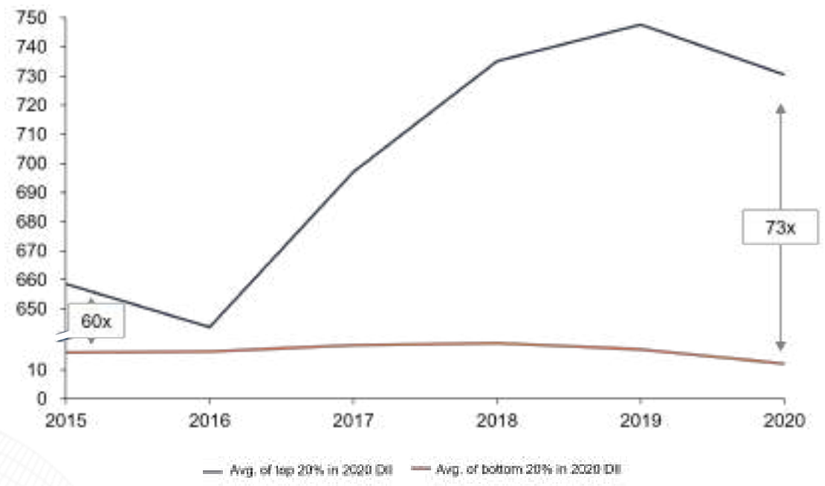
As investment by private-sector entities in innovation and R&D continues to be a stark differentiator between leading innovative cities and developing ones (*Figure 3.3*), governments are re-evaluating their roles in funding innovation. This includes using increasingly varied methods to make the investment ecosystem more attractive for private-sector investors, predominantly through funding proof-of-concept (PoC) work and creating platforms that present opportunities for collaboration between public and private-sector investors.

A government contract can allow a new business to showcase the viability of its products or services, provides access to a market and ultimately offers market validation. This method is exemplified by the Startup India programme, which has recently opened Government e-Marketplace, the government's tender platform, to start-ups. Start-ups are exempted from some qualification-to-tender criteria required of mature businesses, such as having prior experience or a minimum turnover.

Similarly, Dubai Future Accelerators (DFA) has a 10-week programme that offers a platform for start-ups to fine tune and pitch a solution to a need defined by a government entity. Finalists in the programme receive support from accelerator services to deliver a proof of concept. Acting as a government supplier gives start-ups the chance to test their products and services and tweak them in response to market feedback, which then opens investment opportunities for the private sector.

Governments looking to stimulate innovation in their cities are also creating physical spaces that combine co-working facilities with innovation support and advice, and facilitate collaboration between innovators and a wider pool of investors. Dubai, for example, achieves a high ranking for attracting greenfield investments and is highlighted as having an attractive investment environment.

Figure 3.3. Gross Expenditure on R&D (GERD) Performed by Business Enterprise for Top and Bottom 20% DII Cities in 2020



Dubai Innovation Index- Macro Analysis

Part of **Dubai**'s strength stems from its success in creating networking and collaboration spaces such as AREA 2071, a 100,000 square foot incubator. Besides co-working spaces and meeting rooms, AREA 2071 offers entrepreneurs access to global markets, subsidised services and innovation challenges and connects them with support networks. It also connects companies, government entities and non-governmental organisations (NGOs) with start-ups and innovative thinkers, prompting collaborations and investment opportunities.

Singapore, ranked first in overall funding, has a similar government-founded platform, Startup SG Network, which facilitates partnerships and deals for start-ups in the ecosystem. Such platforms enable innovators, investors and public-sector officials to cross paths and find ways to work together to turn early-stage ideas into disruptive players in their respective markets.

A recent rise in global investments by corporate venture capital firms (CVCs) suggests that efforts by governments and cities to increase investment opportunities within their ecosystems are bearing fruit.

By the end of 2020, CVC-backed deals reached a record $40 billion. Significant further growth is expected in 2021. The increase in CVC investments will also perpetuate further participation by the private sector in early-stage funding, as corporates witness first-hand the additional benefits to early-stage engagement with entrepreneurs to drive the creation of innovative solutions.

Governments in leading innovative cities lean towards shifting from pure risk-mitigation models to risk-sharing approaches

Traditionally, governments have been the primary source of funding for early-stage companies, especially when it comes to financing R&D activities, while private-sector investors become interested later, once companies show proof of concept. Governments have therefore taken on greater risk by funding the exploration stages, providing private players with subsidised returns when they invest in the growth stages.

This means that governments generally do not profit from the success of start-ups they once funded, leaving the big returns to risk-avoiding late-stage investors. This is beginning to change as governments realise the benefits of longer-term co-operation in reducing funding risks and increasing rewards.

Co-investment mechanisms are mutually beneficial, since they reduce public-sector transaction costs and enrich the quality of deal opportunities by leveraging the private sector's investor networks and experience and improving the investment offering for start-ups.

In Singapore, which displaced New York at the top of the Funding ranking in 2020, the government launched the Startup SG Equity scheme, whereby it co-invests with private-sector entities in eligible start-ups. Similarly, Germany's High-Tech Gründerfonds (HTGF) has an extensive pool of public and private-sector investors who collaborate to fund selected start-ups. Such arrangements have allowed German government entities to remain active in further stages of start-up funding and share in the financial success of more than 140 exits and IPOs.

Continuing public-sector funding participation can help ensure that start-up activities are aligned to the needs of the city and its citizens. For instance, Dubai's Mohammed bin Rashid Innovation Fund focuses on financing projects that fall within the seven priority sectors identified in the emirate's National Innovation Strategy.

Furthermore, the government can influence anticipated funding risks and rewards by following a KPI-based approach in releasing funds, whereby the disbursement plan aligns with certain milestones or roll-out volumes of a funded project. An example would be **Berlin**'s Pro FIT – Projektfinanzierung, which details that the amount of funding offered to SMEs is based on the project volume. The project volume results from the project planning outlined by the SME, indicating the individual work packages and cost items that were critically reviewed and approved by experts. This would allow participating parties – i.e. the government, private-sector investors and start-ups – to distribute funding risks according to the start-up's achievement of key success markers that were agreed upon in the business case stage.

Cities can aid innovation by creating a comprehensive funding ecosystem. They should:

- **Offer a variety of funding options targeting the different needs of start-ups at various stages of maturity**
- **Move towards a risk-sharing model, enhancing investment opportunities for both entrepreneurs and investors by encouraging the adoption of more Public-Private Partnerships (PPPs)**
- **Enhance the chances of business success by providing additional funding support services such as mentoring, networking and market access opportunities**
- **Boost investor confidence by offering high-potential businesses PoC opportunities and government contracts, so that the government buys the products or services of the business it is financing**



Case Study 3: BERLIN



Strong backing from the city's business and technology support agency helped a pioneering healthcare consumables company sustain the five-year effort needed to perfect its product

Germany's capital has a population of 3.8 million within the city limits and a thriving start-up scene. The roots of its emergence as a centre of digital and technical innovation lie partly in the city's unique history. After the reunification of the Federal Republic of Germany and its eastern neighbour, the German Democratic Republic, in 1990, the run-down eastern districts of Berlin suffered population outflow.

Yet in more recent decades, cheap rents and ample availability of industrial space drew creative people of all stripes, spurring the development of an off-beat and creative culture that has drawn in many entrepreneurs.

Berlin's renaissance has also been accelerated by the relocation of the nation's government and many institutions from Bonn in 1991, the city's subsequent re-emergence as a business and finance centre, and the revitalisation of its universities and academies.

One start-up exemplifies the ways in which many of these factors have combined to help ideas turn into businesses: Smarterials. The company has its offices, laboratories and robotic manufacturing equipment in Berlin-Adlershof, the science and start-up hub in south-east Berlin, where it is developing a new generation of high-tech surgical gloves intended to enhance safety for patients and staff in hospital operating theatres.

Two of the founders, materials engineer Nikolaus Mirtschin and physicist Martin Bothe, met at the Berlin-headquartered Federal Institute for Materials Research and Testing (BAM).

The idea for the business first came to Bothe in 2015, after his sister, who was a trainee doctor, injured herself during a surgical procedure. "She… spent a frightening time in the emergency room until she knew that she was not infected with a blood-borne infection," he relates.

His professor at the time had been encouraging him to patent a discovery. Inspiration came one day as he queued at a Subway sandwich shop. "I watched as my sandwich was being made by an employee wearing disposable gloves." That got him thinking about the materials used to make surgical gloves. Could intelligent materials be used to improve them?

The two scientists used start-up platforms to find a third co-founder from the finance sector, Michael Schneiker, who had been considering becoming an entrepreneur for some time.

But the path from initial idea to today's high-tech gloves, designed to offer better protection against injury and infection for healthcare workers, was far from easy. They had first to deal with chemical challenges in developing the materials from which the gloves are made, with patents and with production facilities in Malaysia. And, of course, they had to struggle with costs and understanding the medical devices market.

The success story of these Berlin founders is therefore not only that of a novel and important product and of scientific innovation, but also one of successfully financing the necessary research and developing the business model.

During more than five years of struggle, the company has been supported by Berlin Partner for Business and Technology (BPBT).

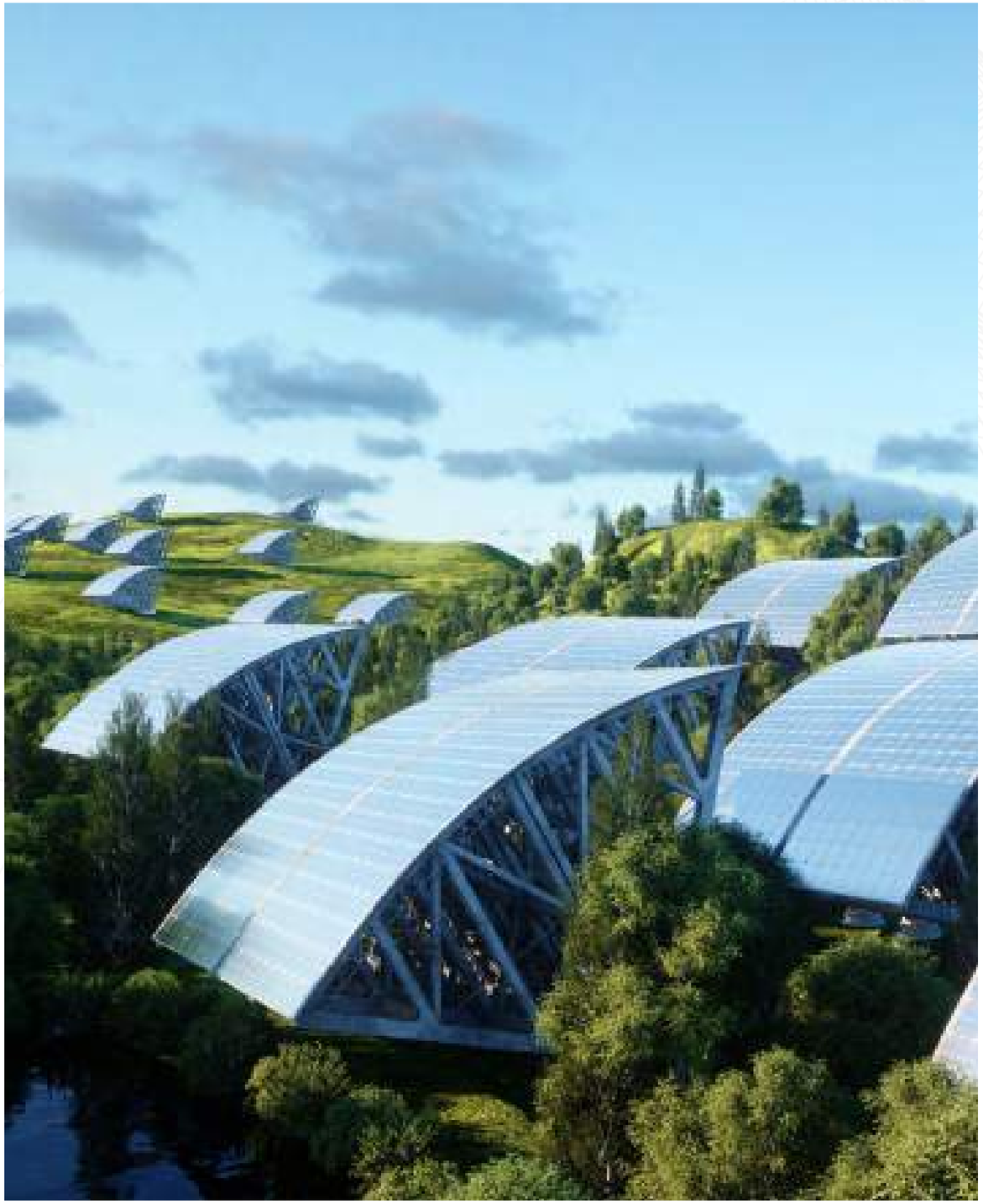
In April 2016, the founders sought advice from Volker Erb, Project Manager for Innovation in Biotech and Pharmaceuticals, to discover what financial help would be available to establish the company. Smarterials then applied to the Investitionsbank Berlin for Pro FIT early stage financing, which enabled them to set up the business and hire their first members of staff. To help develop the technology, the young company subsequently received Pro FIT project financing.

As work progressed and funding needs grew, the company turned to the Innovation, Promotion and Funding Unit, which also houses the Enterprise Europe Network (EEN). They worked with BPBT's Elena Arndt, who guided them to a European Union business innovation support programme called SME Instrument. In 2018 they secured €50,000 to conduct an economic feasibility study and identify potential customers. Berlin Partner subsequently helped the company apply for Phase 2 innovation project funding. After pitching its project in Brussels, the company was awarded project funding totalling €2.6 million.

"We have two locational advantages here in Berlin," says Michael Schneiker. "The Adlershof Technology Park is ideal for us because we are networked with the scientists next door and with interesting companies, and we have co-operation partners and experts on site with whom we constantly exchange ideas." Moreover, "the good support we received from Berlin Partner and other funding agencies in Berlin helped us access regional and European funding in addition to business angels and other investors. With this, we were able to go our research-intensive direction," he says.

Case Study Provided by Berlin Partner

PILLAR 4: Business Environment



Cities focused on fuelling innovation throughout their ecosystems are keen on fostering comprehensive, collaborative and simultaneously competitive business environments. The performance of innovative cities in the DII, as it pertains to their business environments, considers a wide range of output based indicators, ranging from economic productivity to the publication of scientific & technical articles and new business density.

The Covid-19 pandemic blighted business environments around the world, causing job losses despite the widespread introduction of special economic support measures. To facilitate business recovery and hiring, cities have sought to promote entrepreneurship and innovation, providing additional support to promote economic competitiveness and improving local business environments to help nurture new businesses and their founders. Such business environments are attained through the consideration of multiple factors in the enablement of innovation, including: regulations, physical ideation and creation spaces, incentivisation of entrepreneurs and overall enterprise conditions and efficiency.

CITY	RANK 2020	2019
Singapore	1	2
Hong Kong	2	1
Stockholm	3	11
Zurich	4	13
Tel Aviv	5	5
Amsterdam	6	12
Shanghai	7	7
Beijing	8	6
New York	9	4
Copenhagen	10	10
Seoul	11	18
Tallinn	12	3
Tokyo	13	14
Shenzhen	14	9
Toronto	15	25
Berlin	16	17
Paris	17	16
London	18	8
Sydney	19	19
Hamburg	20	20
San Francisco	21	15
Kuala Lumpur	22	21
Dubai	23	26
Vienna	24	22
Warsaw	25	28
Baku	26	23
Doha	27	27
Accra	28	24
Moscow	29	37
Nairobi	30	29
Mexico City	31	30
Madrid	32	32
Riyadh	33	34
Milan	34	35
Turin	35	36
Mumbai	36	31
Bangalore	37	33
São Paulo	38	39
Johannesburg	39	38

Across the innovative cities included in the DII, key areas of higher performance with respect to business environments in 2020 were: GDP per capita change, creative goods exports, and labor force participation (*Figure 4.1*). The top 10 performers in our Index all performed strongly in economic quality and enterprise conditions, reinforcing the importance of a robust business environment on innovation within cities. Those two indicators touch on elements of regulatory soundness, market contestability, market outputs and labour market flexibility.

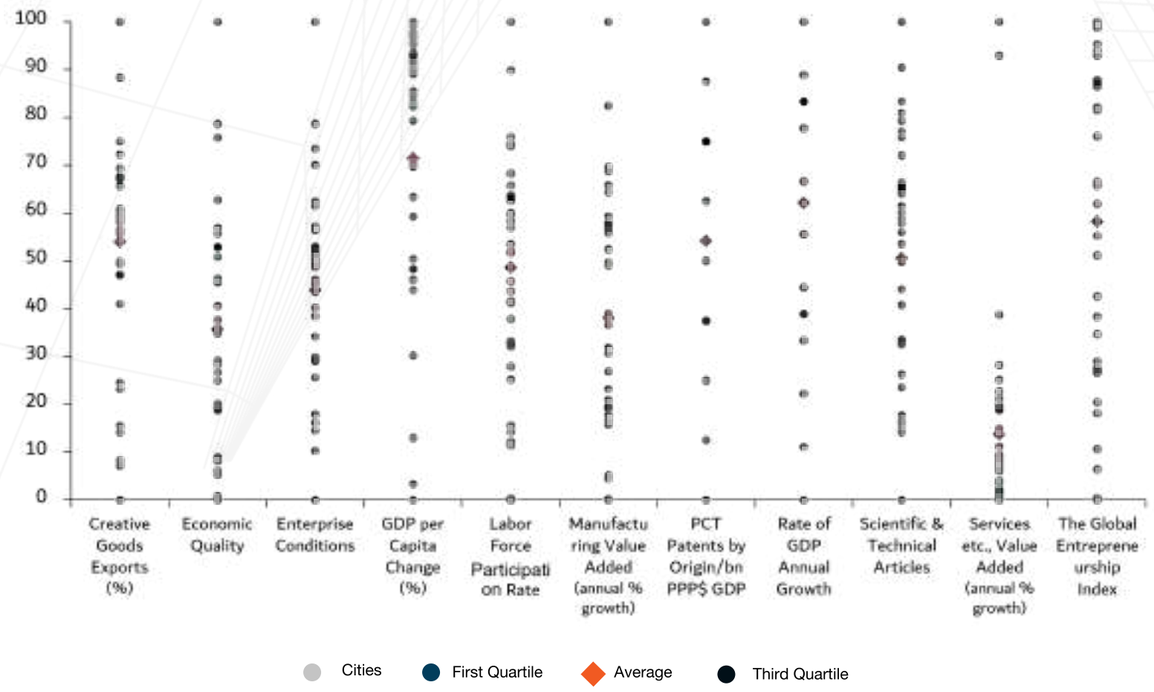
Regionally, North American cities rank highest across the majority of indicators within our Business Environment pillar. Cities in the region performed particularly well in global entertainment & media output, ICT & organizational model creation, economic quality and enterprise conditions.

European cities were also among the top performers in this pillar, with key notable performances across GDP per capita change and ICT services export. The high relative performance in productivity is likely indicative of cities' responses to the pandemic, as some limited restrictions and remained open in certain cases.

Asian and Pacific cities performed best among the regions in creative goods exports and manufacturing value added, showcasing the region's strengths as home to several global trade hubs. African cities also performed strongly, ranking just below Asian and Pacific cities in manufacturing value added. As for Middle Eastern cities, their efforts to strengthen digital capabilities is reflected in the cities' strong performances in ICT services export.



Figure 4.1. Business Environment Scores by Indicator* (2020)



Dubai Innovation Index- Macro Analysis
*For more information on the full list of these indicators, please see Appendix III

Leading innovative cities are shifting the focus of their incentivisation schemes from attracting to retaining companies, to ensure that their investments in innovation flow back into the ecosystem

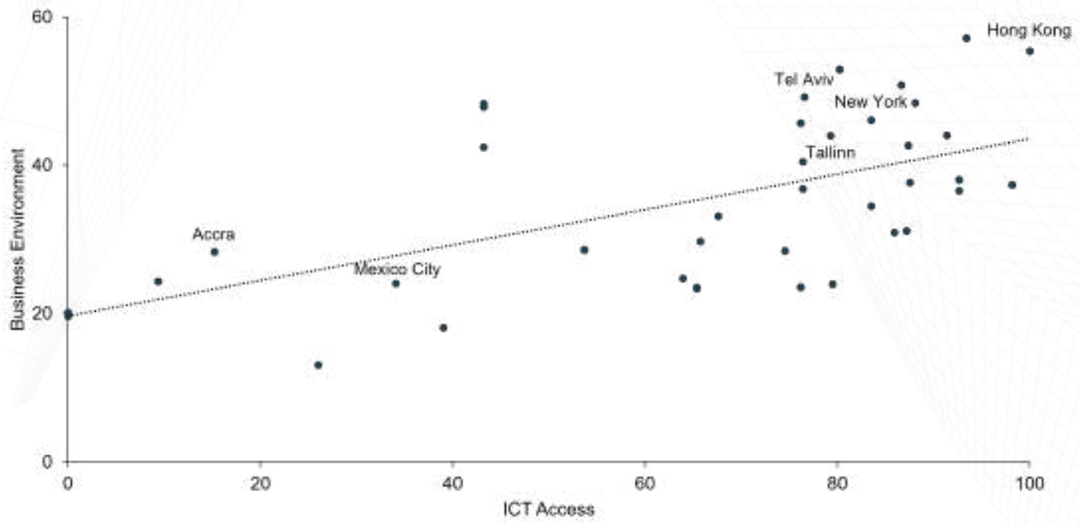
Robust funding capabilities help a business ecosystem fuel innovation by both start-ups and mature ventures. However, funding and financial incentives alone are not enough to anchor businesses within a particular ecosystem long-term. Leading innovative cities are therefore overhauling their incentives to support the long-term retention of talent and businesses and ramping up their early-stage assistance. Retention-driven incentives can be seen in national entrepreneurship programmes, business licensing policies and innovative immigration policies.

National entrepreneurship programmes are especially common in developing innovative cities, where they give local youth entrepreneurial skills and help anchor start-ups within the local ecosystem through government support. In Ghana, for example, **Accra** witnessed a 1.8% increase in its performance in entrepreneurship in 2020, although the African region saw an overall slide of 3.6% – with both **Johannesburg** and **Nairobi** ranking in the bottom 15% for the indicator in 2020.

Accra's standout performance suggests that it may have been strengthened by the Ghanaian government's National Entrepreneurship and Innovation Plan (NEIP), which offers educational and business support to would-be entrepreneurs. Nairobi and Johannesburg, in South Africa, also benefit from government entrepreneurship programmes, but these are geared towards financial investment in start-ups rather than turning local youngsters into entrepreneurs.

Business licensing policies are also effective in retaining foreign entrepreneurs and their businesses. Policies are increasingly designed to attract and retain foreign entrepreneurs. **Dubai**, for example, has followed the lead of **Singapore** and **Riyadh** in allowing 100% ownership of local businesses by foreigners, a right previously restricted to its free-trade zones. The new policy, effective in 2020, is expected to benefit the local business environment, as foreign-owned businesses tap local talent, suppliers and other resources, which will anchor them in the city and increase the likelihood that they remain. The move coincided with a 13% increase in inward foreign direct investment (FDI) in Dubai and a place within the top 10 of this indicator.

Figure 4.2. ICT Access vs Business Environment (2020)



Dubai Innovation Index- Macro Analysis

Riyadh



Accra



Singapore



Johannesburg



Nairobi



As digital infrastructure develops, the most innovative cities are finding creative new ways to benefit (*Figure 4.2*). **Tallinn** has a strong ICT cluster which helped it make its way to a top 3 position in our 2019 Business Environment ranking. Over the last 5 years, Tallinn showed the largest year-on-year growth in new business density, among all cities included in the DII. The growth has been largely attributed to the government's introduction of an e-residency programme, which allows foreigners living abroad to access the local business environment and ecosystem and set up a business entirely online.

The Estonian government understood the attractiveness of certain elements of its ecosystem, such as the ability of companies registered in Estonia to readily access the entire European Union market and the transparency of its business environment, and used this to drive the growth of Tallinn's innovation cluster.

Providing effective networking spaces aids cross-border and cross-sector collaboration and fuels innovation

The most innovative cities facilitate cross-sector and cross-border collaboration, benefiting both themselves and the global innovation ecosystem. Start-ups in emerging hybrid industries such as fintech, edtech and e-sports are found in many cities. By collaborating, they are able to form virtual clusters that share talent and ideas – and potentially improve access to markets.

One example of this is the Start Alliance Network, which benefits from the competitive strengths of innovation hubs in collaborating cities including London, New York, Shanghai and Dubai. The network was instigated at city level by metropolitan entities in innovation hotspots, rather than at national level. It seeks to aid young companies as they spread their wings to build an international presence. The London Alliance member, London & Partners, helps businesses launch operations in the UK capital, providing business support and discounted office space, accommodation and local travel to help inward investors scale up.

International technology exhibitions and trade fairs can also aid innovation. More than 70% of respondents to the 2020 DII Innovator Survey believe exhibitions helped their firm access new ideas for innovation in 2019 and 2020.

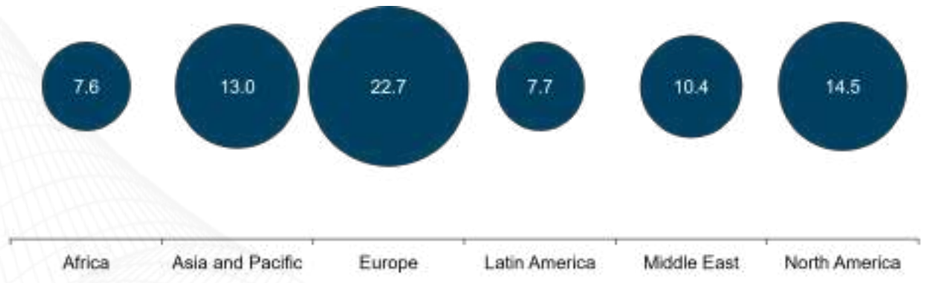
Copenhagen, for example, has established itself as a science and technology hub, partly by holding events such as WindEurope 2019 and the WindEurope Onshore and Offshore Summit in 2020. It is now planning the Global Summit Expo on NanoTechnology and NanoMaterials (GSENN 2022). Hosting regional and global collaboration among experts in these fields has undoubtedly contributed to its consistent ranking as the European leader and subsequently global leader (*Figure 4.3*) in the scientific and technical articles indicator.

Cities that lead in innovation grasp the opportunities offered by emerging technologies to enhance enterprise conditions, streamlining processes and minimising bureaucratic demands on entrepreneurs

Digitalisation of government and the adoption of emerging technologies such as blockchain and artificial intelligence (AI) are enabling governments to simplify their dealings with companies, so they become less intrusive and time-consuming and even aid entrepreneurs to achieve their goals. Governments that move fast to adopt these technologies can enhance the quality of their business environment.

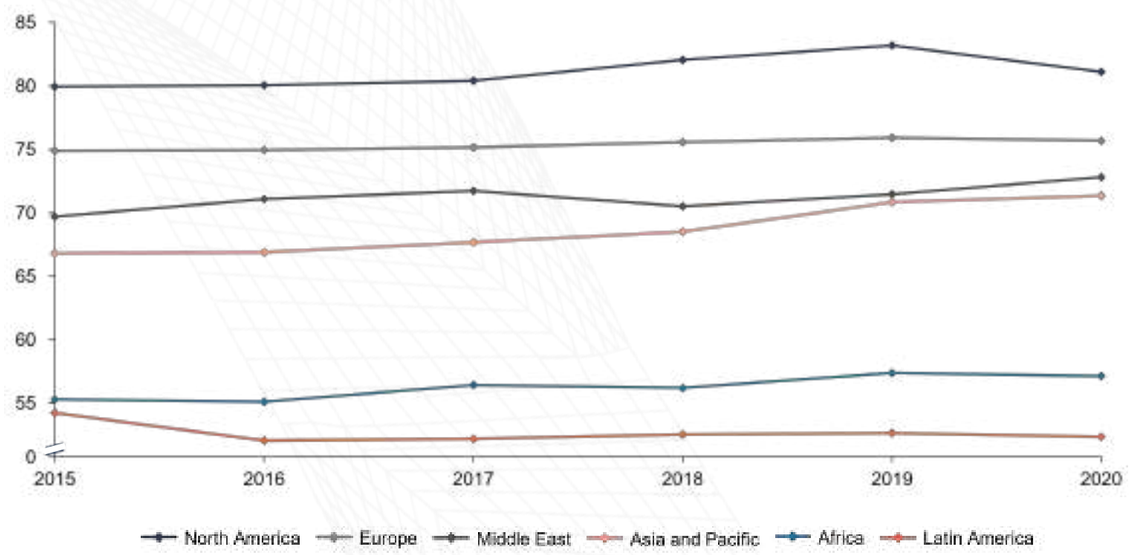
By 2030, AI is expected to contribute $15.7 trillion to the global economy, 42% of which will stem from increased productivity due to the adoption of AI by governments and businesses – thus the impact of leveraging emerging technologies on the output of a business environment is clear. Cities in the DII, which have been leveraging emerging technologies and digitalisation, have seen increased and leading performances in overall enterprise conditions throughout their business environments.

Figure 4.3. Scientific & Technical Articles Average by Region



Dubai Innovation Index- Macro Analysis

Figure 4.4. Enterprise Conditions Trend by Region



Dubai Innovation Index- Macro Analysis

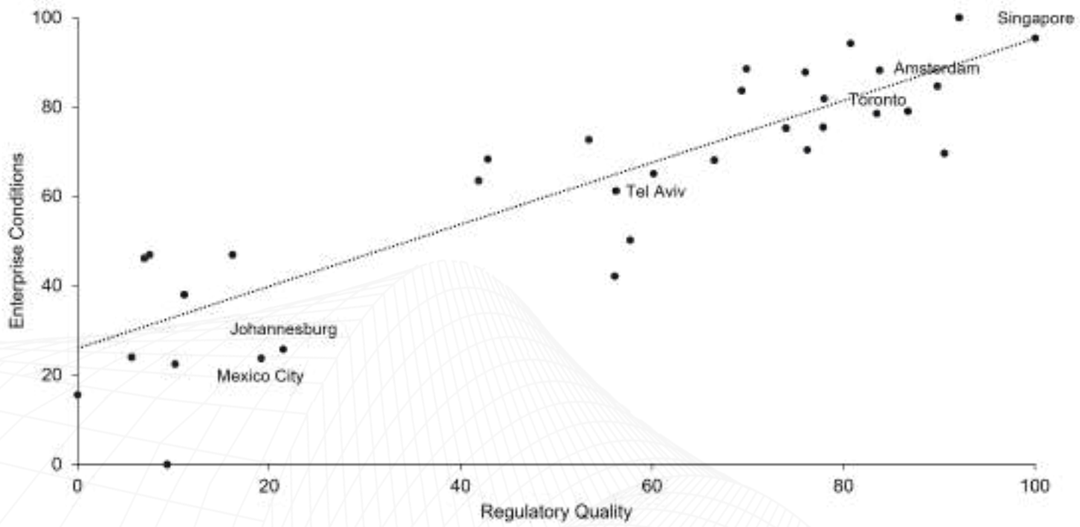
In recent years, Middle Eastern and Asia-Pacific cities have been enhancing their enterprise conditions at rates which have allowed them to now level-peg with European cities. The improvement in both regions have closed the gap significantly over the past five years, with notable improvement by Middle Eastern cities between 2019 and 2020 alone (*Figure 4.4*).

Dubai remains the Middle East's regional leader in enterprise conditions and a key contributor to the city's strong performance is the government's drive to digitalise all its processes, for example Dubai's Paperless Strategy. This is increasing process efficiency and consistency. The city's Blockchain Strategy is also making it easier to do business by streamlining government processes and payments for government services, further contributing to the ease of conducting business in the city.

Similarly, **Riyadh**, the Middle East's rising star for the enterprise conditions indicator – with a 3.6% increase in score between 2019 and 2020 – has benefitted greatly from the launch in 2020 of a digital one-stop-shop for the administrative processes and documentation required to start a business. Riyadh's progress is also enhanced by government efforts to identify and address obstacles to entrepreneurship in Saudi Arabia, such as difficulty in obtaining credit and barriers to cross-border trade. Regulatory reforms in 2020 addressed eight business areas, including these two obstacles. Access to credit was improved by new secured transactions and insolvency laws, while another reform created a single electronic window for documenting imports and exports.

Efforts to reduce regulatory burdens and improve the quality of regulation are widespread and not confined to the Middle East (*Figure 4.5*). Yet while many cities are making it much easier to conduct business, why are so many cities in Africa falling behind? Accra scored the lowest in the region with regard to enterprise conditions, but showed the biggest improvement in this field, while its counterparts either stagnated or decreased in performance. A key problem in these cities is that obtaining the necessary paperwork and approvals is highly bureaucratic.

Figure 4.5. Regulatory Quality vs Enterprise Conditions (2020)



Dubai Innovation Index- Macro Analysis

In Johannesburg, for example, it is hard to obtain construction permits and to register a business, which increases challenges to conducting business and harms the enterprise conditions of the business environment. The improvement of the regional rising star, **Accra**, can be attributed to a number of digitalisation efforts by the government to address those same core challenges. The city is looking at the digitalisation of public-sector processes from all angles, including the implementation of software for business registration and digitalisation of records, and the planned launch of a regulatory and innovation sandbox pilot backed by the Central Bank of Ghana.

All in all, the performance observed with respect to overall enterprise conditions and business environments suggests digitalisation and the streamlining of processes through minimised interfaces and decreased bureaucracy is a key driver of improvement for regional rising stars and a proven strength for leading innovative cities.

Overall, cities can propel innovation by creating an enabling business environment. To do so, they should:

Adopt retention-based incentive schemes for businesses rather than attraction-based schemes and focus on aiding local entrepreneurship

Facilitate collaboration across sectors and borders by hosting exhibitions and other events that enable experts, academics, aspiring and existing entrepreneurs and government officials to get together and network

Take advantage of emerging technologies and digitalisation to streamline government processes and reduce obstacles to doing business (especially making it easier to get permits and register patents)



Case Study 4: WARSAW



Close ties with universities have helped Warsaw emerge as a Petri dish for growing academic ideas into successful businesses.

Warsaw is the capital of Poland and an important academic and research centre. It is here that some of the best universities in the country are located, attracting students from around the world. In recent years, the city has emerged as one of Europe's leading creative and technology hubs, drawing more and more talent and creators. One of Warsaw's development priorities is to ensure its municipal ecosystem of innovation and entrepreneurship has the best possible conditions for creating, testing and developing innovative business, scientific, artistic and social ideas, drawing upon co-operation between various entities and institutions.

One of these initiatives is co-operation with PACTT, an association of Poland's major universities, including technology and medical universities.

This brings together representatives of technology transfer offices (TTOs) responsible for the protection, management and commercialisation of intellectual property (IP) developed in these academic institutions.

PACTT plays an important role as a platform connecting science and business. It acts as a one-stop-shop to facilitate communication, co-operation and research. Its coordinators review and select relevant inventions and research teams from more than 70 Polish universities and connect them with businesses and municipalities. This gives businesses ready access to research academics throughout Poland – and links them in turn to the City of Warsaw and its municipal and related entities.

Drawing upon their knowledge of companies and municipalities, dedicated brokers prepare summary presentations and bring together the various parties. PACTT also helps academics present their ideas to companies and cities – a form of reverse pitching designed to implement successful innovations.

Smart Specializations in Mazovia Region (Warsaw)

Food Safety

- Smart Agriculture
- Technological Process Improvement
- Distribution and Storage
- Biotech and Foodtech

Quality of Life

- Edutech
- Biotech
- Health and Well-being
- Work-life Balance and Securetech

Business Ecosystem

- R+D Infrastructure
- Innovation and Entrepreneurship
- Services and Processes
- Internationalization

ICT

- Smart City
- Softech
- Logistech
- IoT

Speeding up the development of mRNA vaccines and treatments

In the field of biotechnology, PACTT members the University of Warsaw (UW) and Medical University of Warsaw (MUW) got together to transfer and commercialise their healthcare and biotechnology research, including their efforts to combat the Covid-19 pandemic.

ExploRNA Therapeutics is a company that develops breakthrough mRNA modification technologies that open the way to new therapeutic applications. The founders of ExploRNA Therapeutics have been involved in therapeutic mRNA for more than 20 years and their ideas have been adopted by several pharmaceutical companies trialling cancer treatments.

Therapies using mRNA are versatile because information about any protein can be encoded in mRNA: this makes the number of potential applications virtually unlimited. Recently approved preventative Covid-19 vaccines are just one of many possible applications of therapeutic mRNA; other potential applications include therapeutic cancer vaccines, genetic therapies for rare diseases, tissue regeneration and delivery of mRNA encoding growth factors or even antibodies to be produced in patient cells.

The latest inventions developed by Professor Jacek Jemielity and his team at the University of Warsaw, exclusively licensed by ExploRNA, are universal technologies improving the efficiency of mRNA action many times over. Thanks to the involvement of immunologists from the Medical University of Warsaw in the company, ExploRNA has started three therapeutic programmes based on its mRNA technologies and is co-operating with seven global pharmaceutical companies.

Another start-up, Covid Genomics, is led by students from top EU universities with the scientific support of well-known experts in virology and machine learning. It aims to develop a system to accelerate the process of developing mRNA vaccines by predicting the evolution of viruses (including SARS-CoV-2). The company was among winners at EuvsVirus – a hackathon organised by the European Commission and led by the European Innovation Council.

Covid Genomics also won a Stanford University hackathon and scooped the Applications of Tomorrow contest run by the Polish Development Fund. It has received research and development funding from Poland's National Centre for Research and Development (NCBR) and been invited to join the European Federation of Pharmaceutical Industries and Associations' (EFPIA) Partners in Research programme.

Case Study Provided by PACTT

In 2020 PACTT and Pfizer established the PACTT-Pfizer Academy, which is working successfully to transfer knowledge from the company to scientists about pre-clinical and clinical trials procedures.

Boosting learning during the pandemic

To help school students learn – especially during pandemic lockdowns – the University of Warsaw created an innovative spin-off called Lecturus, this online education platform serves schools in the Warsaw area. It aims to enhance student performance in key subjects such as English, Polish and mathematics by providing online lectures to supplement lessons. Working with a well-established partner, the spin-off plans to develop its service nationwide to raise school performance in less-developed regions of Poland.

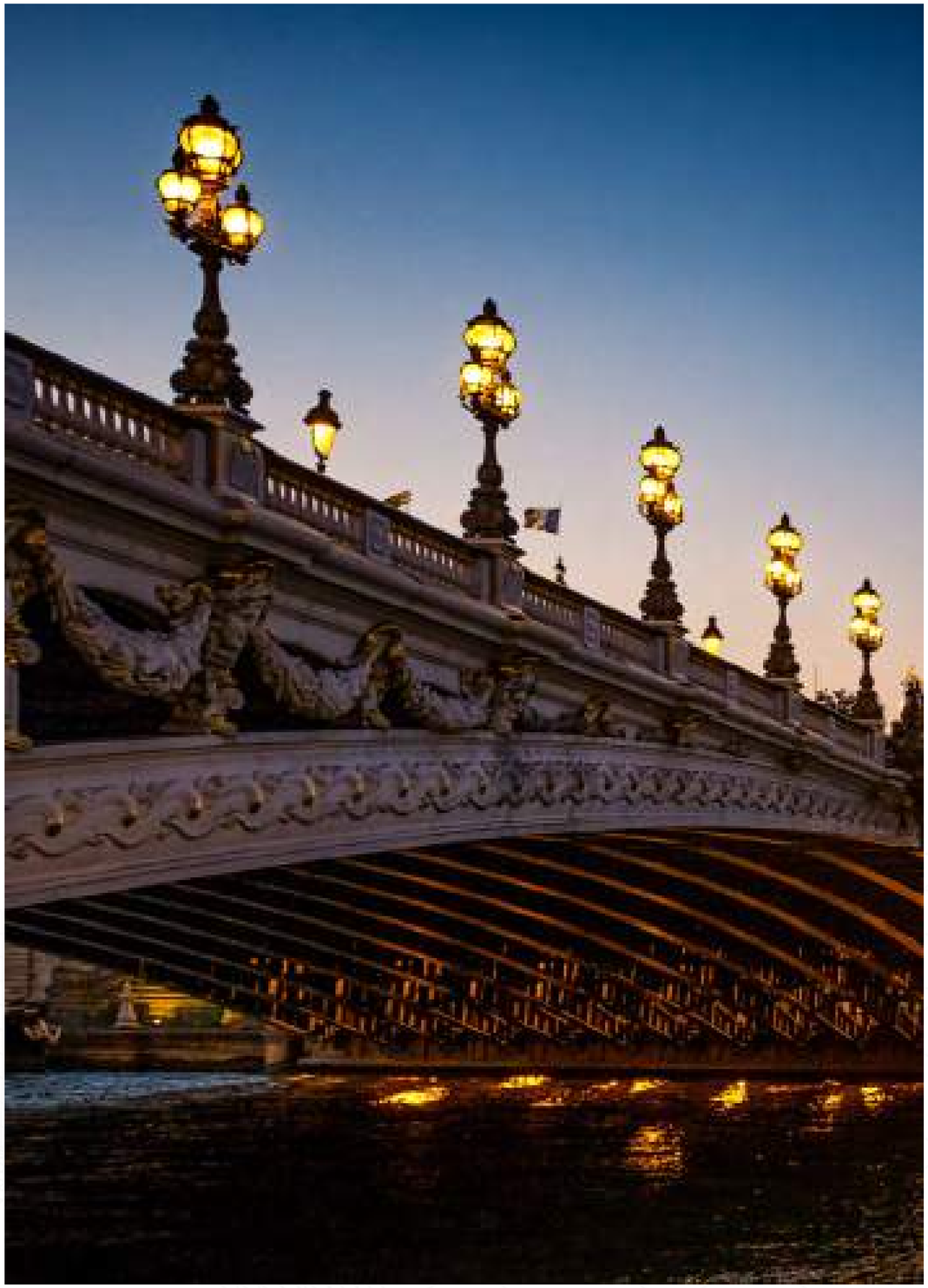
Applying digital technologies to cultural objects

Warsaw University of Technology (WUT) has set up a spin-off, Heritage Imaging, that has developed an automated system for documenting cultural heritage objects. The company is currently carrying out a large project for the Museum of Urban Engineering in Krakow.

It has also collaborated with the Warsaw Archdiocese Museum, the Office of the Capital Conservator of Monuments and the Ministry of Culture, National Heritage and Sports in Warsaw.

Developing sustainable urban food systems

Another PACTT member, the Warsaw University of Life Sciences (WULS), is working with the City of Warsaw to develop more sustainable urban food systems. The city is a signatory of the Milan Urban Food Policy Pact 2015. Its aim is to enhance food system inclusivity, resilience, safety and diversity, providing healthy and affordable food to all, while minimising waste, conserving biodiversity and adapting to and mitigating the effects of climate change. The partners are working together to encourage the adoption of best practice among Warsaw's food suppliers, including in production, logistics and waste, while seeking to promote a more circular economy.



Case Study Provided by PACTT

PILLAR 5: Society



People are at the heart of innovation. To unlock their potential, cities need to pay attention to the quality of their workforce and quality of life. The softer societal components within cities are important in shaping the environment within which innovation and entrepreneurship take place, particularly considering that the quality of the talent pool is an indicator of a city's innovation capacity and the social landscape of cities speaks to their attractiveness to foreign talent and ability to spur collaboration.

After a year of constant uncertainty caused by the unprecedented Covid-19 pandemic, trust in institutions and individuals has now more than ever become a core influencer of decisions and interactions. This brings topics such as social tolerance and social networks to the forefront of our assessment of cities' societies, in addition to human capital and development components.

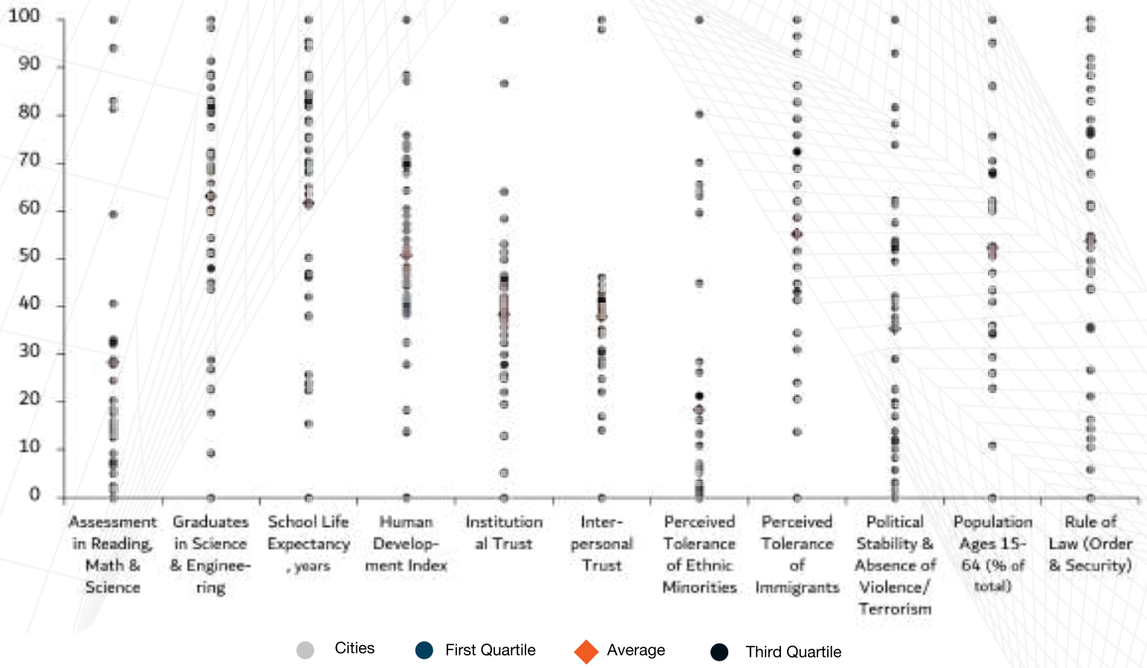
CITY	RANK 2020	2019
Singapore	1	1
Copenhagen	2	3
Hong Kong	3	2
Stockholm	4	5
Zurich	5	4
Sydney	6	6
Berlin	7	8
Vienna	8	9
Toronto	9	10
London	10	7
Amsterdam	11	11
Hamburg	12	12
New York	13	13
Madrid	14	14
Tokyo	15	17
Dubai	16	15
Seoul	17	20
Doha	18	16
San Francisco	19	18
Paris	20	19
Tallinn	21	21
Beijing	22	26
Shanghai	23	25
Milan	24	23
Riyadh	25	22
Kuala Lumpur	26	27
Shenzhen	27	29
Turin	28	24
Warsaw	29	28
Tel Aviv	30	32
Moscow	31	30
Baku	32	31
Mumbai	33	34
Bangalore	34	35
São Paulo	35	33
Mexico City	36	36
Johannesburg	37	37
Accra	38	38
Nairobi	39	39

Our indicators examine the extent to which cities are innovation-ready – in terms of education and skills – and the quality of life they offer, from attitudes to immigration to security and community networks. In 2020, cities averaged stronger performances on human development and social networks and weaker performances in human capital and education, especially with regard to technical subjects (*Figure 5.1*). The DII's top 10 cities in 2020 demonstrated higher average scores in human capital and development indicators, as well as in order and security.

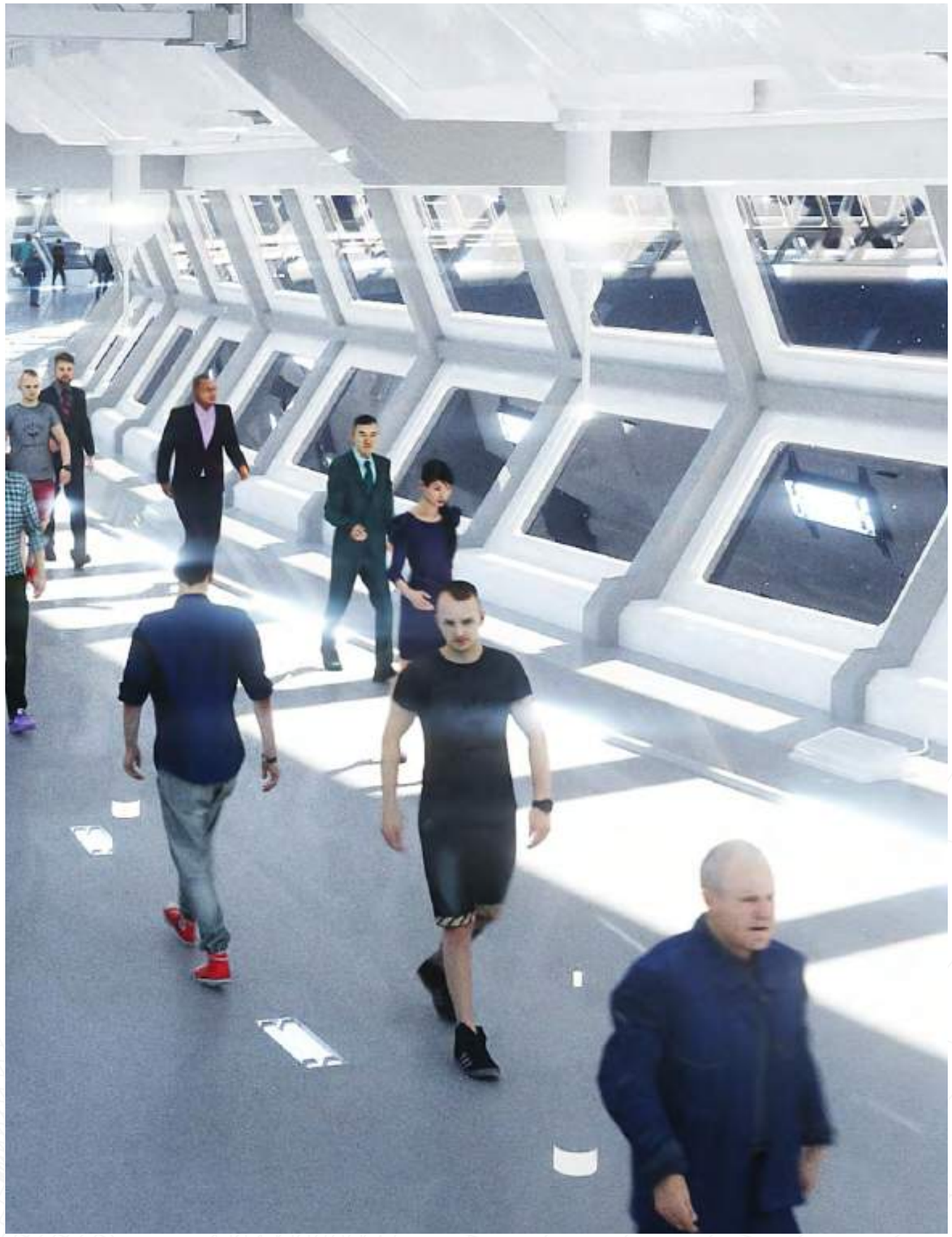
North American cities led our Society pillar, performing best in human development, interpersonal trust, social tolerance (tolerance of ethnic minorities and immigrants) and order and security. European cities closely followed and outshined competition in terms of school life expectancy and political stability & absence of violence / terrorism.

Asian and Pacific cities emerged as the leaders in talent indicators such as assessment in reading, math & science, graduates in science & engineering and number of universities in the top 200. This showcases the strength of their cities' innovation capacities due to their human capital stock. As for Middle Eastern cities, their institutional trust and safety scores were on average higher than those of other cities, which is a testament to their governments' reliability and focus on making their cities secure. Although Latin American cities were relatively weaker than cities in other regions, their average performance in social networks was the highest among all regions. African cities still have room for improvement, as they lagged behind in the majority of the indicators. Their best scores however were in perceived tolerance of immigrants.

Figure 5.1. Society Scores by Indicator* (2020)



Dubai Innovation Index- Macro Analysis
For more information on the full list of these indicators, please see Appendix III



The quality of talent is critical to cities' innovation success, so leading cities focus on developing their existing workforce while filling any skills gaps through targeted immigration policies

The more skilled labour and highly qualified professionals available, the more sophisticated the city's business ecosystem. Levels and type of educational attainment and quality of universities are a proxy for innovation capacity. Studies suggest that technical skills help drive individual innovation, while social and communication skills help spread innovation and co-creation within cities. This underscores the importance of equipping homegrown talent with the right variety of skills to propel innovation.

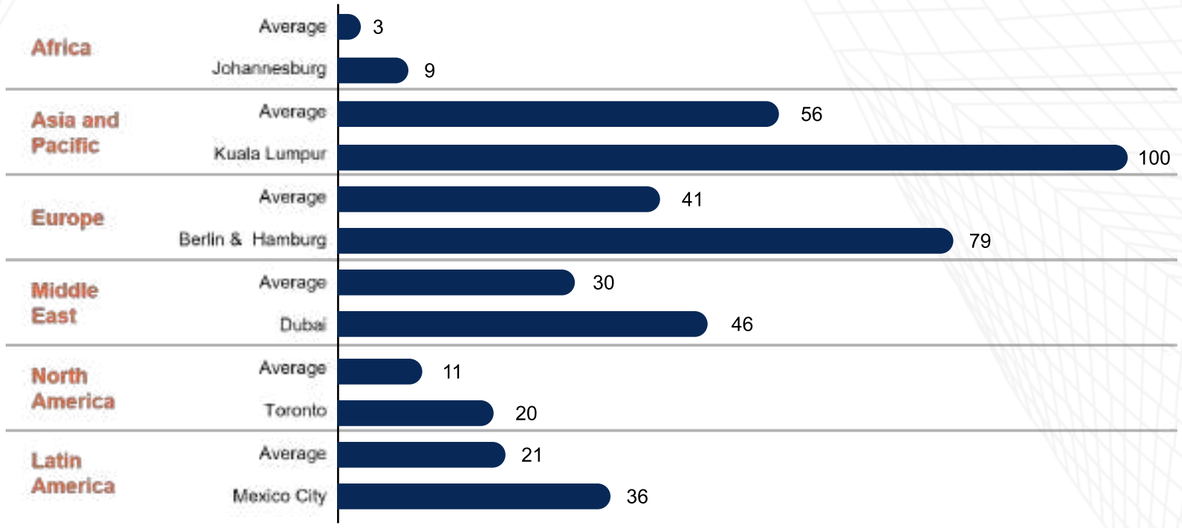
Growth today is driven by science, engineering and innovation, so knowledge and skills in these disciplines has become critical. Asian and Pacific cities typically have a larger proportion of graduates in these fields than those in other regions (*Figure 5.2*).

Kuala Lumpur topped our ranking in 2020, recording a 8.7 percentage point increase in the proportion of graduates with degrees in science and engineering since 2019. This remarkable advance arises from Malaysia's focus on teaching science, technology, engineering and maths (STEM) subjects. The government set a target for 60% of high school students to specialise in STEM subjects by 2020 and has focused on stimulating students' interests in these subjects and upskilling teachers.

North American and African cities are falling far behind. The United States has long suffered from shortages of graduates in science and engineering, largely due to the perception that STEM degrees are too difficult. In African cities such as Accra and Nairobi, shortages arise from the poor quality of education available, particularly for engineers, as many universities offering engineering programmes lack accreditation.

A lack of talent or inadequate skill sets is increasingly viewed as restricting companies' and individuals' ability to innovate. The 2020 DII Innovator Survey shows that in 2019 and 2020 a majority (60%) of firms struggled to find and retain the talent they need to make innovation happen.

Figure 5.2. Graduates in Science & Engineering - Regional Average vs Regional Leader Scores (2020)



Dubai Innovation Index- Macro Analysis

Kuala Lumpur



Sydney



London



Dubai



Toronto



The survey also shows, however, that 80% of firms often used their employees' ideas and suggestions to support innovation and 78% collaborated with them to develop, test and implement innovative ideas in 2020. A lack of talent stifles innovation and increases firms' costs of doing business. Cities must therefore focus on both enhancing the quality of their STEM teaching and on persuading their youngsters to study these subjects.

Attracting outside talent has been critical to fill cities' skill gaps and enable them to acquire specific skill sets in innovative sectors. Migration has helped improve the stock of human capital within cities and is often driven by a lack of opportunities for skilled workers in their hometowns. Many migrants to cities, both within countries and across borders, are young, economically-active individuals with capabilities and skills. Tracking immigration helps us assess the appeal of a city's business environment to foreign talent.

One multicultural city that excels in attracting talent is **Toronto**. Canada has long been admired for its comprehensive, skills-driven immigration assessment process that admits tens of thousands of individuals from around the world each year. Applications from skilled workers are assessed and ranked according to age, education level, language proficiency and experience. Immigration has greatly contributed to Canada's economic growth: a study by the country's national statistics office showed that immigrant-owned SMEs were more likely to implement a product, process or marketing innovation than firms owned by Canadian-born individuals.

Another city that has embraced immigration is **Dubai**, which has become a haven for expatriates drawn by its plethora of business opportunities during the past decade. The city clearly recognises the value of international experience and qualifications.

Dubai continues to introduce business-friendly incentives to help attract foreigners, such as its Golden Visa, which offers permanent visas to skilled expats to reward their contribution to the city, a five-year visa for entrepreneurs and, more recently, a Green Visa, which will be granted to high achievers, investors, businesspeople, exceptional students and experts, no matter their employment status, and a Freelance Visa for independent workers.

Dubai and Toronto have consistently ranked first and second, since 2015, in terms of perceived tolerance of immigrants – evidence of their efforts to create a diverse and inclusive business environment.

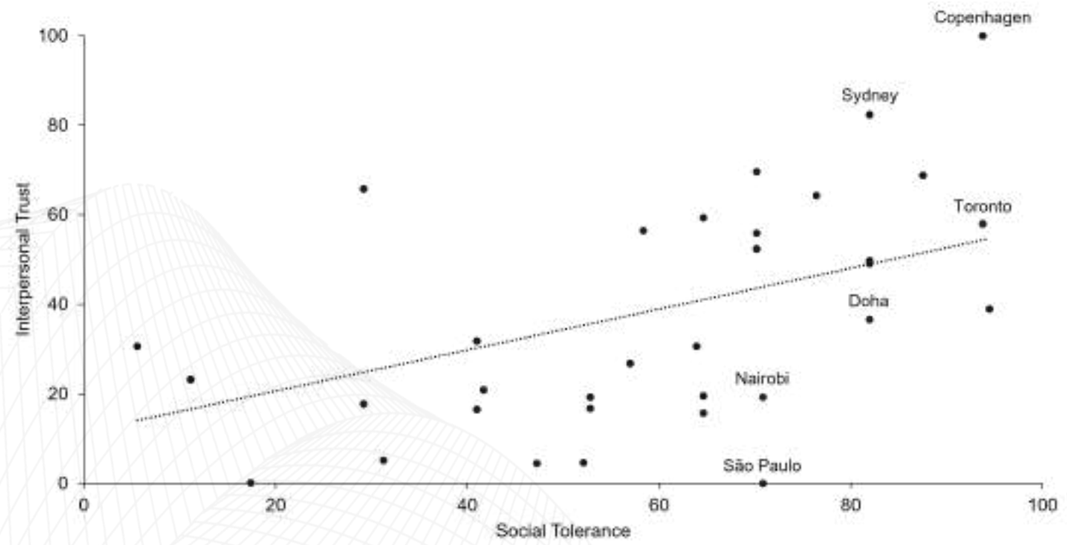
Cities that embrace cultural diversity and uphold social tolerance create a favourable environment for a proactive and well-connected society, leading to higher levels of innovation

Individuals thrive when they feel a sense of belonging. Living and working in a pluralistic society that encourages respect, acceptance and understanding of others reinforces solidarity among inhabitants. It also cultivates easy and effective collaboration between people of different backgrounds and provides opportunities for dialogue and interaction among those of diverse cultures and traditions.

Although some would argue that people are becoming more individualistic and nationalistic, innovation thrives on collaboration, as it allows for the open exchange and adoption of different perspectives and ideas. We can observe this attitudinal shift through cities' generally improved performances in social tolerance over the years.

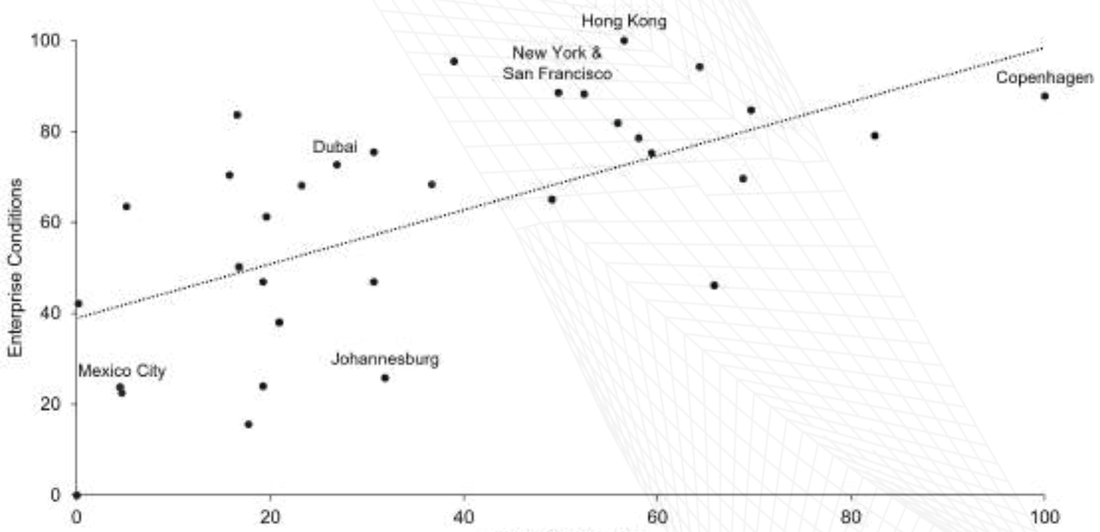
There is a positive overall correlation between social tolerance and interpersonal trust (*Figure 5.3*). This suggests that the higher the level of tolerance in a city, the more comfortable individuals feel when interacting with strangers and those outside their social sphere.

Figure 5.3. Social Tolerance vs Interpersonal Trust (2020)



Dubai Innovation Index- Macro Analysis

Figure 5.4. Interpersonal Trust vs Enterprise Conditions (2020)



Dubai Innovation Index- Macro Analysis

Yet the cities that lead in social tolerance tend to exhibit differing levels of interpersonal trust in different regions, suggesting that trust in a society is influenced by perceived tolerance as well as other factors.

Toronto, **Singapore** and **Sydney**, which are all among the top five cities for social tolerance, all consider tolerance as part of their identity and have rolled out multiple initiatives to promote social cohesion. For instance, Toronto and the Canadian nation celebrate "Canadian Multiculturalism Day", when residents and citizens jointly celebrate all of the cultures that constitute Canadian society. Similarly, Australia hosts "Harmony Week", bringing together newcomers, local businesses, community groups, schools and residents through art and culture. Singapore, which has witnessed a steep 5.2% year-on-year growth in its tolerance score since 2015, has a "National Integration Council" to promote social inclusion and harmony and help immigrants adapt to the Singaporean way of life.

The link between interpersonal trust and enterprise conditions is strong (*Figure 5.4*). Cities in the top 10% on both of these indicators are also among the top five in the 2020 Dubai Innovation Index. This amply demonstrates the importance of collaboration to well-functioning innovation systems: innovation requires the integration of efforts from multiple contributors. Interpersonal trust is also critical: cities with higher levels of social cohesion have more collaborative behaviour. Ultimately, tolerance influences the level of innovation within cities, since it promotes an environment where knowledge is exchanged, sparking creativity.

Safety and security are intrinsic to the level of trust between individuals in cities and underpin their appetite for entrepreneurship

The level of security people in cities feel stems not only from their trust in each other, but also from their trust in institutions. Impartial and effective financial institutions and banks, judicial systems and courts, police and governments, reassure individuals and make them more willing to experiment and take calculated risks – which translates into better innovation performance.

Cities that rank in the top 20% in the overall Dubai Innovation Index for 2020 have consistently had much higher levels of institutional trust than the bottom 20% since 2015 (*Figure 5.5*). But the gap is narrowing: although top performers are still well ahead, their performance declined in 2020, perhaps as a result of the pandemic.

The bottom 20%, meanwhile, continued their gradual catch-up. Middle Eastern cities, on average, consistently score higher than those in other regions, perhaps because of their institutions' great emphasis in making their cities safe. For instance, **Doha**, **Dubai** and **Zurich**, which rank among the top 10% cities on institutional trust, also occupy the first three spots on the safety index. One common feature is that their institutions are strongly monitored, which gives citizens confidence that institutions are benevolent, reliable, competent and will act responsibly towards them.

Safety and security have surged in importance because the Covid-19 pandemic has accelerated the digital transition, increasing opportunities for cybercrime. The rapid release of new products and urgent change in business operations introduced many poorly-tested products and services with security vulnerabilities. The rise in digital innovation needs to be matched by the continuous improvement of cybersecurity measures.

Cybersecurity, resilience and technological innovation therefore go hand-in-hand. Cities need to prioritise the rollout of effective cybersecurity plans. One leader in this respect is **Tel Aviv**: the national government has invested heavily in developing the skills of citizens in combating cybercrime, introducing cybersecurity training within schools and universities. High levels of cybersecurity expertise among the workforce helped attract multi-national companies, including IBM and Dell EMC, to set up their cybersecurity R&D centres 100km south of Tel Aviv. Tel Aviv's annual Cyber Week also brings together cybersecurity experts, industry leaders, start-ups, investors, academics, diplomats and government officials from around the world and is one of the world's leading cybersecurity events.

Order and security reduces crime and conflict and builds trust, and is a precondition for social networking among city dwellers, underpinning their desire to start businesses and remain residents.

Zurich



Doha



Nairobi



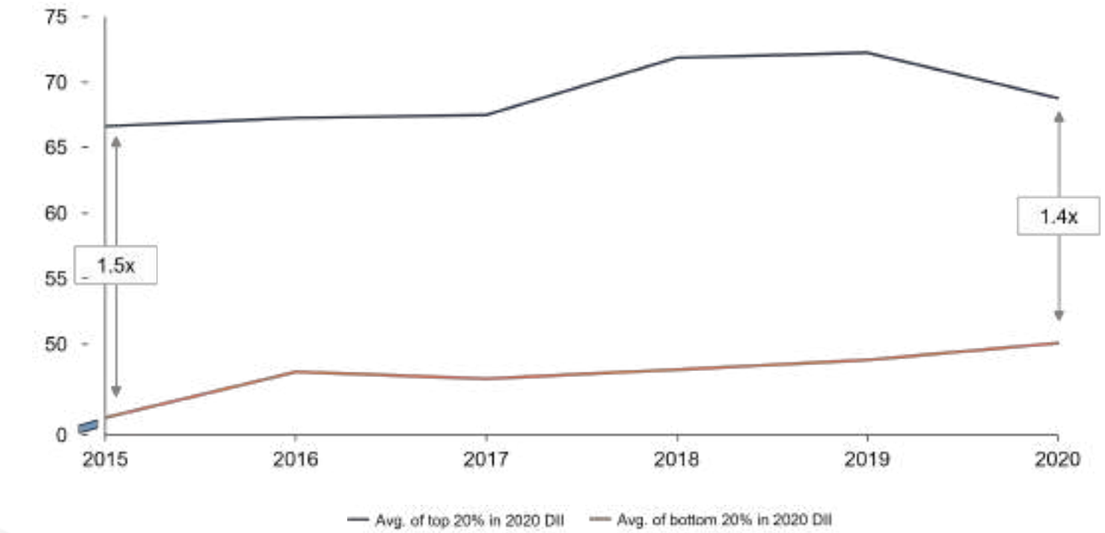
Singapore



Tel Aviv



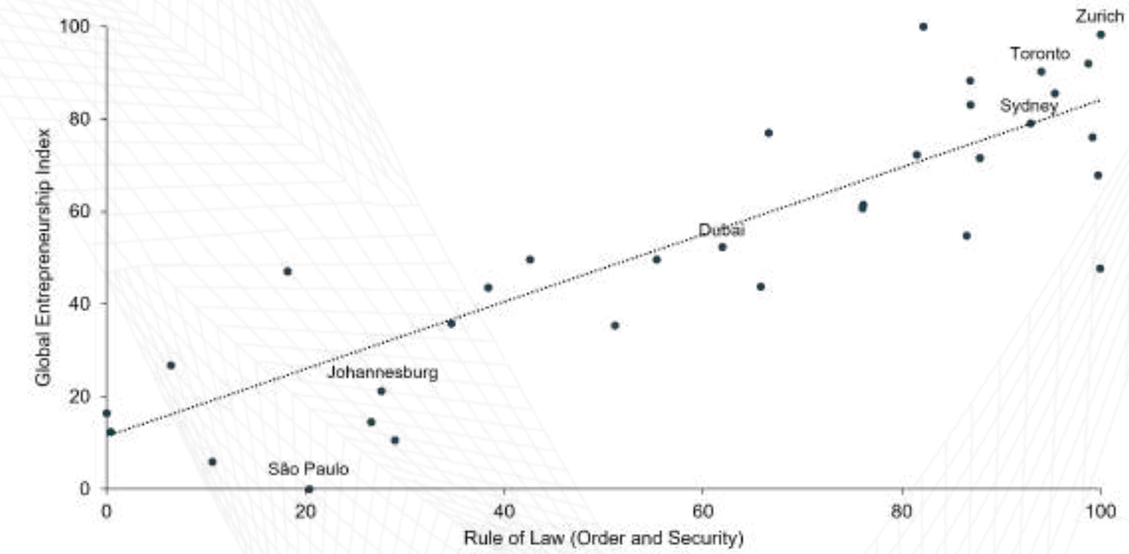
Figure 5.5. Institutional Trust Trend for Top and Bottom 20% DII Cities in 2020



Dubai Innovation Index- Macro Analysis

The strong correlation between scores for order and security and entrepreneurship highlight just how important it is that people feel protected. Security is also critical to attracting investors. Entrepreneurs must be able to exchange information and feedback and take in diverse views and opinions, if their new ventures are to succeed. The top 10 DII performers in 2020 have been consistently strong performers on these indicators (*Figure 5.6*).

Figure 5.6. Rule of Law (Order and Security) vs Global Entrepreneurship Index (2020)



Dubai Innovation Index- Macro Analysis

Cities with proactive communities and vibrant entrepreneurial cultures are more innovative

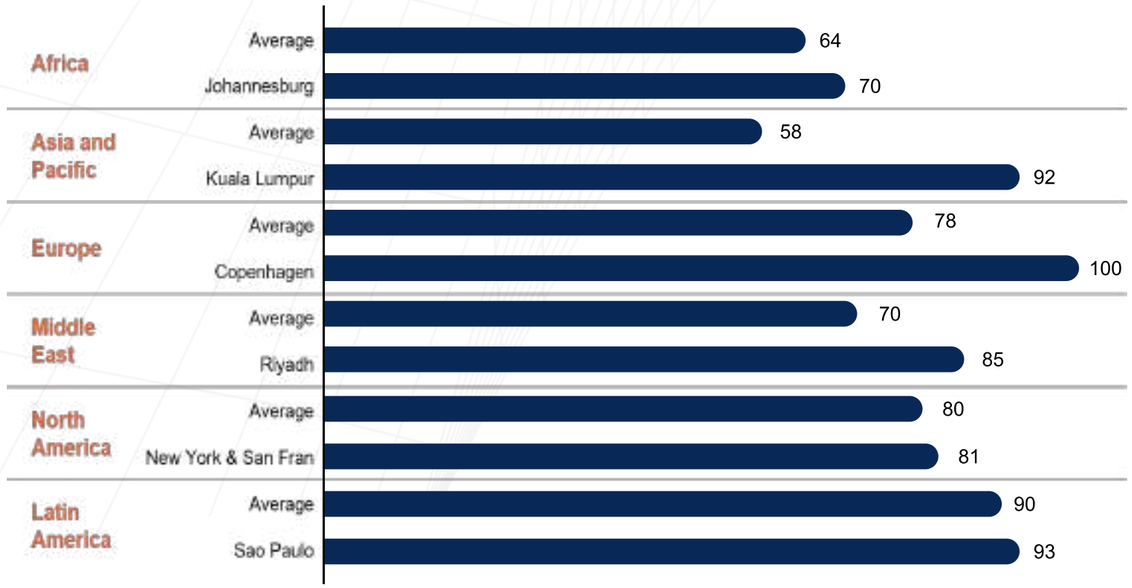
One factor often overlooked by those involved in business ecosystems is happiness, although it plays a vital role in motivating residents to work and be creative. City leaders need to think about motivation and creativity.

Physical social networks can be a good proxy for how inhabitants feel in their cities, showing how easy it is for individuals to connect with others and to feel respected. Cities in North America and Latin America score highest on average . Latin America, up 3% year-on-year, tops our social network ranking, as a regional average- for the second consecutive year (2019 and 2020), with **São Paulo** twice the regional champion. **New York** and **San Francisco** come next in the Americas. They are known for their abundant entertainment possibilities, conferences, exhibitions and networking events that attract both residents and visitors *(Figure 5.7*).

Although the effects of physical social networks are not directly visible in innovation performance, studies acknowledge that networking and community involvement facilitate the exchange of ideas and knowledge, leading to inspired and proactive societies that are motivated to create. Entrepreneurship is also encouraged in societies where experimentation and collaboration are commonplace and failure is readily accepted. Fostering an environment where failure and risk are tolerated was deemed essential for the development of an innovative culture by 83% of companies surveyed for the 2020 DII Innovator Survey. Similarly, 84% said that removing silos within companies and encouraging internal collaboration also shape innovation.

Leading cities have also been promoting entrepreneurship by seeking to equip young people with the necessary skills and talents from an early age. This is particularly important today, when many start-ups are led by young people with great ambition, creativity and technological aptitude. While age is not the prime determinant of the success of start-ups, as young talent enters the workforce cities must equip them either to enter the innovation ecosystem or do so later.

Figure 5.7. Social Networks - Regional Average vs Regional Leader Scores (2020)



This has been further pronounced as job insecurity looms after the pandemic, especially since young people do not generally think of starting a business as their first career option. In some cities, many new jobs are now being created, but often there are skills shortages, or a mismatch between available skills and those now needed.

Encouraging entrepreneurship can help combat youth unemployment. In **Singapore**, the National Youth Council and Ministry of Culture, Community and Youth introduced a Youth Action Challenge in 2019, enabling aspiring young entrepreneurs to pitch solutions to problems and offering prizes to winners in the form of grants worth up to $50,000 to implement their ideas.

The city recognises the importance of cultivating an entrepreneurial mindset among young people, empowering them through targeted initiatives and informal training.

To encourage innovation and entrepreneurship, cities must nurture their societies. They should:

- **Equip their homegrown workforce with the necessary skills to innovate by encouraging young people to study science, technology, engineering and maths (STEM) subjects and equip teachers to teach them well**
- **Promote inclusivity and social cohesion by organising cultural events and initiating dialogues that build tolerance**
- **Build community culture by supporting and spreading awareness of networking and collaboration opportunities and backing events where they can happen**
- **Ensure that individuals feel safe and secure by providing effective law and order and responding to emerging risks arising from changes (such as data security risks)**
- **Nurture youth entrepreneurship through investments in targeted initiatives in schools and universities**
- **Create an entrepreneurial culture by promoting social norms that encourage experimentation, tolerate failure and leverage collaboration**

Case Study 5: SINGAPORE



Singapore's performance on our Society pillar remains exemplary. Its outstanding strength in this domain stems partly from numerous government initiatives tailored to address the human and social aspects of innovation. In particular, the city's close attention to developing talent and multiple routes to entrepreneurship contributes substantially to the success of its innovation ecosystem.

A government agency, Enterprise Singapore (ESG), helps develop and support small and medium enterprises. ESG works to develop the creativity, capabilities and internationalisation of emerging firms through various channels and programmes - most notably, via the Startup SG platform, which was set up in 2017.

A dedicated arm for the successful delivery of the envisioned talent upskilling agenda

Startup SG showcases Singapore's vibrant startup ecosystem locally and overseas, and works to meet the various needs of entrepreneurs, from mentoring to funding and infrastructure. The platform is supported by a network of industry partners, government agencies and organisations with a stake in innovation. It thus provides startups in the ecosystem with a robust network that makes it easier for them to develop and succeed.

Startup SG's strengths include its talent building programmes and its mechanisms for connecting local startups with strong local and global talent. There are two main types of programmes under its Talent pillar. Some match existing talent with SMEs and startups that require their particular set of skills; others play an active role in developing the talent pool by providing opportunities to learn the skills that underpin innovation.

Bringing together talented young people and potential employers

StartUp SG not only focuses on training local young people and those who have just graduated. It also provides training for those already working in order to get the best outcomes from its talent development programmes and ensure they complement other training efforts. One benefit of this approach is that it leverages existing skills and capabilities.

The vehicle for this kind of intervention is the Innovation & Enterprise Fellowship Programme (IFP). The programme seeks to develop industry-relevant innovation and enterprise (I&E) talent and is focused on those already working as researchers, scientists and engineers (RSEs). At the operational level, IFP provides RSEs with formal and on-the-job training and six to 18-month placements with partner organisations. Enterprise Singapore pays 80% of the trainee's salary during the placement, with the remainder paid by the partner organisation. Programme participants who show promise are encouraged to apply for full-time opportunities at the IFP partner entities, while partners are encouraged to offer full-time positions to fellows who perform well.

Complementing the development of local talent by facilitating the market entry of skilled foreign entrepreneurs

Besides aiding the emergence of a talented home-grown workforce, Startup SG seeks to attract complementary talent to Singapore's innovation ecosystem through a programme called EntrePass. The programme leverages the city's strong interconnected ecosystem and makes it easier for foreign start-ups and entrepreneurs to establish a presence in Singapore. EntrePass is also designed to ensure that startups continue to grow in Singapore, through incentives to hire additional local talent rather than importing skills from abroad.

To qualify for EntrePass, foreign startups must be less than six months old at the time of application and the applicant must qualify as an entrepreneur, innovator or investor. The startup must either be backed by venture capital, or have developed, produced or commercialised IT-based products, services or platforms.

Case Study Supported by Enterprise Singapore

Appendices

Appendix I: Sources

Pillar 1: Agile Government

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Appendix II: Methodology & Assumptions

Macro Analysis:

1. Data Sources:

Data was obtained from multiple sources and sources were selected on the basis of:

- Trusted sources: A qualitative judgement was made to mark a source as trusted based on the use of source data in other studies. Widely used data sources such as World Bank, UNESCO were selected, whereas unreliable sources such as blog posts were ignored.

- Availability of data for selected country/city set: The selection of source data was made in accordance with ensuring that data points were available for the maximum number of countries/cities selected for comparison.

- Recentness of data: To ensure valid comparison, data sources were carefully examined and selected to ensure the latest available data is obtained for each indicator. In the case data was missing for 2020 due to sources not releasing them on time, the data was forecasted using a CAGR method, taking into consideration growth since 2015.

2. Data Indicator Types:

- Composite Indices: These data indicators are indices in themselves derived through mathematical combination of a number of individual data indicators. E.g. 2.3.2 Energy Sustainability, which is a composite index measuring 3 dimensions, Energy Security, Energy Equity and Environmental Sustainability.

- Hard Data: These data indicators are hard factual data obtained from a direct trusted source. For example, Unemployment as a % of total labour force (World Bank)

3. Methodology for Computation of Scores:

Computation of scores from the raw data collected across the Agile Government, Infrastructure, Funding, Business Environment, and Society pillars can be described in 3 steps, i) Data Scaling, ii) Data Normalisation and iii) Data Averaging.

- **3.1. Data Scaling:**

Scaling country data to city data. Data obtained from various sources pertains to a particular country (except data gathered from QS World University Rankings, Global Financial Centres Index, Healthcare Index and Safety Index). To introduce homogeneity of data indicators and aid fair comparisons across cities, the country data gathered from these sources was scaled to city level using either city GDP or city population as a scaling factor for respective cities.

Example of Scaling:

Step 1: In preparation for scaling, the indicator needs to be converted to its absolute value (not a percentage). E.g. Gross Expenditure in Research and Development (GERD) financed by abroad (% GDP). Here, GDP (country) represents the denominator. Hence, to obtain the GERD value for the country, the figure from the data source is first multiplied by GDP (country)
GERD(%GDP)×GDP(country)= GERD (Country)

Step 2: Value Scaling: Depending on the nature of the value (i.e., whether it was dependent on population or economic performance), an appropriate scaling factor is used. As GERD is dependent on economic performance, the total GERD figure obtained is then scaled down to its city value by using GDP as its scaling factor.
GERD (Country) x (GDP (City))/(GDP (country)) = GERD (City)

Scaling Exceptions:

Referring back to the data indicator types, due to the nature, source and method of collection and evaluation of Composite Index data, these data types have not been put through the data scaling process:

Composite Indices: It is extremely challenging to scale indicators classified under this data type, primarily because composite indices comprise a number of hard data or survey data elements. In order to put these data indicators through a logical scaling process, the root of each data indicator that forms a part of the overall index would have to be identified and scaled to city level by the base measure of each specific individual indicator. Due to the complexity of this task and lack of availability of the data required to conduct this scaling exercise, composite data indicators are taken as is and are not scaled. Moreover, since the cities selected are assumed to be one of the largest economic performers of the country, it is safe to deduce the composite indicator directly applies to the selected cities.

Descriptions of data sources, classification of indicators by data types (hard data or composite index) and scale factor used is detailed out in Appendix III.

- **3.2. Data Normalisation**

In order to account for and eliminate the effect of different units and scales of the variety of data indicators on the scores for all 5 pillars and overall city scores, a normalisation method is applied.

Once the scaled values have been computed, all values of a particular indicator are normalized across cities on a 0 – 100 scale using the min-max normalization method.

Min-Max normalization method takes data that is measured in its engineering units and transforms it to a value between 0 and 100 (i.e. the scale defined in this case). It is advantageous as it preserves the relationships among original data values and does not introduce any bias. The lowest (min) value is set to 0 and the highest (max) value is set to 100. The normalized value is then calculated using the following formula:

Normalized value (positive polarity) = (original value - min)/(max - min)×100

Normalized value (negative polarity) = (max - original value)/(max - min)×100

For example, consider different city populations with the following values for a positive polarity indicator: 10, 14, 16, 17, 20. The minimum value is 10, the maximum value is 20 and the data has a range of 10. For a city population reading of 16, the normalized value is (16 - 10)/10×100=60

- **3.3 Data Averaging: Simple averages not weighted averages**

In order to arrive at cities' overall score in the DII, as well as their scores for each specific pillar, the method of averaging normalized values has been followed.

We use the simple average method instead of the weighted average method because of the advantages of the former over the latter, such as:

Simplification of Process

Challenges in justifying weights due to variety of indicators
Lack of concrete evidence to justify specific weights

4. Missing Data Consideration

For certain indicators where data for a particular country/city is unavailable, the missing data is not considered while calculating average scores. This approach is followed to ensure fairness in comparison and overcome underestimation of scores due to absence of data. It is ensured that missing data is not considered as 0 value.

5. Assumptions & limitations of the framework

Area of Framework	Limitation/ Assumption	Raw Data Collection
Raw Data Collection	Data gaps due to lack of available data Although the data gap is not taken into account in the final average, a city's score can still be skewed if the data was available the previous year or vice versa	Search for better data source Estimate missing data for a particular year using CAGR method Consider removing indicator (this, however, can affect scores for the same reason mentioned) Some data which has been unavailable in previous years and was found this year has been kept as N/A so as not to skew the results so much
	Not all city GDP and population data are from one source due to lack of sources available	Ensure use of same source with same city definition per city over all years e.g. Toronto – City of Toronto - toronto.ca
	Data is gathered at country level and scaled down to city level rather than gathered at city level directly due to lack of sources available	Continue to search for alternative sources
Data Scaling	For some scaled indicators, such as Unemployment, applying a country level percentage to city GDP/population may not provide a realistic picture, or may require and adjustment factor (e.g. because % of unemployment in a capital city differs greatly to that of the rest of the country)	Continue to reassess such indicators and search for city specific sources that would not need to be scaled
	When converting to absolute terms (e.g. multiplying a country level percentage by city GDP), relativity/ cross-economy comparability is disabled	Continue to reassess such indicators and search for city specific sources that would not need to be scaled
Data Averaging	The scoring is a non-weighted average although it is unlikely that each factor contributes equally to innovation	Ensure that it is clear to reader that indicators are unweighted

Micro Analysis:

1. Innovator Survey:

A survey consisting of questions covering key aspects including company ambitions for growth, related innovation strategies, challenges and best practice approaches and the impact Covid-19 had on businesses.

Answers were gathered through interviews and e-surveys. The survey audience was limited to private sector companies in Dubai and Berlin and was targeted towards innovative firms across a variety of industries. The total number of respondents was 202 firms.

2. Ecosystem Analysis:

A survey consisting of questions covering key aspects including government and regulation, talent, support services (e.g. incubators/accelerators), partnerships and funding. Answers were gathered through interviews and e-surveys. The audience was limited to government entities closest to the innovation networks within their respective cities. Participating entities were Berlin Partner for the city of Berlin, the Dubai Future Foundation for the city of Dubai, the IMC Chamber of Commerce and Industry for the city of Mumbai and the Economic Development Office for the city of Warsaw.

3. Case Studies:

A case study covering any topic relevant to the pillar within which it falls under.

Each pillar has one case study for a city that has either performed consistently well or improved its performance within the pillar. Participating cities were Berlin, Dubai, Paris, Singapore and Warsaw. Berlin's case study was provided by Berlin Partner; Paris' case study was supported by Station F; Singapore's case study was supported by Enterprise Singapore; and Warsaw's case study was provided by PACTT.

Appendix III: Macro Data Indicators

1_Agile Government						
1_1	Government Effectiveness	Index that captures perceptions of the quality of public and civil services and the degree of their independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Scores are standardized.	Worldwide Governance Indicators	2019*	Hard Data	None
1_2	Regulatory Enforcement	Combination of qualitative assessment of questions around: government regulations are effectively enforced. Government regulations are applied and enforced without improper influence, administrative proceedings are conducted without unreasonable delay. Due process is respected in administrative proceedings. The Government does not expropriate without adequate compensation.	World Justice Project	2020	Hard Data	None
1_3	Regulatory Quality	Index that captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private-sector development. Scores are standardized.	Worldwide Governance Indicators	2019*	Hard Data	None
1_4	Trade Tariffs, % Duty	The weighted mean applied tariff is the average of effectively applied rates weighted by the product import shares corresponding to each partner country. Applied tariffs are considered to be the tariff rates applied by a customs administration on imported goods. They are the rates published by national customs authorities for duty administration purposes.	Global Competitiveness Report	2019*	Hard Data	None
1_5	E-Government Development Index	A composite measure of three important dimensions of e-government, namely: provision of online services, telecommunication connectivity and human capacity.	UN E-Government Development Index	2020	Composite Index	N/A - city level indicator
1_6	Government Integrity	Measures the level that the government keeps its word to its citizens and provides them with what they promise. It measures use of public office for private gain, diversion of public funds, right to information, publicised laws and government data, transparency of government policy and budget transparency.	Legatum Prosperity Index	2020	Composite Index	None
2_Infrastructure						
2_1	Computer Software Spending	Computer software spending includes the total value of purchased or leased packaged software such as operating systems, database systems, programming tools, utilities, and applications. It excludes expenditures for internal software development and outsourced custom software development. The data are a combination of actual figures and estimates. Data are reported as a percentage of GDP.	Global Innovation Index	2020	Hard Data	GDP Ratio
2_2	ICT Access	The ICT access index, previously part of the ITU ICT Development Index, is a composite index that weights five ICT indicators (20% each): (1) Fixed telephone subscriptions per 100 inhabitants; (2) Mobile cellular telephone subscriptions per 100 inhabitants; (3) International Internet bandwidth (bit/s) per Internet user; (4) Percentage of households with a computer; and (5) Percentage of households with Internet access.	Global Innovation Index	2020	Composite Index	None
2_3	ICT Services Import	Telecommunications, computer and information services as a percentage of total trade according to the Organisation for Economic Co-operation and Development (OECD)'s Extended Balance of Payments Services Classification EBOPS 2010, coded SI: Telecommunications, computer and information services.	Global Innovation Index	2020	Hard Data	GDP Ratio
2_4	Logistics Performance	A multidimensional assessment of logistics performance, the Logistics Performance Index (LPI) ranks countries combining data on six core performance components into a single aggregate measure—including customs performance, infrastructure quality, and timeliness of shipments. The data used in the ranking comes from a survey of logistics professionals who are asked questions about the foreign countries in which they operate. The LPI's six components are: (1) the efficiency of customs and border management clearance ("Customs"); (2) the quality of trade and transport infrastructure ("Infrastructure"); (3) the ease of arranging competitively priced shipments ("International shipments"); (4) the competence and quality of logistics services ("Services Quality"); (5) the ability to track and trace consignments ("Tracking and tracing"); and (6) the frequency with which shipments reach consignees within scheduled or expected delivery times ("Timeliness"). The LPI consists therefore of both qualitative and quantitative measures and helps build profiles of logistics friendliness for these countries.	Global Innovation Index	2020	Composite Index	None
2_5	Healthcare Index	Overall estimation of quality of healthcare equipment, doctors, staff and technology within a city. This section is based on surveys from visitors of this website. Questions for this survey are similar to many similar scientific and government surveys. Each entry in the survey is saved as the number in the range [-2, +2], with -2 having meaning of strongly negative and +2 meaning of strongly positive. Numbeo filters surveys to eliminate potential spam, like people entering a large amount of data which are differentiating from the median value. To present survey results, the scale [0, 100] is used for values since it is easier to read for users.	Numbeo Cost of Living	2020	Composite Index	N/A - city level data
2_6	Energy Sustainability Index (Energy Performance)	Energy performance indicators consider supply and demand, the affordability of and access to energy, and the environmental impact of a country's energy use. Measures 3 dimensions: Energy Security, Energy Equity and Environmental Sustainability.	World Energy Council in coordination with Oliver Wyman	2020	Composite Index	None
2_7	Environmental Performance	Environmental Performance Index measures across: Is the average Health Impacts, Air Quality, Water and Sanitation, Water Resources, Agriculture, Forests, Fisheries, Biodiversity and Habitat and Climate and Energy.	Global Innovation Index	2020	Composite Index	None
2_8	GDP (PPP) per kg of oil equivalent (Energy Use)	Purchasing power parity gross domestic product (PPP$ GDP) per kilogram of oil equivalent of energy use. Energy use or total primary energy supply (TPES) is calculated as the production of fuels + inputs from other sources + imports – exports – international marine bunkers +/– stock changes. It includes coal, crude oil, natural gas liquids, refinery feedstocks, additives, petroleum products, gases, combustible renewables and waste, electricity, and heat. Domestic supply (also called 'energy apparent consumption') differs from final consumption in that it does not take account of distribution losses. The supply (or use) of energy commodities is converted to kilograms or tons of oil equivalent (koe to toe) using standard coefficients for each energy source.	Global Innovation Index	2020	Hard Data	None

3_Funding						
3_1	Claims on Central Government, etc. (%GDP)	Claims on central government (IFS line 52AN or 32AN) include loans to central government institutions net of deposits.	World Bank	2020	Hard Data	None
3_2	Domestic Credit to Private Sector	Financial resources provided to the private sector, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries, these claims include credit to public enterprises.	Global Innovation Index	2020	Hard Data	GDP Ratio
3_3	Venture Capital Availability	Venture Capital Availability assesses how easy it is for start-up entrepreneurs with innovative but risky projects to obtain equity funding in a particular country on a scale of 1-7 [1 = extremely difficult; 7 = extremely easy] through a primary source survey.	Global Competitiveness Report	2019	Composite Index	None
3_4	GERD: Performed by Business Enterprise	Gross expenditure on R&D performed by business enterprise as a percentage of GDP.	Global Innovation Index	2020	Hard Data	GDP Ratio
3_5	Inward FDI Flow (US$ Million)	Amount of total foreign investment inflows	UNCTAD	2020	Hard Data	GDP Ratio
3_6	Number of Venture Capital Deals (fractional counting)	Thomson Reuters Eikon data on private equity deals, per deal, with information on the location of investment, investment company, investor firms, funds, and crowdfunding, among other details. The data are reported per billion PPP$ GDP.	Global Innovation Index	2020	Hard Data	GDP Ratio
3_7	Value of Greenfield Investments by Destination (US$ Million)	A form of foreign direct investment where a parent company starts a new venture in a foreign country by constructing new operational facilities from the ground up. In addition to building new facilities, most parent companies also create new long-term jobs in the foreign country by hiring new employees	UNCTAD	2020	Hard Data	GDP Ratio
3_8	Global Financial Centres Index	Compares the world's leading financial centres. This is calculated by the 'factor assessment model' which utilizes two different sets of input; Instrumental Factors and Financial Centre Assessments.	Global Financial Centres Index	2020	Composite Index	N/A - city level data
3_9	Investment Environment	Investment Environment involves investment opportunities and the market structure which manages the buying and selling of these investments, various types of security, as well as market intermediaries. It measures property rights (e.g. protection of property rights, quality of land administration, procedures to register property, etc.), investor protection (e.g. strength of insolvency framework, auditing and reporting standards, conflict of interest regulation, etc.) contract enforcement (e.g. quality of judicial administration, time to resolve commercial cases, legal costs, etc.), financing ecosystem (e.g. access to finance, financing of SMEs, quality of banking system, etc.) and restrictions on international investments (e.g. business impact on rules on FDI, capital controls, restrictions on financial transactions, etc.)	Legatum Prosperity Index	2020	Composite Index	None

4_Business Environment						
4_1	Cost of Redundancy Dismissal, salary weeks	Measures flexibility in the regulation of redundancy in a manner consistent with relevant ILO conventions to strike a better balance between labour market flexibility and social protection (including unemployment protection). The redundancy cost indicator is the sum of the cost of advance notice requirements added to severance payments due when terminating a redundant worker, expressed in weeks of salary. The average value of notice requirements and severance payments applicable to a worker with 1 year of tenure, a worker with 5 years of tenure, and a worker with 10 years of tenure is used to assign the score. If the redundancy cost adds up to 8 or fewer weeks of salary, a value of 8 is assigned but the actual number of weeks is published. If the cost adds up to more than 8 weeks of salary, the score is the number of weeks. One month is recorded as 4 and 1/3 weeks.	Global Innovation Index	2020	Hard Data	
4_2	Creative Goods Exports, %	Total value of creative goods exports, net of re-exports (current US$) over total trade. 'Total trade' is defined as the sum of total imports code G100 goods and code S200OS commercial services (excluding government services) plus total exports of code G100 goods and code S200OS commercial services (excluding government services), divided by 2. According to the fifth edition of the International Monetary Fund's Balance of Payments Manual, the category 'goods' covers general merchandise, goods for processing, repairs on goods, goods procured in ports by carriers, and non-monetary gold. The 'commercial services' category is defined as being equal to 'services' minus 'government services, not included elsewhere'.	Global Innovation Index	2020	Hard Data	
4_3	GDP per Capita Change (%)	Change in GDP per capita from 2019 to 2020	Different sources for GDP and Population	2020	Hard Data	N/A - city-level data
4_4	Global Entertainment and Media Output (/Th population)	The Global Entertainment & Media Outlook (the Outlook) is a comprehensive source of global analyses and five-year forecasts of consumer and advertising spending across 53 territories for 14 entertainment and media segments. A total of 53 territories are represented within the Outlook spread across North America, Western Europe, Central Europe, the Middle East and North Africa, Latin America, and Asia Pacific. The score and rankings for the Global Media Expenditures for the 53 territories considered in the	Global Innovation Index	2020	Hard Data	GDP Ratio
4_5	ICT Services Export	Telecommunications, computer and information services (% of total trade) according to the Extended Balance of Payments Services Classification EBOPS 2010, coded SI: Telecommunications, computer and information services.	Global Innovation Index	2020	Hard Data	GDP Ratio
4_6	ICTs & organizational model creation	Average answer to the question: In your country, to what extent do ICTs enable new organizational models (e.g., virtual teams, remote working, telecommuting) within companies? (1 = not at all; 7 = to a great extent)	Global Innovation Index	2020	Hard Data	None
4_7	Labor Force Participation Rate, total (% of total population ages 15+) (modeled ILO estimate) - World Bank 2013	Labor force participation rate is the proportion of the population ages 15 and older that is economically active: all people who supply labor for the production of goods and services during a specified period.	World Bank	2020	Hard Data	None

4_8	Manufacturing Value Added (annual % growth)	Annual growth rate for manufacturing value added based on constant local currency. Aggregates are based on constant 2005 U.S. dollars. Manufacturing refers to industries belonging to ISIC divisions 15-37. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3.	World Bank	2020	Hard Data	None
4_9	Market Capitalization (% of GDP)	Market capitalization (also known as 'market value') is the share price times the number of shares outstanding. Listed domestic companies are the domestically incorporated companies listed on the country's stock exchanges at the end of the year. Listed companies do not include investment companies, mutual funds, or other collective investment vehicles.	World Bank	2020	Hard Data	GDP Ratio
4_10	New Business Density	Number of new firms, defined as firms registered in the current year of reporting, per thousand population aged 15–64 years old.	Global Innovation Index	2020	Hard Data	Population Ratio
4_11	No. of JV-Strategic Alliance Deals (fractional counting)	Joint ventures/strategic alliances: Number of deals, fractional counting (per billion PPP$ GDP) Thomson Reuters data on joint ventures/ strategic alliances deals, per deal, with details on the country of origin of partner firms, among others. For each year, each participating nation of each company in a deal (n countries per deal) gets, per deal, a score equivalent to 1/n (with the effect that all country scores add up to the number of deals reported that year). The data are reported per billion PPP$ GDP.	Global Innovation Index	2020	Hard Data	GDP Ratio

4_12	Number of Trademark Applications Issued to Residents by the National Office	Number of trademark applications at the national trademark office, based on equivalent class counts. 'Class count' refers to the number of classes specified in a trademark application or registration. Data are scaled by PPP$ GDP (billions). A 'trademark' is a distinctive sign that identifies certain goods or services as those produced or provided by a specific person or enterprise. The holder of a trademark application has the legal right to exclusive use of the mark in relation to the products or services for which it is registered. The owner can prevent unauthorized use of the trademark, or a confusingly similar mark, so as to prevent consumers and the public in general from being misled. Unlike patents, trademarks can be maintained indefinitely by paying renewal fees. The procedures for registering trademarks are governed by the rules and regulations of national and regional IP offices. Trademark rights are limited to the jurisdiction of the authority that registers the trademark. Resident trademark registrations are based on equivalent class counts. In the international trademark system and at certain offices, an applicant can file a trademark application that specifies one or more of the 45 goods and services classes of the Nice Classification. Offices use either a single or multi-class filing system. For example, the offices of Japan, the Republic of Korea, and the United States of America as well as many European offices have multi-class filing systems. The offices of Brazil, Mexico, and South Africa follow a single-class filing system, requiring a separate application for each class in which applicants seek trademark protection. To capture the differences in application numbers across offices, it is useful to compare their respective registration class counts. 'Equivalent registrations' refers to registrations at regional offices and are equivalent to multiple registrations, one in each of the states that is a member of those offices. To calculate the number of equivalent registrations for regional office data, each registration is multiplied by the corresponding number of member states.	Global Innovation Index	2020	Hard Data	GDP Ratio
4_13	PCT Patents by Origin/bn PPP$ GDP	A PCT application refers to an international patent application filed through the WIPO-administered Patent Cooperation Treaty (PCT). The PCT system makes it possible to seek patent protection for an invention simultaneously in a number of countries by filing a single international patent application. The origin of PCT applications is defined by the residence of the first-named applicant. Data is available only for those economies which are PCT Contracting States. Data are scaled by PPP$ GDP (billions).	Global Innovation Index	2020	Hard Data	GDP Ratio
4_14	Rate of GDP Annual Growth for Cities	Annual percentage growth rate of GDP for cities at market prices based on constant local currency. Aggregates are based on constant 2005 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.	Different sources for GDP and Population	2020	Hard Data	N/A - city level data
4_15	Scientific & Technical Articles	Number of scientific and technical journal articles (per billion PPP$ GDP)	Global Innovation Index	2020	Hard Data	None

4_16	Services etc., Value Added (annual % growth)	Annual growth rate for value added in services based on constant local currency. Aggregates are based on constant 2005 U.S. dollars. Services correspond to ISIC divisions 50-99. They include value added in wholesale and retail trade (including hotels and restaurants), transport, and government, financial, professional, and personal services such as education, health care, and real estate services. Also included are imputed bank service charges, import duties, and any statistical discrepancies noted by national compilers as well as discrepancies arising from rescaling. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The industrial origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3.	World Bank	2020	Hard Data	None
4_17	Global Entrepreneurship Index	The main contribution of the GEDI Institute is the GEI index, a breakthrough advances in measuring the quality and dynamics of entrepreneurship ecosystems at a national, regional and local level. The GEI index methodology, has been validated in rigorous academic peer reviews and has been widely reported in media, including in The Economist, The Wall Street Journal, Financial Times and Forbes. The GEDI methodology collects data on the entrepreneurial attitudes, abilities and aspirations of the local population and then weights these against the prevailing social and economic 'infrastructure' – this includes aspects such as broadband connectivity and the transport links to external markets. This process creates 14 'pillars' which GEDI uses to measure the health of the regional ecosystem.	The Global Entrepreneurship and Development Institute	2019*	Composite Index	None
4_18	Total Value of Stocks Traded (% of GDP)	Total value of shares traded during the period. This indicator complements the market capitalization ratio by showing whether market size is matched by trading.	World Bank	2020	Hard Data	GDP Ratio
4_19	Unemployment, total (% total labor force)	Unemployment refers to the share of the labor force that is without work but available for and seeking employment.	World Bank	2020	Hard Data	None
4_20	Enterprise Conditions	Looks at domestic market contestability (e.g. market-based competition, anti-monopoly policy, etc.), environment for business creation (e.g. ease of starting a business, availability of skilled workers, etc.), burden of regulation (e.g. time spent complying with regulations, burden of government regulation, etc.), labour market flexibility (e.g. flexibility of hiring practices, redundancy costs, etc.), price distortions (e.g. distortive effect of taxes and subsidies, energy subsidies, etc.).	Legatum Prosperity Index	2020	Composite Index	None
4_21	Economic Quality	A country's economy can be defined by the quality of the goods manufactured there and its services. It measures fiscal sustainability (e.g. government budget balance, government debt, etc.), macroeconomic stability (e.g. inflation volatility, GDP per capita growth, etc.), productivity and competitiveness (e.g. labor productivity, economic complexity, etc.), dynamism (patent applications, capacity to attract talented people, etc.) and labor force engagement (e.g. female labor force participation, youth unemployment, etc.).	Legatum Prosperity Index	2020	Composite Index	None

5_Society						
5_1	Assessment in Reading, Mathematics & Science	PISA is the OECD's (Organisation for Economic Co-operation and Development) Programme for International Student Assessment. PISA measures 15-year-olds' ability to use their reading, mathematics and science knowledge and skills. Results from PISA indicate the quality and equity of learning outcomes attained around the world. The 2018 PISA survey is the seventh round of the triennial assessment. The indicator is built using the average of the reading, mathematics and science scores for each country. PISA scores are set in relation to the variation in results observed across all test participants in a country. There is theoretically no minimum or maximum score in PISA; rather, the results are scaled to fit approximately normal distributions, with means around 500 score points and standard deviations around 100 score points.	Global Innovation Index	2020	Hard Data	None
5_2	Graduates in Science and Engineering, %	The share of all tertiary graduates in manufacturing, engineering, and construction over all tertiary graduates.	Global Innovation Index	2020	Hard Data	None
5_3	No. of Universities in Top 200 World University Rankings	No. of universities in top 200 world university rankings - ranked using six indicators i.e., academic reputation, employer reputation, student-to-faculty ratio, citations per faculty, international faculty ratio and international student ratio.	QS World University Ranking	2020	Hard Data	N/A - city level data
5_4	School Life Expectancy, years	Total number of years of schooling that a child of a certain age can expect to receive in the future, assuming that the probability of his or her being enrolled in school at any particular age is equal to the current enrolment ratio for that age.	Global Innovation Index	2020	Hard Data	None

5_5	Human Development Index (HDI)	The HDI was created to emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone. The HDI can also be used to question national policy choices, asking how two countries with the same level of GNI per capita can end up with different human development outcomes. These contrasts can stimulate debate about government policy priorities. The HDI is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions. The health dimension is assessed by life expectancy at birth component of the HDI is calculated using a minimum value of 20 years and maximum value of 85 years. The education component of the HDI is measured by mean of years of schooling for adults aged 25 years and expected years of schooling for children of school entering age. Mean years of schooling is estimated by UNESCO Institute for Statistics based on educational attainment data from censuses and surveys available in its database. Expected years of schooling estimates are based on enrolment by age at all levels of education. This indicator is produced by UNESCO Institute for Statistics. Expected years of schooling is capped at 18 years. The indicators are normalized using a minimum value of zero and maximum aspirational values of 15 and 18 years respectively. The two indices are combined into an education index using arithmetic mean. The standard of living dimension is measured by gross national income per capita. The goalpost for minimum income is $100 (PPP) and the maximum is $75,000 (PPP). The minimum value for GNI per capita, set at $100, is justified by the considerable amount of unmeasured subsistence and nonmarket production in economies close to the minimum that is not captured in the official data. The HDI uses the logarithm of income, to reflect the diminishing importance of income with increasing GNI. The scores for the three HDI dimension indices are then aggregated into a composite index using geometric mean.	UN Development Programme	2019*	Composite Index	None
5_6	Political Stability and Absence of Violence/Terrorism	Index that captures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism. Scores are standardized.	Worldwide Governance Indicators	2019*	Composite Index	None
5_7	Population ages 15-64 (% of total)	Total population between the ages 15 to 64 is the number of people who could potentially be economically active. Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship - except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of the country of origin.	World Bank	2020	Hard Data	Population Ratio
5_8	Rule of Law Index (Order and Security)	Combination of qualitative assessment of questions around: Crime is effectively controlled, Civil conflict is effectively limited, People do not resort to violence to redress personal grievances	Worldwide Governance Indicators	2019*	Composite Index	None
5_9	Perceived Tolerance of Ethnic Minorities	Captures how people respond to the statement that their city is tolerant towards ethnic minorities.	Legatum Prosperity Index	2020	Composite Index	None
5_10	Perceived Tolerance of Immigrants	Captures how people respond to the statement that their city is tolerant towards immigrants.	Legatum Prosperity Index	2020	Composite Index	None
5_11	Social Networks	Looks at respect, opportunities to make friends, and how helpful other households in the area are.	Legatum Prosperity Index	2020	Composite Index	None
5_12	Interpersonal Trust	Looks at generalized interpersonal trust and how comfortable people are with helping strangers.	Legatum Prosperity Index	2020	Composite Index	None
5_13	Institutional Trust	Looks at the people's confidence in local police, financial institutions and banks, the judicial system and courts, national government, military, and public trust in politicians.	Legatum Prosperity Index	2020	Composite Index	None
5_14	Safety Index	Estimates the overall level of safety in a given city. Questions for this survey are similar to many similar scientific and government surveys. Each entry in the survey is saved as the number in the range [-2, +2], with -2 having meaning of strongly negative and +2 meaning of strongly positive. Numbeo filters surveys to eliminate potential spam, like people entering a large amount of data which are differentiating from the median value. To present survey results, the scale [0, 100] is used for values since it is easier to read for users.	Numbeo Cost of Living	2020	Composite Index	N/A - city level data

* 2020 Values Estimated using CAGR

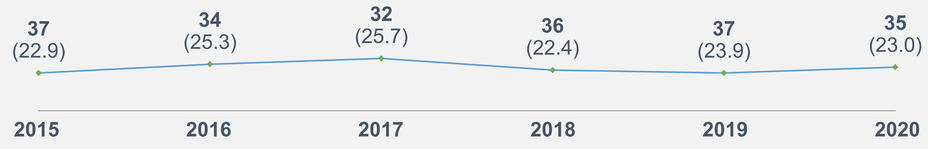
Accra, Ghana

DII 2020 Rank

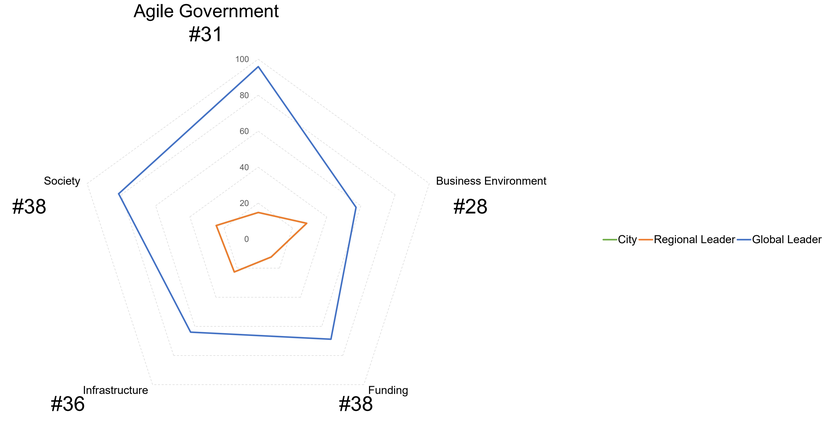
35

In 2020 Accra moved up two ranks, to 35th on the innovation index, from 37th in 2019. Its performance across three of the five pillars stayed the same, including: Society (38th), Infrastructure (36th), and Agile Government (31st). On the Business Environment pillar, the city dropped four ranks from 24th to 28th in 2020, because of a poor performance on the Joint Venture Strategic Alliances measure, where it fell six ranks between 2019 and 2020. However, the city's performance in Funding improved, moving it up from 39th to 38th place in 2020. The key indicators driving the improved performance in Funding are Gross Expenditure on Research & Development (GERD) Performed by Business Enterprise, and Inward Foreign Direct Investment (FDI) Flow, on which it rose three ranks between 2019 and 2020.

Accra's Ranking & Score in the DII over time



Accra's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Cost of Redundancy Dismissal, salary weeks	1	—
Services etc., Value Added (annual % growth)	2	▼1
Manufacturing Value Added (annual % growth)	3	▲2
Perceived Tolerance of Immigrants	4	—
No. of Unis in Top 200 World University Rankings	6	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	8	▲13
Unemployment, total (% total labor force)	9	▲7
Inward FDI Flow (US$ Million)	32	▲3
Manufacturing Value Added (annual % growth)	3	▲2
GDP (PPP) per kg of oil equivalent (Energy Use)	8	▲1

Accra's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Regulatory Enforcement	17	▼1
Trade Tariffs, %Duty	19	—
Regulatory Quality	28	▼1
E-Government Development Index	31	—
Government Effectiveness	31	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Government Effectiveness	31	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
GDP (PPP) per kg of oil equivalent (Energy Use)	8	▲1
Logistics Performance	15	—
Energy Sustainability Index (Energy Performance)	21	▼1
ICT Access	29	—
Environmental Performance	30	▼3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP (PPP) per kg of oil equivalent (Energy Use)	8	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	16	▼3
Venture Capital Availability	30	—
Inward FDI Flow (US$ Million)	32	▲3
Investment Environment	33	—
GERD: Performed by Business Enterprise	35	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	32	▲3
GERD: Performed by Business Enterprise	35	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Cost of Redundancy Dismissal, salary weeks	1	—
Services etc., Value Added (annual % growth)	2	▼1
Manufacturing Value Added (annual % growth)	3	▲2
Labor Force Participation Rate (% of total pop ages 15+)	7	—
Rate of GDP Annual Growth for Cities	7	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	8	▲13
Unemployment, total (% total labor force)	9	▲7
Manufacturing Value Added (annual % growth)	3	▲2

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	4	—
No. of Unis in Top 200 World University Rankings	6	—
Perceived Tolerance of Ethnic Minorities	6	—
Population ages 15-64 (% of total)	21	—
Social Networks	22	▼4

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Interpersonal Trust	28	▲1

Amsterdam, Netherlands

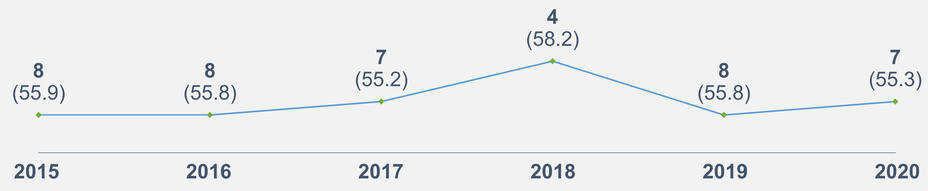
DII 2020 Rank

7

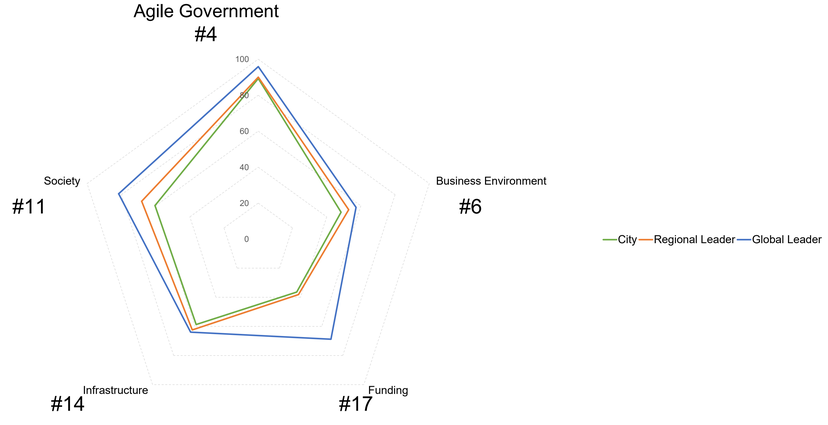
Top 10 & New City

In 2020, Amsterdam moved up a rank from the previous year, to reach 7th place for overall innovation. Its progress across the varied pillars was balanced: it remained consistent in rank across Society (11th), Infrastructure (14th) and Agile Government (4th), but slipped in Funding (8th to 17th), and gained in Business Environment (12th to 6th). The city performed poorly on Funding, where it saw a drop in Inward FDI Flow and Domestic Credit to Private Sector. On the other hand, Amsterdam performed well on its Business Environment, especially the Economic Quality and GDP per Capita Change (%) metrics.

Amsterdam's Ranking & Score in the DII over time



Amsterdam's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Interpersonal Trust	3	▼1
ICTs & Organizational Model Creation	3	—
Logistics Performance	3	—
Perceived Tolerance of Immigrants	3	—
Regulatory Enforcement	3	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	11	▲18
GERD: Performed by Business Enterprise	11	▲5
Services etc., Value Added (annual % growth)	15	▲5
Unemployment, total (% total labor force)	6	▲4
Claims on Central Government, etc. (%GDP)	12	▲4

Amsterdam's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Regulatory Enforcement	3	—
Trade Tariffs, %Duty	3	—
Regulatory Quality	4	—
Government Effectiveness	5	—
Government Integrity	5	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
E-Government Development Index	8	▲3

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	3	—
ICT Access	6	▼1
ICT Services Import	8	—
Environmental Performance	8	▲1
Computer Software Spending	9	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Environmental Performance	8	▲1
GDP (PPP) per kg of oil equivalent (Energy Use)	12	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Investment Environment	6	▲1
Venture Capital Availability	10	▲3
GERD: Performed by Business Enterprise	11	▲5
Claims on Central Government, etc. (%GDP)	12	▲4
Value of Greenfield Investments by Destination	13	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GERD: Performed by Business Enterprise	11	▲5
Claims on Central Government, etc. (%GDP)	12	▲4
Venture Capital Availability	10	▲3
Investment Environment	6	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICTs & Organizational Model Creation	3	—
Economic Quality	4	▲1
ICT Services Export	5	—
The Global Entrepreneurship & Development Index	6	▲1
Unemployment, total (% total labor force)	6	▲4

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	11	▲18
Services etc., Value Added (annual % growth)	15	▲5
Unemployment, total (% total labor force)	6	▲4
Rate of GDP Annual Growth	8	▲2
Labor Force Participation Rate (% of total pop ages 15+)	12	▲2

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Interpersonal Trust	3	▼1
Perceived Tolerance of Immigrants	3	—
Perceived Tolerance of Ethnic Minorities	4	▼1
School Life Expectancy, years	4	▲1
Human Development Index (HDI)	5	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
School Life Expectancy, years	4	▲1
Graduates in Science and Engineering, %	26	▲1

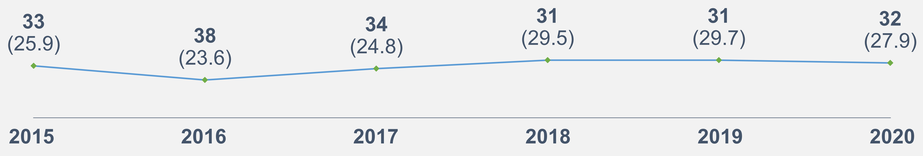
Baku, Azerbaijan

DII 2020 Rank **32**

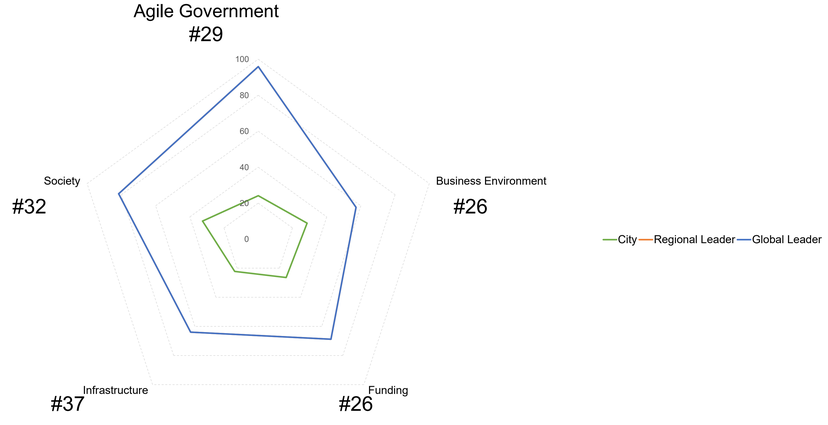
New City

In 2020, Baku ranked 32nd overall, down a rank from 2019. The city slipped on four of the pillars. The exception was the Funding pillar, where it moved up four ranks to place 26th in 2020. The improved performance on the Funding pillar can be largely attributed to the city's improved performance on Venture Capital Availability, up from 19th place in 2019 to 13th place in 2020. An overall improvement of its ranking for the Investment Environment was also a factor in its Funding progress. With respect to other pillars, the key areas of focus for improving performance could be: Environmental Performance (Infrastructure), Labor Force Participation Rate (Business Environment), and GDP per Capita Change (%).

Baku's Ranking & Score in the DII over time



Baku's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	2	▼1
Claims on Central Government, etc. (%GDP)	2	—
Perceived Tolerance of Immigrants	5	—
Perceived Tolerance of Ethnic Minorities	5	▲1
No. of Unis in Top 200 World University Rankings	6	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Venture Capital Availability	13	▲6
Enterprise Conditions	23	▲3
Institutional Trust	12	▲2
Perceived Tolerance of Ethnic Minorities	5	▲1
Unemployment, total (% total labor force)	20	▲1

Baku's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	18	—
E-Government Development Index	28	▲1
Government Effectiveness	29	—
Regulatory Quality	30	—
Government Integrity	31	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
E-Government Development Index	28	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICT Services Import	12	—
GDP (PPP) per kg of oil equivalent (Energy Use)	14	—
Logistics Performance	16	NA
Energy Sustainability Index (Energy Performance)	20	NA
Environmental Performance	24	▼4

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	2	—
Venture Capital Availability	13	▲6
Investment Environment	25	▲1
Inward FDI Flow (US$ Million)	31	—
Global Financial Centres Index	35	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Venture Capital Availability	13	▲6
Investment Environment	25	▲1
GERD: Performed by Business Enterprise	35	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	2	▼1
Services etc., Value Added (annual % growth)	10	▼1
Labor Force Participation Rate (% of total pop ages 15+)	13	▼5
Cost of Redundancy Dismissal, salary weeks	14	—
Rate of GDP Annual Growth	17	▼10

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Enterprise Conditions	23	▲3
Unemployment, total (% total labor force)	20	▲1
PCT Patents by Origin/bn PPP$ GDP	22	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	5	—
Perceived Tolerance of Ethnic Minorities	5	▲1
No. of Unis in Top 200 World University Rankings	6	—
Population ages 15-64 (% of total)	7	—
Institutional Trust	12	▲2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Institutional Trust	12	▲2
Perceived Tolerance of Ethnic Minorities	5	▲1
Social Networks	29	▲1

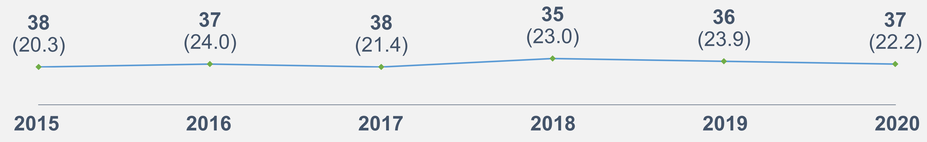
Bangalore, India

DII 2020 Rank

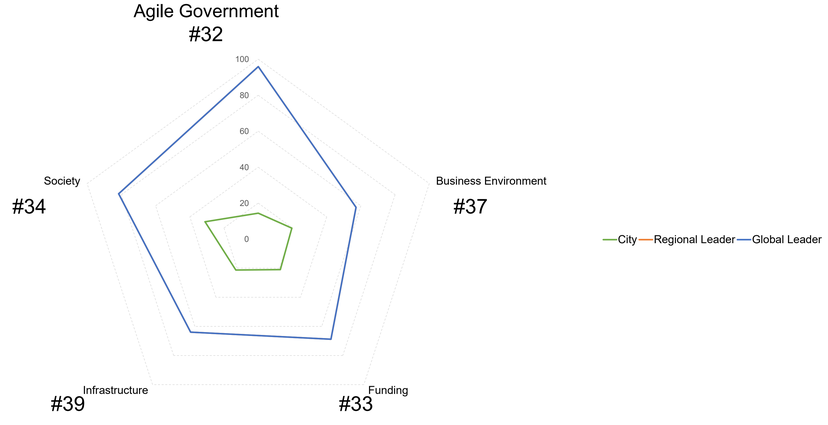
37

In 2020, Bangalore ranked 37th, down from 36th place in 2019. Across the five pillars, Bangalore saw the same ranking for Funding (33rd) and Agile Government (32nd) across both years. It slipped on its ranking for Business Environment (33rd to 37th) and Infrastructure (38th to 39th), but climbed a spot on the Society pillar (35th to 34th). Although the city slipped on certain indicators, such as GDP per Capita Change (%) and Number of Joint Venture Strategic Alliances, which led to the overall drop in its ranking, it also saw notable progress in others. For example, within the Society pillar, Bangalore rose eight places between 2019 and 2020 in Interpersonal Trust. It also improved on some indicators within the Business Environment pillar, such as Manufacturing Value Added (Annual % Growth).

Bangalore's Ranking & Score in the DII over time



Bangalore's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Graduates in Science and Engineering, %	4	▼1
No. of Unis in Top 200 World University Rankings	5	—
Perceived Tolerance of Ethnic Minorities	5	▲1
Perceived Tolerance of Immigrants	7	—
Manufacturing Value Added (annual % growth)	8	▲18

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	8	▲18
Interpersonal Trust	20	▲8
Inward FDI Flow (US$ Million)	17	▲5
Total Value of Stocks Traded (% of GDP)	13	▲4
Market Capitalization (% of GDP)	17	▲3

Bangalore's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Regulatory Enforcement	19	▲1
Trade Tariffs, %Duty	23	—
Government Integrity	26	—
Government Effectiveness	27	—
Regulatory Quality	27	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Regulatory Enforcement	19	▲1
Regulatory Quality	27	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	11	—
GDP (PPP) per kg of oil equivalent (Energy Use)	19	▼1
Healthcare Index	23	▼4
Energy Sustainability Index (Energy Performance)	30	▼2
Environmental Performance	30	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
ICT Services Import	32	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	17	▲5
Venture Capital Availability	19	▼1
Claims on Central Government, etc. (%GDP)	20	▲2
Value of Greenfield Investments by Destination	23	—
Number of Venture Capital Deals (fractional counting)	25	▼4

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	17	▲5
Claims on Central Government, etc. (%GDP)	20	▲2
GERD: Performed by Business Enterprise	29	▲1
Investment Environment	30	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	8	18
Cost of Redundancy Dismissal, salary weeks	11	—
Creative Goods Exports, %	12	—
Rate of GDP Annual Growth	13	▼10
Total Value of Stocks Traded (% of GDP)	13	▲4

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	8	▲18
Total Value of Stocks Traded (% of GDP)	13	▲4
Market Capitalization (% of GDP)	17	▲3
Number of Trademark Applications Issued to Residents	21	▲3
Unemployment, total (% total labor force)	23	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Graduates in Science and Engineering, %	4	▼1
No. of Unis in Top 200 World University Rankings	5	—
Perceived Tolerance of Ethnic Minorities	5	▲1
Perceived Tolerance of Immigrants	7	—
Institutional Trust	9	▼3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Interpersonal Trust	20	▲8
Political Stability and Absence of Violence/Terrorism	28	▲2
Perceived Tolerance of Ethnic Minorities	5	▲1

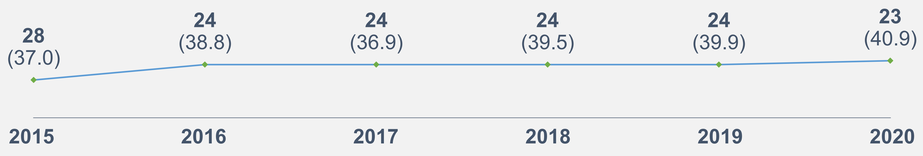
Beijing, China

DII 2020 Rank

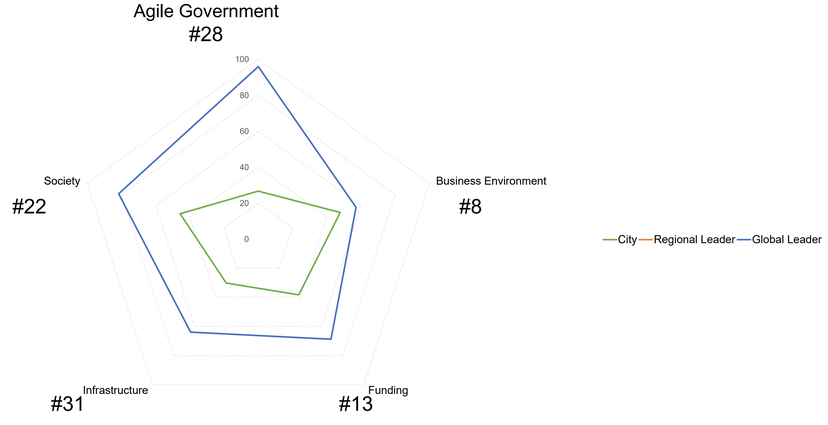
23

In 2020, Beijing ranked 23rd in the Dubai Innovation Index, up from 24th the previous year. It has made substantial progress in Agile Government and Society, while continuing to rank in the top 10 for its Business Environment. Beijing has made strong investments to develop e-government - contributing to its improved ranking on the Agile Government pillar (29th to 28th). It has also improved on domestic credit to the private sector and foreign investment. The city still performed strongly in Funding, ranking 13th in 2020, despite falling one spot from the previous year. Infrastructure remains the key weakness affecting the city's overall ranking, though it improved on some indicators within the pillar.

Beijing's Ranking & Score in the DII over time



Beijing's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Creative Goods Exports, %	1	—
Services etc., Value Added (annual % growth)	1	▲3
Assessment in Reading, Mathematics & Science	1	▲6
Cost of Redundancy Dismissal, salary weeks	2	—
Number of Trademark Applications Issued to Residents	2	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Safety Index	19	▲12
Inward FDI Flow (US$ Million)	8	▲7
Assessment in Reading, Mathematics & Science	1	▲6
Unemployment, total (% total labor force)	14	▲6
Social Networks	11	▲5

Beijing's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Regulatory Enforcement	19	▲1
Trade Tariffs, %Duty	21	—
Government Effectiveness	23	—
E-Government Development Index	23	▲4
Government Integrity	27	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
E-Government Development Index	23	▲4
Regulatory Enforcement	19	▲1
Government Integrity	27	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	7	—
Computer Software Spending	8	—
GDP (PPP) per kg of oil equivalent (Energy Use)	25	▲1
ICT Access	25	▲1
Environmental Performance	27	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
ICT Services Import	34	▲2
GDP (PPP) per kg of oil equivalent (Energy Use)	25	▲1
ICT Access	25	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Domestic Credit to Private Sector	4	▲3
GERD: Performed by Business Enterprise	6	▲1
Global Financial Centres Index	6	▲1
Inward FDI Flow (US$ Million)	8	▲7
Number of Venture Capital Deals (fractional counting)	11	▼3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	8	▲7
Domestic Credit to Private Sector	4	▲3
Claims on Central Government, etc. (%GDP)	21	▲3
GERD: Performed by Business Enterprise	6	▲1
Global Financial Centres Index	6	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Creative Goods Exports, %	1	—
Services etc., Value Added (annual % growth)	1	▲3
Cost of Redundancy Dismissal, salary weeks	2	—
Number of Trademark Applications Issued to Residents	2	—
Total Value of Stocks Traded (% of GDP)	3	▲2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Unemployment, total (% total labor force)	14	▲6
Services etc., Value Added (annual % growth)	1	▲3
Market Capitalization (% of GDP)	9	▲3
Total Value of Stocks Traded (% of GDP)	3	▲2
Global Entertainment and Media Output (/Th population)	28	▲2

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Assessment in Reading, Mathematics & Science	1	▲6
No. of Unis in Top 200 World University Rankings	4	—
Interpersonal Trust	5	▼1
Perceived Tolerance of Ethnic Minorities	7	▲1
Perceived Tolerance of Immigrants	7	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Safety Index	19	▲12
Assessment in Reading, Mathematics & Science	1	▲6
Social Networks	11	▲5
Perceived Tolerance of Ethnic Minorities	7	▲1
Perceived Tolerance of Immigrants	7	▲1

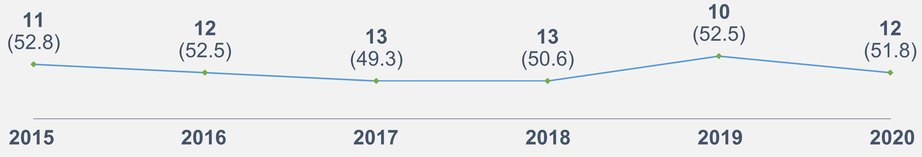
Berlin, Germany

DII 2020 Rank

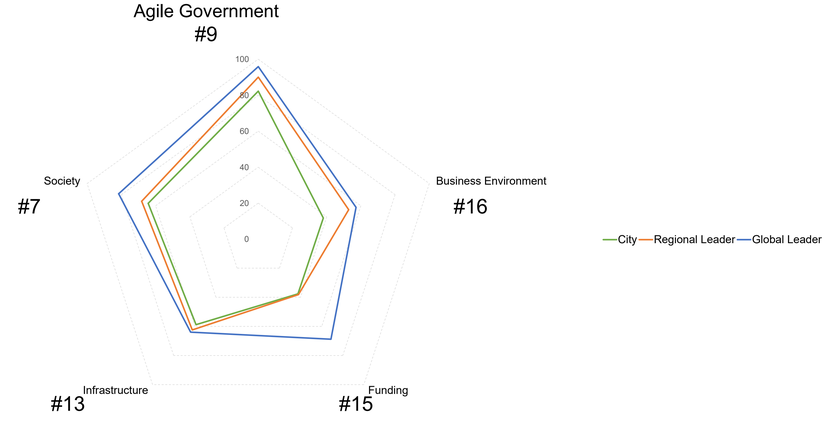
12

In 2020, Berlin ranked 12th in the Dubai Innovation Index, moving down from 10th in 2019. Despite the overall drop in ranking, the city remained in the top 10 for two pillars and top 20 for the remaining three pillars. The three pillars in which it improved its ranking between 2019 and 2020 were Society (8th to 7th), Funding (19th to 15th), and Business Environment (17th to 16th). These improvements were driven by improvements in Manufacturing Value Added (Annual % Growth), Services etc., Value Added (Annual % Growth), Social Networks, and Venture Capital Availability. In Infrastructure, Berlin maintained 13th place in both years. Despite sliding one place on Agile Government, it maintained a top 10 position, ranking 8th in 2019 and 9th in 2020.

Berlin's Ranking & Score in the DII over time



Berlin's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	1	—
Graduates in Science and Engineering, %	2	▼1
Economic Quality	3	—
Human Development Index (HDI)	3	—
No. of Unis in Top 200 World University Rankings	3	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	11	▲19
Services etc., Value Added (annual % growth)	13	▲8
Social Networks	8	▲5
Venture Capital Availability	3	▲3
Market Capitalization (% of GDP)	19	▲2

Berlin's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	3	—
Regulatory Enforcement	3	▲1
Regulatory Quality	6	—
Government Effectiveness	9	—
Government Integrity	10	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Regulatory Enforcement	3	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	1	—
ICT Access	4	▼1
Environmental Performance	7	—
Energy Sustainability Index (Energy Performance)	9	—
GDP (PPP) per kg of oil equivalent (Energy Use)	9	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
ICT Services Import	26	▲2
GDP (PPP) per kg of oil equivalent (Energy Use)	9	▲1
Healthcare Index	17	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Venture Capital Availability	3	▲3
Claims on Central Government, etc. (%GDP)	10	▲1
Investment Environment	13	—
GERD: Performed by Business Enterprise	15	▼1
Number of Venture Capital Deals (fractional counting)	20	▼5

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Venture Capital Availability	3	▲3
Value of Greenfield Investments by Destination	22	▲2
Claims on Central Government, etc. (%GDP)	10	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Economic Quality	3	—
Enterprise Conditions	5	—
Cost of Redundancy Dismissal, salary weeks	7	—
ICTs & Organizational Model Creation	7	—
Unemployment, total (% total labor force)	7	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	11	▲19
Services etc., Value Added (annual % growth)	13	▲8
Market Capitalization (% of GDP)	19	▲2
Labor Force Participation Rate (% of total pop ages 15+)	22	▲2
Total Value of Stocks Traded (% of GDP)	15	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Graduates in Science and Engineering, %	2	▼1
Human Development Index (HDI)	3	—
No. of Unis in Top 200 World University Rankings	3	—
Perceived Tolerance of Immigrants	3	—
Perceived Tolerance of Ethnic Minorities	4	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Social Networks	8	▲5

Copenhagen, Denmark

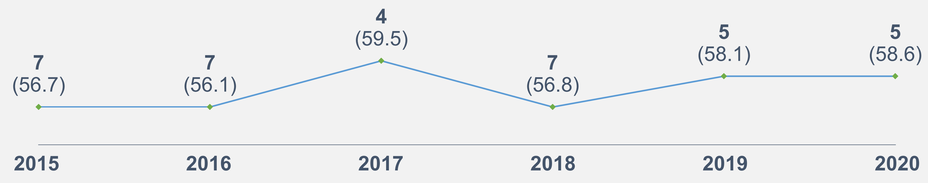
DII 2020 Rank

5

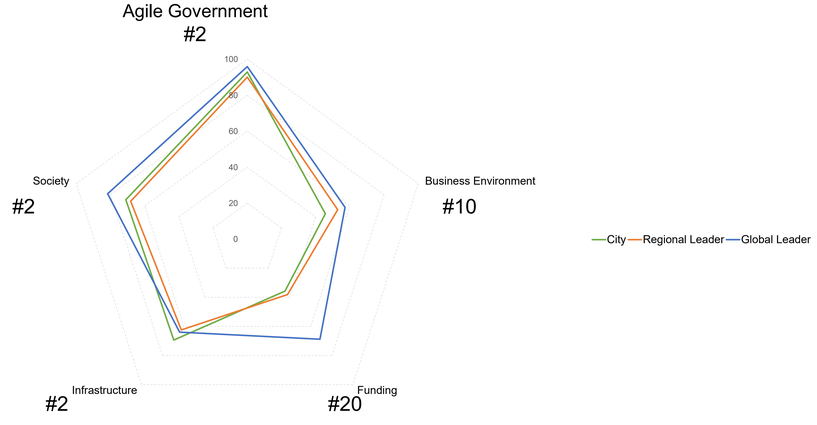
Top 10

In 2020, Copenhagen held on to the 5th place it achieved in 2019. The city ranked consistently across four of the five individual pillars: Infrastructure (2nd), Funding (20th), Business Environment (10th), and Agile Government (2nd). On the Society pillar, Copenhagen edged up from 3rd in 2019 to 2nd in 2020.. Overall, it was placed in the top three for three of the pillars and top 10 for four of the pillars. It's outstanding performance in Agile Government is driven by enhancements in both Government Integrity and Government Effectiveness. As for Society, the key drivers of progress were in Interpersonal Trust, Perceived Tolerance of Ethnic Minorities and of Immigrants, Political Stability and Social Networks. In Infrastructure, its ranking among the top three was driven by Energy Performance, Environmental Performance, and Logistics Performance.

Copenhagen's Ranking & Score in the DII over time



Copenhagen's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
E-Government Development Index	1	—
Interpersonal Trust	1	—
Regulatory Enforcement	1	—
Scientific & Technical Articles	1	—
Social Networks	1	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Cost of Redundancy Dismissal, salary weeks	8	▲13
Value of Greenfield Investments by Destination	27	▲10
GDP per Capita Change (%)	28	▲7
Unemployment, total (% total labor force)	16	▲6
Enterprise Conditions	6	▲2

Copenhagen's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
E-Government Development Index	1	—
Regulatory Enforcement	1	—
Government Effectiveness	2	▲1
Government Integrity	2	▲1
Trade Tariffs, %Duty	3	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Government Effectiveness	2	▲1
Government Integrity	2	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Environmental Performance	1	▲2
Logistics Performance	3	—
GDP (PPP) per kg of oil equivalent (Energy Use)	3	▲1
Energy Sustainability Index (Energy Performance)	4	—
ICT Services Import	4	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Environmental Performance	1	▲2
GDP (PPP) per kg of oil equivalent (Energy Use)	3	▲1
Healthcare Index	5	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Investment Environment	3	▲1
Claims on Central Government, etc. (%GDP)	7	▼1
Domestic Credit to Private Sector	17	▼1
GERD: Performed by Business Enterprise	19	▼1
Number of Venture Capital Deals (fractional counting)	19	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Value of Greenfield Investments by Destination	27	▲10
Venture Capital Availability	20	▲2
Investment Environment	3	▲1
Global Financial Centres Index	20	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Scientific & Technical Articles	1	—
The Global Entrepreneurship & Development Index	3	▲1
PCT Patents by Origin/bn PPP$ GDP	4	—
New Business Density	6	▼1
ICT Services Export	6	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Cost of Redundancy Dismissal, salary weeks	8	▲13
GDP per Capita Change (%)	28	▲7
Unemployment, total (% total labor force)	16	▲6
Enterprise Conditions	6	▲2
Labor Force Participation Rate (% of total pop ages 15+)	19	▲2

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Interpersonal Trust	1	—
Social Networks	1	—
Perceived Tolerance of Immigrants	1	▲1
Perceived Tolerance of Ethnic Minorities	2	▲1
School Life Expectancy, years	3	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Political Stability and Absence of Violence/Terrorism	5	▲2
Perceived Tolerance of Immigrants	1	▲1
Perceived Tolerance of Ethnic Minorities	2	▲1
Safety Index	8	▲1

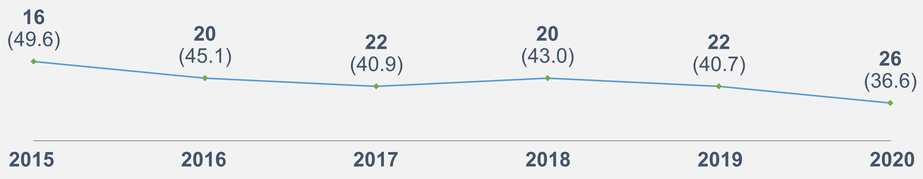
Doha, Qatar

DII 2020 Rank

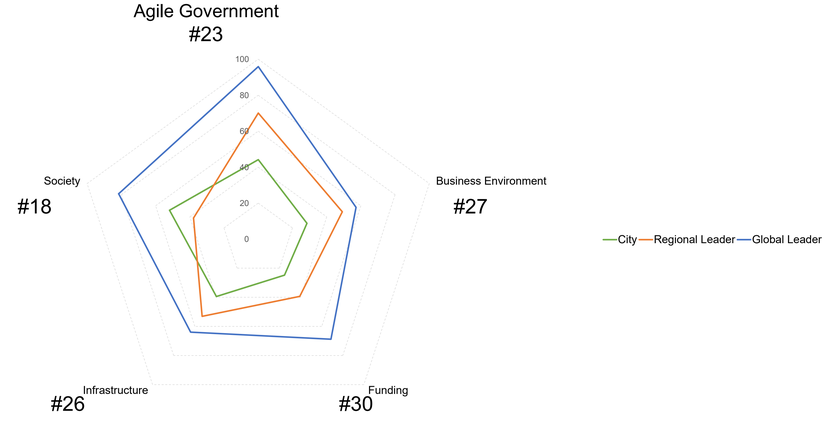
26

In 2020, Doha ranked 26th in the Dubai Innovation Index, sliding from its 22nd ranking in 2019. The city's overall ranking was impacted by poorer performances on Society (16th to 18th), Infrastructure (18th to 26th), Funding (23rd to 30th), and Agile Government (22nd to 23rd). It's Business Environment, on the other hand, maintained the same ranking of 27th across both 2019 and 2020. Despite the drop in ranking for Society, this pillar remains one of the areas where it performs relatively well. For Institutional Trust, for example, the city ranks 2nd overall, and it ranks first overall for Safety in both 2019 and 2020. It also ranks in the top three for Perceived Tolerance of Ethnic Minorities and Immigrants. Key challenges to the city's ranking performance lie in Funding, where Doha saw weaker performances on Venture Capital Availability, Domestic Credit to Private Sector and Value of Greenfield Investments.

Doha's Ranking & Score in the DII over time



Doha's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Labor Force Participation Rate (% of total pop ages 15+)	1	—
Safety Index	1	—
Institutional Trust	2	—
Perceived Tolerance of Immigrants	2	—
Unemployment, total (% total labor force)	3	▼2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	26	▲8
New Business Density	12	▲6
PCT Patents by Origin/bn PPP$ GDP	30	▲6
Total Value of Stocks Traded (% of GDP)	23	▲5
Claims on Central Government, etc. (%GDP)	22	▲4

Doha's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	14	—
Government Effectiveness	21	—
Government Integrity	22	—
Regulatory Quality	22	—
E-Government Development Index	27	▼3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICT Services Import	3	▼1
Logistics Performance	8	—
Healthcare Index	12	—
ICT Access	19	—
GDP (PPP) per kg of oil equivalent (Energy Use)	23	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP (PPP) per kg of oil equivalent (Energy Use)	23	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Venture Capital Availability	8	▼4
Claims on Central Government, etc. (%GDP)	22	▲4
Investment Environment	23	—
Global Financial Centres Index	25	▲1
Number of Venture Capital Deals (fractional counting)	25	NA

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	22	▲4
Inward FDI Flow (US$ Million)	36	▲2
Global Financial Centres Index	25	▲1
GERD: Performed by Business Enterprise	33	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Labor Force Participation Rate (% of total pop ages 15+)	1	—
Unemployment, total (% total labor force)	3	▼2
Cost of Redundancy Dismissal, salary weeks	5	—
Services etc., Value Added (annual % growth)	9	▲1
New Business Density	12	▲6

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	26	▲8
New Business Density	12	▲6
PCT Patents by Origin/bn PPP$ GDP	30	▲6
Total Value of Stocks Traded (% of GDP)	23	▲5
Economic Quality	13	▲2

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Safety Index	1	—
Institutional Trust	2	—
Perceived Tolerance of Immigrants	2	—
Perceived Tolerance of Ethnic Minorities	3	—
Population ages 15-64 (% of total)	5	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Assessment in Reading, Mathematics & Science	25	▲1

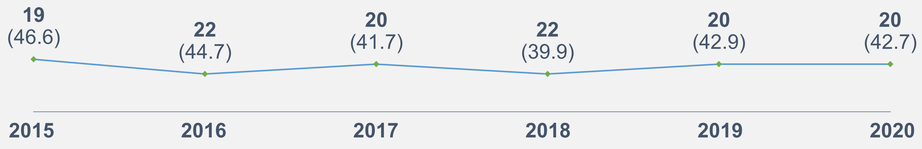
Dubai, UAE

DII 2020 Rank

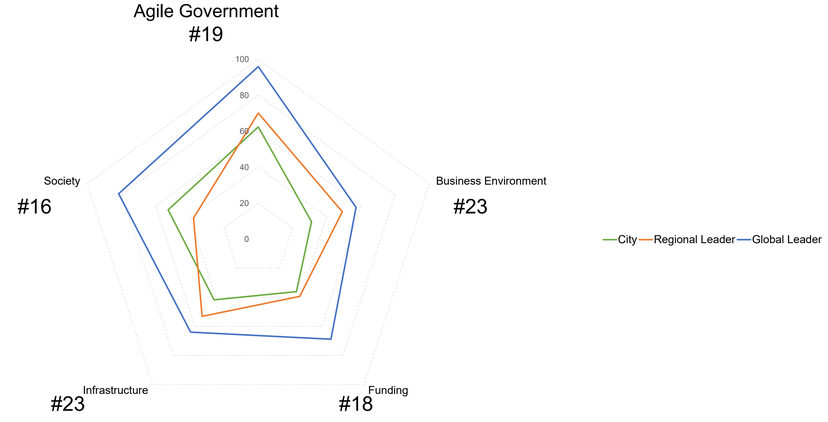
20

In 2020, Dubai ranked 20th overall in the Dubai Innovation Index, maintaining its position from the previous year. While delivering a consistent overall performance, the city's performance across the pillars fluctuated: it improved in rank between 2019 and 2020 for Infrastructure (24th to 23rd) and Business Environment (26th to 23rd), and but slipped for Society (15th to 16th) and Funding (13th to 18th). As for the fifth pillar, Agile Government, it remained consistent, maintaining a solid 19th place on this pillar. Though it was placed lower on Society and Funding, they remain the pillars on which Dubai performs highest. Its strengths include Institutional Trust, where the city ranked 4th both years, and Inward FDI Flow, in which the city improved from 16th place to 10th place between 2019 and 2020. The drop in ranks for the two pillars may be attributed to a drop in its ranking for Social Networks from 10th in 2019 to 18th in 2020 and a fall in its rankings for Venture Capital Availability from 3rd to 5th.

Dubai's Ranking & Score in the DII over time



Dubai's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	2	▼1
Labor Force Participation Rate (% of total pop ages 15+)	2	—
Logistics Performance	3	—
Population ages 15-64 (% of total)	3	—
Safety Index	3	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Graduates in Science and Engineering, %	9	▲9
Inward FDI Flow (US$ Million)	10	▲6
Environmental Performance	19	▲5
Value of Greenfield Investments by Destination	8	▲3
Regulatory Enforcement	9	▲3

Dubai's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Regulatory Enforcement	9	▲3
Trade Tariffs, %Duty	13	—
E-Government Development Index	15	▲1
Government Effectiveness	16	▼1
Government Integrity	17	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Regulatory Enforcement	9	▲3
E-Government Development Index	15	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	3	—
ICT Access	9	▲1
ICT Services Import	16	▲3
Environmental Performance	19	▲5
GDP (PPP) per kg of oil equivalent (Energy Use)	20	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Environmental Performance	19	▲5
ICT Services Import	16	▲3
ICT Access	9	▲1
GDP (PPP) per kg of oil equivalent (Energy Use)	20	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Venture Capital Availability	5	▼2
Value of Greenfield Investments by Destination	8	▲3
Inward FDI Flow (US$ Million)	10	▲6
Global Financial Centres Index	13	▼2
Investment Environment	20	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	10	▲6
Value of Greenfield Investments by Destination	8	▲3

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Labor Force Participation Rate (% of total pop ages 15+)	2	—
Creative Goods Exports, %	5	▲1
New Business Density	10	▼1
Unemployment, total (% total labor force)	14	▼12
Enterprise Conditions	14	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Creative Goods Exports, %	5	▲1
ICT Services Export	14	▲1
Global Entertainment and Media Output (/Th population)	20	▲1
Scientific & Technical Articles	31	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	2	▼1
Population ages 15-64 (% of total)	3	—
Safety Index	3	—
Institutional Trust	4	—
No. of Unis in Top 200 World University Rankings	6	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Graduates in Science and Engineering, %	9	▲9
Political Stability and Absence of Violence/Terrorism	10	▲1

Hamburg, Germany

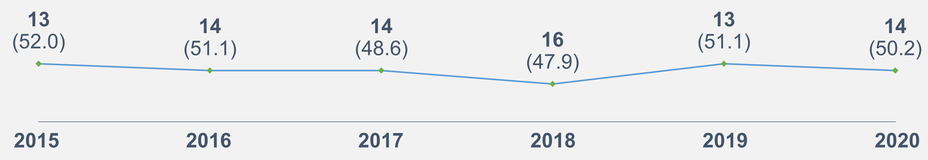
DII 2020 Rank

14

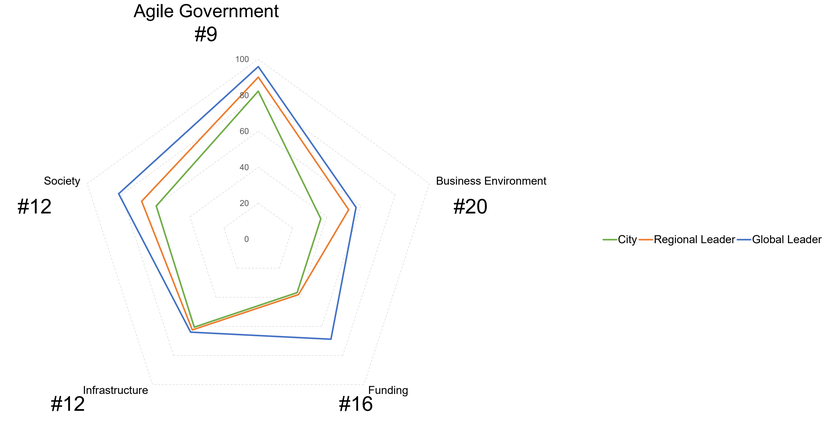
New City

In 2020, Hamburg held 14th place overall for innovation, one place below 2019. The city remained consistent in ranking across both Society (12th) and Business Environment (20th) but saw a fall in its overall ranking for Infrastructure (8th to 12th), Funding (15th to 16th) and Agile Government (8th to 9th) between 2019 and 2020. Hamburg's performance across certain indicators influenced the drop in rankings, for example, a relative decrease in the Number of Venture Capital Deals and Inward FDI Flow within the Funding pillar. However, the overall decrease in its ranking on Funding did not prevent the city improving on other metrics in this area. Hamburg increased Venture Capital Availability for example, driving its ranking in that indicator from 6th place to 3rd place between 2019 and 2020. In Infrastructure, meantime, the city dropped in rank with regard to ICT Services Import, ICT Access, and Healthcare, but still topped our ranking for Logistics Performance in both 2019 and 2020.

Hamburg's Ranking & Score in the DII over time



Hamburg's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	1	—
Graduates in Science and Engineering, %	2	▼1
Economic Quality	3	—
Human Development Index (HDI)	3	—
Perceived Tolerance of Immigrants	3	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	6	▲22
Services etc., Value Added (annual % growth)	13	▲8
Social Networks	8	▲5
Venture Capital Availability	3	▲3
Total Value of Stocks Traded (% of GDP)	16	▲2

Hamburg's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	3	—
Regulatory Enforcement	3	▲1
Regulatory Quality	6	—
Government Effectiveness	9	—
Government Integrity	10	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Regulatory Enforcement	3	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	1	—
ICT Access	4	▼1
Environmental Performance	7	—
Healthcare Index	8	▼4
Energy Sustainability Index (Energy Performance)	9	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP (PPP) per kg of oil equivalent (Energy Use)	9	▲1
ICT Services Import	29	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Venture Capital Availability	3	▲3
Claims on Central Government, etc. (%GDP)	10	▲1
Investment Environment	13	—
GERD: Performed by Business Enterprise	16	▲1
Number of Venture Capital Deals (fractional counting)	22	▼6

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Venture Capital Availability	3	▲3
Value of Greenfield Investments by Destination	26	▲2
Claims on Central Government, etc. (%GDP)	10	▲1
GERD: Performed by Business Enterprise	16	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Economic Quality	3	—
Enterprise Conditions	5	—
Manufacturing Value Added (annual % growth)	6	▲22
Cost of Redundancy Dismissal, salary weeks	7	—
ICTs & Organizational Model Creation	7	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	6	▲22
Services etc., Value Added (annual % growth)	13	▲8
Total Value of Stocks Traded (% of GDP)	16	▲2
Market Capitalization (% of GDP)	20	▲2
Labor Force Participation Rate (% of total pop ages 15+)	22	▲2

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Graduates in Science and Engineering, %	2	▼1
Human Development Index (HDI)	3	—
Perceived Tolerance of Immigrants	3	—
Perceived Tolerance of Ethnic Minorities	4	—
No. of Unis in Top 200 World University Rankings	6	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Social Networks	8	▲5

Hong Kong, China

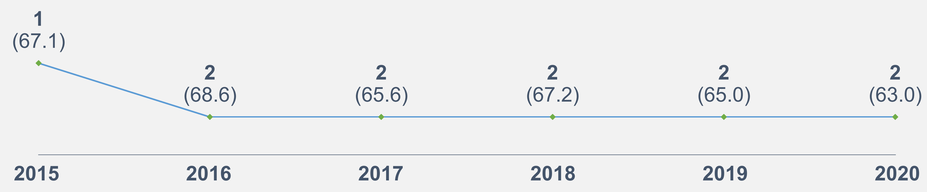
DII 2020 Rank

2

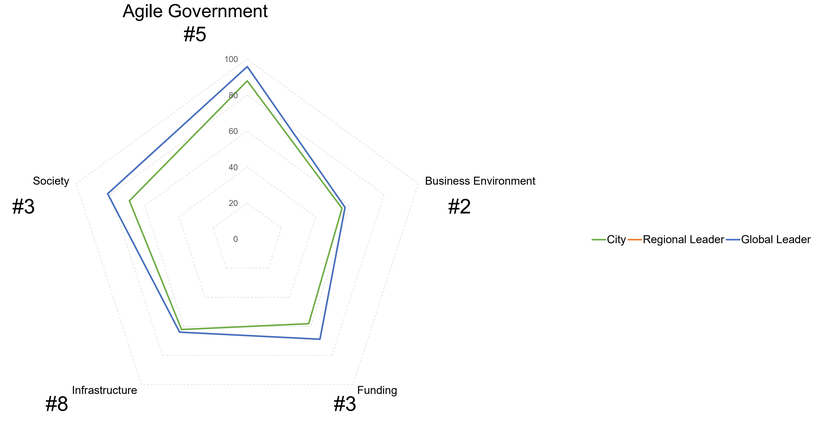
Top 10

In 2020, Hong Kong ranked 2nd overall, maintaining its stellar performance of the four previous years. The city ranked among the top five across four of the pillars in 2020: Business Environment (2nd), Funding (3rd), Society (3rd) and Agile Government (5th). On Funding, it edged up from 4th (2019) to 3rd (2020), as it became the number one city for foreign investment, with a substantial increase in the number of venture capital deals compared to the previous year. Although Hong Kong did not rank among the top five for Infrastructure, it remained in the top 10, moving up from 9th place in 2019 to 8th in 2020. The city's weakest performance was on Healthcare in both years. Meantime, within Infrastructure it ranked first for Energy Use and ICT Access. The largest drop was seen in institutional trust, although it improved against several other societal metrics.

Hong Kong's Ranking & Score in the DII over time



Hong Kong's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	1	—
Enterprise Conditions	1	—
GDP (PPP) per kg of oil equivalent (Energy Use)	1	—
Global Entertainment and Media Output (/Th population)	1	—
Market Capitalization (% of GDP)	1	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Services etc., Value Added (annual % growth)	22	▲9
GDP per Capita Change (%)	15	▲8
Number of Venture Capital Deals (fractional counting)	4	▲7
Political Stability and Absence of Violence/Terrorism	22	▲3
The Global Entrepreneurship & Development Index	7	▲2

Hong Kong's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	1	—
Regulatory Quality	2	—
Regulatory Enforcement	6	—
Government Effectiveness	7	▼1
Government Integrity	9	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
GDP (PPP) per kg of oil equivalent (Energy Use)	1	—
ICT Access	1	▲1
Logistics Performance	4	—
Energy Sustainability Index (Energy Performance)	12	—
Computer Software Spending	14	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
ICT Access	1	▲1
ICT Services Import	15	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	1	—
Inward FDI Flow (US$ Million)	1	▲1
Investment Environment	2	—
Global Financial Centres Index	4	▲1
Number of Venture Capital Deals (fractional counting)	4	▲7

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Number of Venture Capital Deals (fractional counting)	4	▲7
Inward FDI Flow (US$ Million)	1	▲1
Global Financial Centres Index	4	▲1
GERD: Performed by Business Enterprise	23	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Enterprise Conditions	1	—
Global Entertainment and Media Output (/Th population)	1	—
Market Capitalization (% of GDP)	1	—
New Business Density	1	—
Total Value of Stocks Traded (% of GDP)	1	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Services etc., Value Added (annual % growth)	22	▲9
GDP per Capita Change (%)	15	▲8
The Global Entrepreneurship & Development Index	7	▲2
Labor Force Participation Rate (% of total pop ages 15+)	25	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
No. of Unis in Top 200 World University Rankings	1	—
Human Development Index (HDI)	2	—
Population ages 15-64 (% of total)	2	—
Assessment in Reading, Mathematics & Science	3	▼1
Perceived Tolerance of Immigrants	4	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Political Stability and Absence of Violence/Terrorism	22	▲3
Safety Index	4	▲1
School Life Expectancy, years	8	▲1

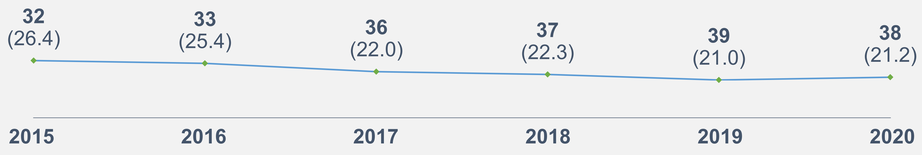
Johannesburg, South Africa

DII 2020 Rank

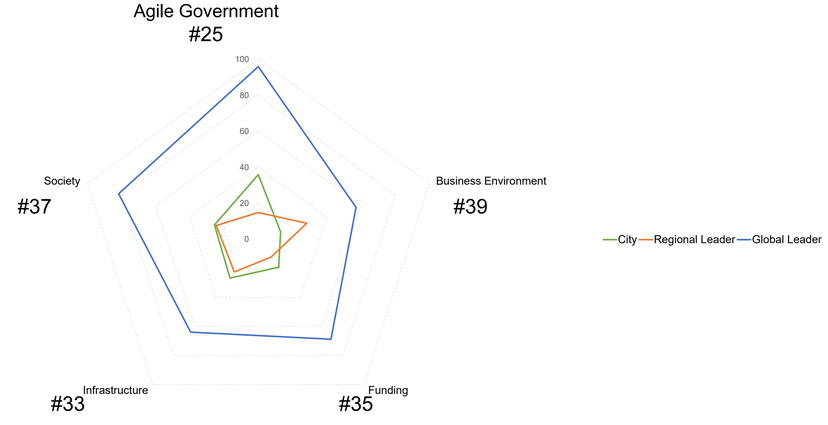
38

In 2020, Johannesburg moved up one place from its prior ranking in 2020, to reach 38th on the innovation index. The city's strongest overall performance in the pillars goes to Agile Government, where it took 25th place in both 2019 and 2020. Johannesburg has great room for improvement in its Business Environment, where it ranked 39th both years. The largest improvement across the five pillars was seen in Infrastructure, where Johannesburg moved up two places from 35th (2019) to 33rd (2020). The performance increase on this pillar is primarily due to enhanced Environmental Performance, along with an overall top 10 performance in the Logistics Performance indicator (9th). The second notable point of improvement for the city was in Funding, where it shifted from 36th to 35th place in 2020. Within Funding, Johannesburg showed significant improvement in ranks from 21st (2019) to 8th (2020) in the Claims on Central Government, Etc. (% GDP) indicator.

Johannesburg's Ranking & Score in the DII over time



Johannesburg's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	6	▼1
No. of Unis in Top 200 World University Rankings	6	—
Perceived Tolerance of Ethnic Minorities	6	—
Claims on Central Government, etc. (%GDP)	8	▲13
Logistics Performance	9	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	8	▲13
Services etc., Value Added (annual % growth)	19	▲8
Manufacturing Value Added (annual % growth)	22	▲5
Inward FDI Flow (US$ Million)	29	▲5
Regulatory Enforcement	13	▲3

Johannesburg's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Regulatory Enforcement	13	▲3
Trade Tariffs, %Duty	16	—
Government Integrity	24	▼1
Regulatory Quality	24	—
Government Effectiveness	25	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Regulatory Enforcement	13	▲3

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	9	—
ICT Services Import	23	—
Environmental Performance	26	▲3
Energy Sustainability Index (Energy Performance)	27	▼2
ICT Access	28	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Environmental Performance	26	▲3
GDP (PPP) per kg of oil equivalent (Energy Use)	28	▲2

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	8	▲13
Number of Venture Capital Deals (fractional counting)	25	▼4
Venture Capital Availability	27	—
Investment Environment	28	—
Domestic Credit to Private Sector	29	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	8	▲13
Inward FDI Flow (US$ Million)	29	▲5
GERD: Performed by Business Enterprise	31	▲1
Global Financial Centres Index	31	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Market Capitalization (% of GDP)	12	▲2
New Business Density	14	▼1
Rate of GDP Annual Growth	19	▼6
No. of JV-Strategic Alliance Deals (fractional counting)	19	▼4
Scientific & Technical Articles	19	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Services etc., Value Added (annual % growth)	19	▲8
Manufacturing Value Added (annual % growth)	22	▲5
PCT Patents by Origin/bn PPP$ GDP	25	▲3
Market Capitalization (% of GDP)	12	▲2
Scientific & Technical Articles	19	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	6	▼1
No. of Unis in Top 200 World University Rankings	6	—
Perceived Tolerance of Ethnic Minorities	6	—
Interpersonal Trust	16	▼2
Population ages 15-64 (% of total)	17	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Rule of Law Index (Order and Security)	26	▲1

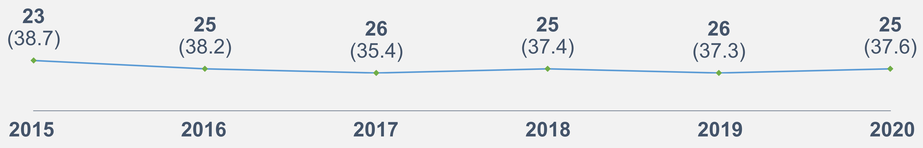
Kuala Lumpur

DII 2020 Rank

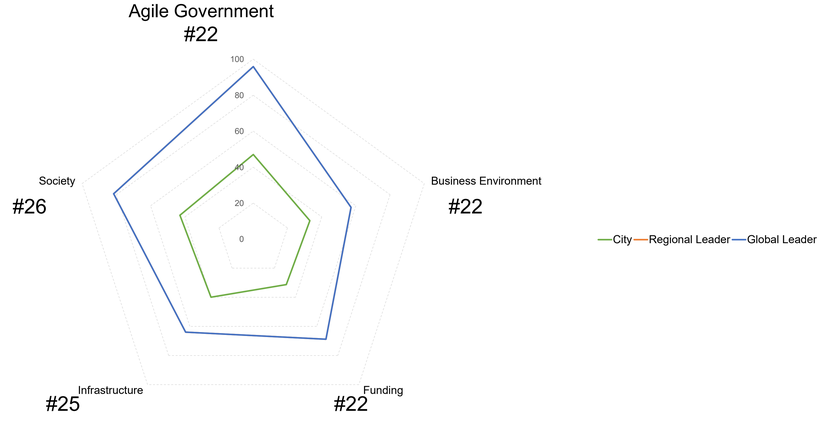
25

In 2020, Kuala Lumpur ranked 25th overall, up one place from 2019 when the city ranked 26th. The city improved its ranking across three of the five pillars, including Agile Government (from 23rd to 22nd), Infrastructure (from 27th to 25th) and Society (from 27th to 26th). Although the city's performance on Funding and Business Environment eased on both from 21st in 2019 to 22nd in 2020, those two pillars remain the ones in which Kuala Lumpur ranks highest in its performance across the board. The falls on the two pillars are attributable to the decrease in New Business Density and Enterprise Conditions. The improvement on other pillars may be attributed to the city's strides in e-government, where its efforts are having a positive impact on the Government Effectiveness and Government Integrity indicators. Enterprise conditions and the number of new businesses registered a decrease and the lack of domestic credit to the private sector has seen the number of venture capital deals and joint venture alliances decrease, leading to lower overall economic growth. .

Kuala Lumpur's Ranking & Score in the DII over time



Kuala Lumpur's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Graduates in Science and Engineering, %	1	▲3
Cost of Redundancy Dismissal, salary weeks	3	—
Creative Goods Exports, %	3	—
Social Networks	3	▲5
Perceived Tolerance of Ethnic Minorities	4	▲2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Social Networks	3	▲5
Institutional Trust	6	▲4
Graduates in Science and Engineering, %	1	▲3
Total Value of Stocks Traded (% of GDP)	20	▲3
Market Capitalization (% of GDP)	23	▲3

Kuala Lumpur's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	11	—
Regulatory Enforcement	16	▲1
Government Effectiveness	19	▲1
Regulatory Quality	23	—
Government Integrity	23	▲2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Government Integrity	23	▲2
Regulatory Enforcement	16	▲1
Government Effectiveness	19	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	11	—
GDP (PPP) per kg of oil equivalent (Energy Use)	17	▲2
Energy Sustainability Index (Energy Performance)	19	—
ICT Access	20	—
ICT Services Import	20	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP (PPP) per kg of oil equivalent (Energy Use)	17	▲2
ICT Services Import	20	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	13	▲1
Venture Capital Availability	17	▼9
Investment Environment	19	—
Value of Greenfield Investments by Destination	21	▲1
Global Financial Centres Index	24	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GERD: Performed by Business Enterprise	27	▲2
Inward FDI Flow (US$ Million)	28	▲2
Claims on Central Government, etc. (%GDP)	13	▲1
Value of Greenfield Investments by Destination	21	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Cost of Redundancy Dismissal, salary weeks	3	—
Creative Goods Exports, %	3	—
Manufacturing Value Added (annual % growth)	9	—
Unemployment, total (% total labor force)	10	▼1
Labor Force Participation Rate (% of total pop ages 15+)	10	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Total Value of Stocks Traded (% of GDP)	20	▲3
Market Capitalization (% of GDP)	23	▲3
GDP per Capita Change (%)	24	▲2
PCT Patents by Origin/bn PPP$ GDP	31	▲2
Labor Force Participation Rate (% of total pop ages 15+)	10	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Graduates in Science and Engineering, %	1	▲3
Social Networks	3	▲5
Perceived Tolerance of Ethnic Minorities	4	▲2
No. of Unis in Top 200 World University Rankings	5	—
Population ages 15-64 (% of total)	6	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Social Networks	3	▲5
Institutional Trust	6	▲4
Graduates in Science and Engineering, %	1	▲3
Perceived Tolerance of Ethnic Minorities	4	▲2
Assessment in Reading, Mathematics & Science	23	▲2

London, UK

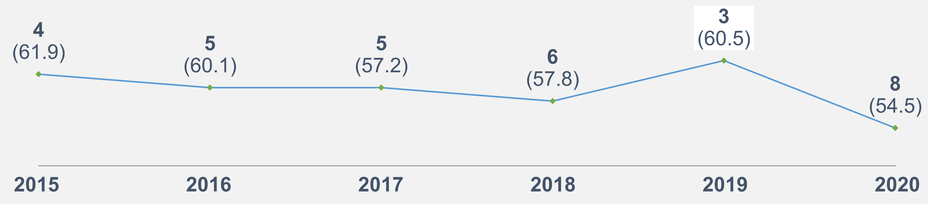
DII 2020 Rank

8

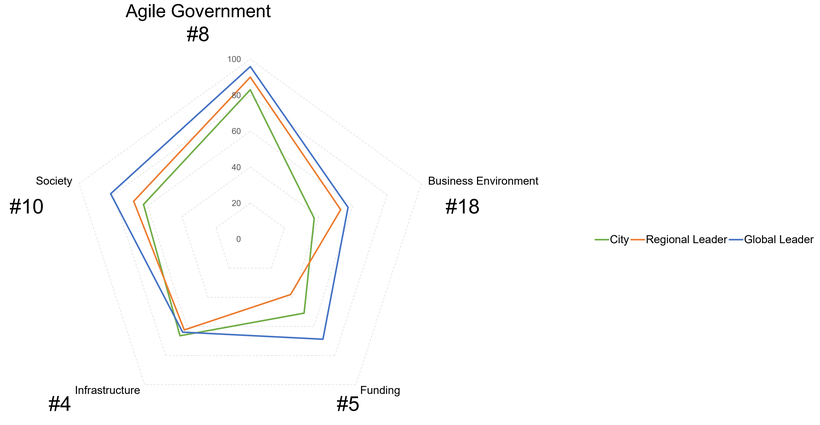
Top 10

In 2020, London ranked 8th overall, maintaining a top 10 position, despite its slide from 3rd place in 2019. The city fell in rankings for four of the pillars: Society, Infrastructure, Funding, and Business Environment. However, even after the drop in rankings, London maintained a top 10 ranking in three of those pillars: Infrastructure (4th), Funding (5th), and Society (10th). The only pillar to rank outside of the top 10 in 2020 is the Business Environment, coming in at 18th, although it ranked 8th in 2019. London's ranking for Agile Government improved: it rose from 9th place in 2019 to 8th place in 2020. Notably, the city ranked 2nd in ICT Access and 4th in Investment Environment in 2020, and it is among the top three for Logistics Performance and Number of Venture Capital Deals. Additionally, the Number of Joint Venture Strategic Alliances increased despite a significant fall in FDI inflow.

London's Ranking & Score in the DII over time



London's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
No. of Unis in Top 200 World University Rankings	1	—
Value of Greenfield Investments by Destination	1	—
ICT Access	2	▼1
Global Financial Centres Index	2	—
Perceived Tolerance of Immigrants	3	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	24	▲9
Unemployment, total (% total labor force)	8	▲5
Assessment in Reading, Mathematics & Science	9	▲5
Labor Force Participation Rate (% of total pop ages 15+)	15	▲3
Environmental Performance	3	▲2

London's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	3	—
E-Government Development Index	6	▼2
Regulatory Enforcement	6	—
Government Integrity	7	▼1
Regulatory Quality	9	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICT Access	2	▼1
Logistics Performance	3	—
Environmental Performance	3	▲2
Computer Software Spending	4	—
GDP (PPP) per kg of oil equivalent (Energy Use)	4	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Environmental Performance	3	▲2
Healthcare Index	19	▲2
GDP (PPP) per kg of oil equivalent (Energy Use)	4	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Value of Greenfield Investments by Destination	1	—
Global Financial Centres Index	2	—
Number of Venture Capital Deals (fractional counting)	3	—
Investment Environment	4	▼1
Domestic Credit to Private Sector	6	▼2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
New Business Density	3	—
No. of JV-Strategic Alliance Deals (fractional counting)	4	▲1
ICTs & Organizational Model Creation	5	—
The Global Entrepreneurship & Development Index	5	—
Global Entertainment and Media Output (/Th population)	6	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	24	▲9
Unemployment, total (% total labor force)	8	▲5
Labor Force Participation Rate (% of total pop ages 15+)	15	▲3
No. of JV-Strategic Alliance Deals (fractional counting)	4	▲1
Scientific & Technical Articles	6	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
No. of Unis in Top 200 World University Rankings	1	—
Perceived Tolerance of Immigrants	3	▼1
Perceived Tolerance of Ethnic Minorities	4	▼1
School Life Expectancy, years	6	▼3
Human Development Index (HDI)	9	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Assessment in Reading, Mathematics & Science	9	▲5

Madrid, Spain

DII 2020 Rank

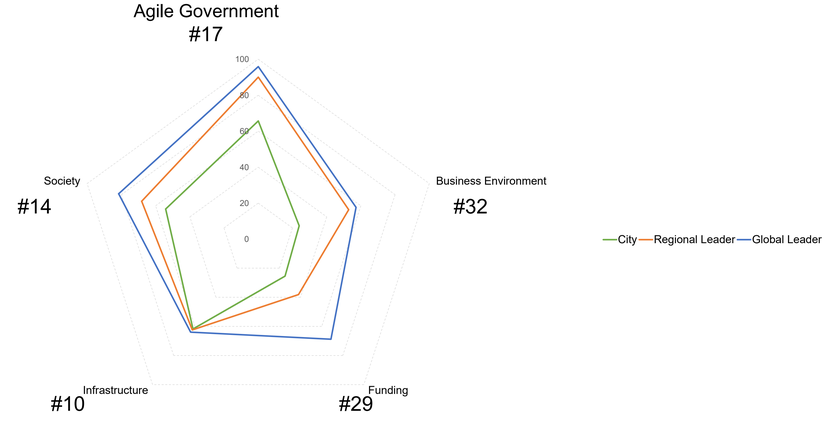
22

In 2020, Madrid ranked 22nd overall, moving down a spot from its 2019 ranking. Its 2020 performance across three of the pillars - Society (14th), Business Environment (32nd), and Agile Government (17th) - was consistent with its rankings in 2019. On Funding, though, it fell from 26th to 29th, while gaining two places on Infrastructure to reach 10th place in 2020. Although the city witnessed a drop in Environmental Performance, its high performance on other aspects within the Infrastructure pillar offset the decrease. For example, Madrid ranked 5th in both 2019 and 2020 for Logistics Performance, and it ranked 5th in Healthcare for 2019 and 3rd in 2020. The city also continues to have a relatively strong investment environment, achieving a five-place increase in foreign direct investment (FDI) between 2019 and 2020.

Madrid's Ranking & Score in the DII over time



Madrid's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	2	—
Perceived Tolerance of Ethnic Minorities	3	—
Trade Tariffs, %Duty	3	—
Healthcare Index	3	▲2
Logistics Performance	5	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	23	▲5
Number of Venture Capital Deals (fractional counting)	17	▲4
Social Networks	19	▲3
Healthcare Index	3	▲2
ICT Services Import	13	▲2

Madrid's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	3	—
Regulatory Enforcement	12	▲1
E-Government Development Index	13	▲1
Regulatory Quality	17	▲1
Government Integrity	19	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Regulatory Enforcement	12	▲1
E-Government Development Index	13	▲1
Regulatory Quality	17	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Healthcare Index	3	▲2
Logistics Performance	5	—
GDP (PPP) per kg of oil equivalent (Energy Use)	6	▲1
Energy Sustainability Index (Energy Performance)	8	—
Computer Software Spending	10	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Healthcare Index	3	▲2
ICT Services Import	13	▲2
GDP (PPP) per kg of oil equivalent (Energy Use)	6	▲1
ICT Access	14	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Value of Greenfield Investments by Destination	9	▲1
Domestic Credit to Private Sector	15	—
Number of Venture Capital Deals (fractional counting)	17	▲4
Investment Environment	18	—
Global Financial Centres Index	19	▼3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	23	▲5
Number of Venture Capital Deals (fractional counting)	17	▲4
Value of Greenfield Investments by Destination	9	▲1
GERD: Performed by Business Enterprise	22	▲1
Claims on Central Government, etc. (%GDP)	24	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Cost of Redundancy Dismissal, salary weeks	9	—
Scientific & Technical Articles	11	▲1
New Business Density	13	▼2
ICT Services Export	13	—
Total Value of Stocks Traded (% of GDP)	14	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Scientific & Technical Articles	11	▲1
Market Capitalization (% of GDP)	14	▲1
Number of Trademark Applications Issued to Residents	15	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	2	—
Perceived Tolerance of Ethnic Minorities	3	—
No. of Unis in Top 200 World University Rankings	5	—
School Life Expectancy, years	5	▲1
Interpersonal Trust	13	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Social Networks	19	▲3
Safety Index	14	▲2
School Life Expectancy, years	5	▲1
Assessment in Reading, Mathematics & Science	18	▲1

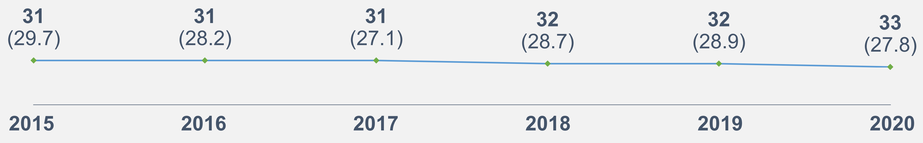
Mexico City, Mexico

DII 2020 Rank

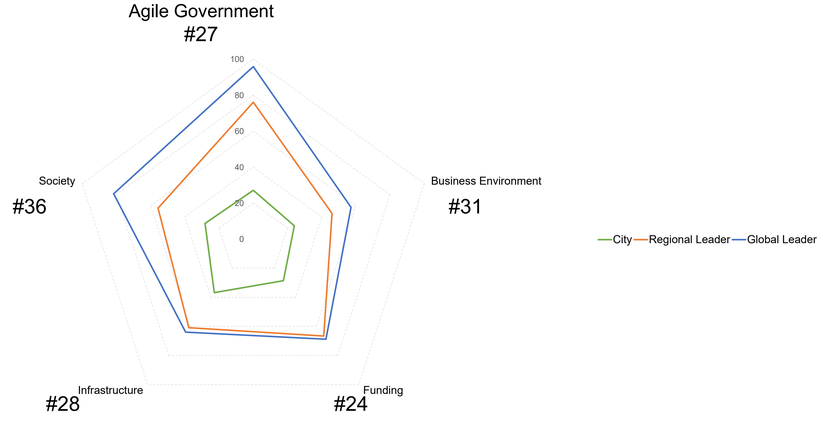
33

In 2020, Mexico City ranked 33rd in the Dubai Innovation Index, moving down a place from 2019. Across each of the pillars, the city retained its ranking on Society (36th), Infrastructure (28th), Funding (24th), and Agile Government (27th). Business Environment is the only pillar in which Mexico City dropped in place between 2019 and 2020, going from 30th to 31st. The city performs strongest in Funding with respect to its innovation ecosystem. The key contributors to its performance on the Funding pillar are Inward FDI Flow, in which the city moved from 12th place to 10th, and Venture Capital Availability, where Mexico City climbed from 10th to 5th place in 2020. The city's fall on the Business Environment pillar stems from lower placings for GDP per Capita Change and its Labor Force Participation Rate.

Mexico City's Ranking & Score in the DII over time



Mexico City's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Creative Goods Exports, %	4	—
Venture Capital Availability	4	▲6
No. of Unis in Top 200 World University Rankings	5	—
Perceived Tolerance of Ethnic Minorities	5	—
Cost of Redundancy Dismissal, salary weeks	6	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Venture Capital Availability	4	▲6
Services etc., Value Added (annual % growth)	25	▲4
Social Networks	6	▲3
Total Value of Stocks Traded (% of GDP)	21	▲3
New Business Density	18	▲2

Mexico City's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	12	—
Regulatory Enforcement	20	▲1
Regulatory Quality	25	—
E-Government Development Index	26	—
Government Effectiveness	28	▲2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Government Effectiveness	28	▲2
Regulatory Enforcement	20	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
GDP (PPP) per kg of oil equivalent (Energy Use)	11	▼1
Logistics Performance	12	—
Energy Sustainability Index (Energy Performance)	17	—
Environmental Performance	20	▲2
Computer Software Spending	27	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Environmental Performance	20	▲2
ICT Services Import	37	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Venture Capital Availability	4	▲6
Value of Greenfield Investments by Destination	11	▼6
Inward FDI Flow (US$ Million)	11	▲1
Claims on Central Government, etc. (%GDP)	18	▲1
Number of Venture Capital Deals (fractional counting)	25	▼4

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Venture Capital Availability	4	▲6
Inward FDI Flow (US$ Million)	11	▲1
Claims on Central Government, etc. (%GDP)	18	▲1
GERD: Performed by Business Enterprise	30	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Creative Goods Exports, %	4	—
Cost of Redundancy Dismissal, salary weeks	6	—
Unemployment, total (% total labor force)	12	▼1
Number of Trademark Applications Issued to Residents	14	▲1
Rate of GDP Annual Growth	16	▼11

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Services etc., Value Added (annual % growth)	25	▲4
Total Value of Stocks Traded (% of GDP)	21	▲3
New Business Density	18	▲2
Market Capitalization (% of GDP)	21	▲2
Global Entertainment and Media Output (/Th population)	23	▲2

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
No. of Unis in Top 200 World University Rankings	5	—
Perceived Tolerance of Ethnic Minorities	5	—
Perceived Tolerance of Immigrants	6	▲1
Social Networks	6	▲3
Population ages 15-64 (% of total)	12	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Social Networks	6	▲3
Interpersonal Trust	29	▲2
Perceived Tolerance of Immigrants	6	▲1
Political Stability and Absence of Violence/Terrorism	30	▲1

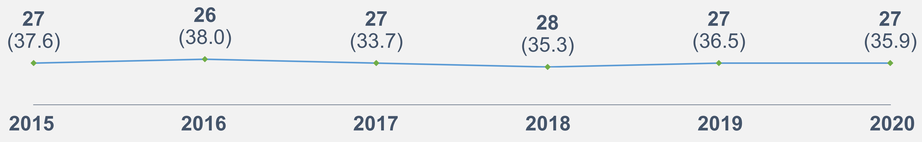
Milan, Italy

DII 2020 Rank

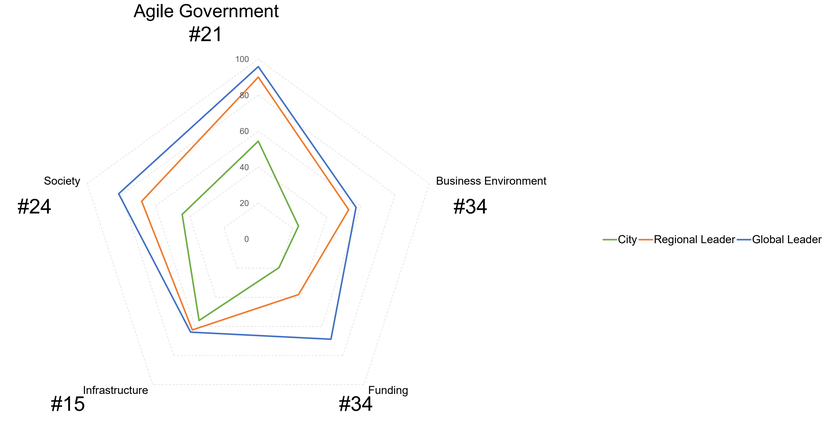
27

In 2020, Milan ranked 27th overall, unchanged from 2019. On three pillars, the city's performance was identical in 2020 and 2019: Infrastructure (15th), Funding (34th), and Agile Government (21st). On the Society ranking, Milan eased from 23rd in 2019 to 24th in 2020. In the Business Environment, Milan moved up a place from 35th in 2019 to 34th in 2020, largely due to an increase in Manufacturing Value Added (Annual % Growth), wherein it climbed from 25th in 2019 to 17th in 2020.

Milan's Ranking & Score in the DII over time



Milan's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	3	—
Perceived Tolerance of Ethnic Minorities	4	▲1
Perceived Tolerance of Immigrants	4	▲1
No. of Unis in Top 200 World University Rankings	5	—
GDP (PPP) per kg of oil equivalent (Energy Use)	5	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Social Networks	14	▲12
Manufacturing Value Added (annual % growth)	17	▲8
Global Financial Centres Index	15	▲7
Services etc., Value Added (annual % growth)	27	▲3
Global Entertainment and Media Output (/Th population)	17	▲2

Milan's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	3	—
Regulatory Enforcement	15	—
Regulatory Quality	19	▲2
E-Government Development Index	21	▼3
Government Integrity	21	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Regulatory Quality	19	▲2

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
GDP (PPP) per kg of oil equivalent (Energy Use)	5	▲1
Logistics Performance	6	—
Energy Sustainability Index (Energy Performance)	7	—
Environmental Performance	12	▼4
Computer Software Spending	13	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP (PPP) per kg of oil equivalent (Energy Use)	5	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Global Financial Centres Index	15	▲7
Domestic Credit to Private Sector	19	▼1
GERD: Performed by Business Enterprise	21	▲1
Investment Environment	21	▲1
Number of Venture Capital Deals (fractional counting)	25	▼4

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Global Financial Centres Index	15	▲7
Claims on Central Government, etc. (%GDP)	27	▲2
GERD: Performed by Business Enterprise	21	▲1
Investment Environment	21	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Creative Goods Exports, %	13	—
Scientific & Technical Articles	13	▲1
Rate of GDP Annual Growth	15	▼7
PCT Patents by Origin/bn PPP$ GDP	17	▲1
Global Entertainment and Media Output (/Th population)	17	▲2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	17	▲8
Services etc., Value Added (annual % growth)	27	▲3
Global Entertainment and Media Output (/Th population)	17	▲2
Scientific & Technical Articles	13	▲1
PCT Patents by Origin/bn PPP$ GDP	17	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Ethnic Minorities	4	▲1
Perceived Tolerance of Immigrants	4	▲1
No. of Unis in Top 200 World University Rankings	5	—
School Life Expectancy, years	13	▼1
Social Networks	14	▲12

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Social Networks	14	▲12
Perceived Tolerance of Ethnic Minorities	4	▲1
Perceived Tolerance of Immigrants	4	▲1
Political Stability and Absence of Violence/Terrorism	16	▲1
Assessment in Reading, Mathematics & Science	20	▲1

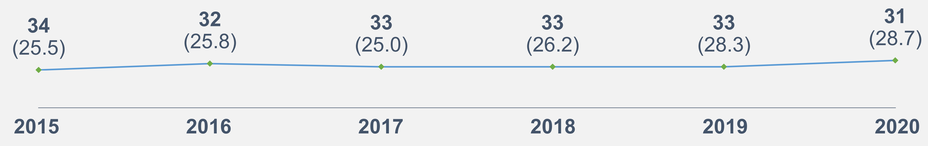
Moscow, Russia

DII 2020 Rank

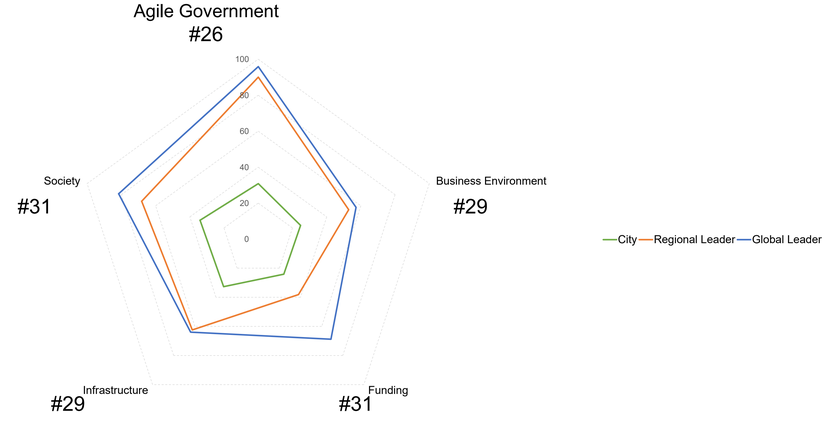
31

In 2020, Moscow ranked 31st overall, an increase of two ranks from its 2019 standing. Across the five pillars, the city improved on Infrastructure (32nd to 29th) and Business Environment (37th to 29th), but slipped on Society (30th to 31st), and marked time on the Funding (31st) and Agile Government (26th) pillars. Moscow's rankings on the Healthcare Index and the Human Development Index dropped, contributing to an overall fall on the Society pillar. On the other hand, the city's ranking for Manufacturing Value Added, Market Capitalization, and New Business Density saw significant increases, driving the overall improvement in its Business Environment ranking.

Moscow's Ranking & Score in the DII over time



Moscow's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	3	—
New Business Density	4	▲4
Manufacturing Value Added (annual % growth)	4	▲7
No. of Unis in Top 200 World University Rankings	5	—
Graduates in Science and Engineering, %	6	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Services etc., Value Added (annual % growth)	7	▲11
Population ages 15-64 (% of total)	8	▲10
Manufacturing Value Added (annual % growth)	4	▲7
New Business Density	4	▲4
Total Value of Stocks Traded (% of GDP)	18	▲4

Moscow's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	10	—
Regulatory Enforcement	19	—
E-Government Development Index	20	—
Government Integrity	28	▼1
Government Effectiveness	28	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	14	—
ICT Services Import	21	▼4
Environmental Performance	22	▼3
Computer Software Spending	23	—
ICT Access	23	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP (PPP) per kg of oil equivalent (Energy Use)	29	▲2

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	3	—
Value of Greenfield Investments by Destination	17	▼8
Domestic Credit to Private Sector	18	▲1
Inward FDI Flow (US$ Million)	25	▼11
Number of Venture Capital Deals (fractional counting)	25	▼4

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GERD: Performed by Business Enterprise		▲21
Global Financial Centres Index	26	▲2
Domestic Credit to Private Sector	18	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
New Business Density	4	▲4
Manufacturing Value Added (annual % growth)	4	▲7
Services etc., Value Added (annual % growth)	7	▲11
Number of Trademark Applications Issued to Residents	9	—
Cost of Redundancy Dismissal, salary weeks	10	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Services etc., Value Added (annual % growth)	7	▲11
Manufacturing Value Added (annual % growth)	4	▲7
New Business Density	4	▲4
Total Value of Stocks Traded (% of GDP)	18	▲4
GDP per Capita Change (%)	16	▲3

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
No. of Unis in Top 200 World University Rankings	5	—
Graduates in Science and Engineering, %	6	▼1
Perceived Tolerance of Ethnic Minorities	7	—
Perceived Tolerance of Immigrants	7	—
Population ages 15-64 (% of total)	8	▲10

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Population ages 15-64 (% of total)	8	▲10
Political Stability and Absence of Violence/Terrorism	26	▲1
Rule of Law Index (Order and Security)	32	▲1

Mumbai, India

DII 2020 Rank

36

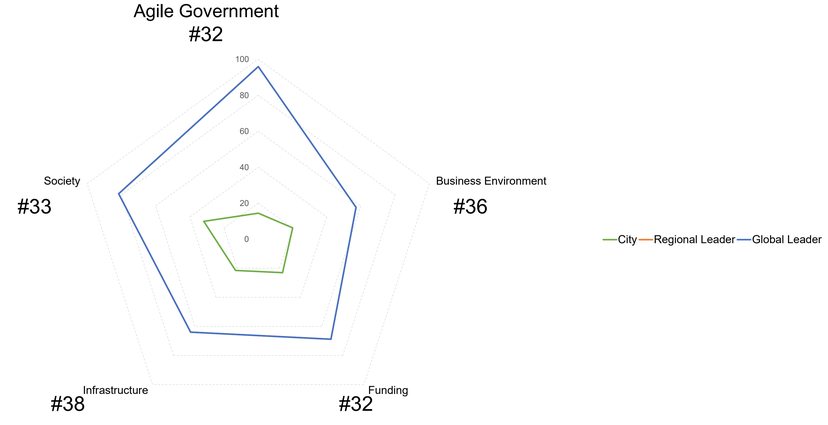
New City

In 2020, Mumbai ranked 36th, two places below its 2019 standing. The drop in overall ranking is mainly attributable to the city's slide on Funding (from 27th to 32nd) and Business Environment (from 31st to 36th). The Enterprise Conditions and GDP per Capita Change suffered during the pandemic, impacting overall performance in the Business Environment. In contrast, Mumbai saw improvements in both the Society (34th to 33rd) and Infrastructure (39th to 38th) pillars, as highlighted by its increased ranking in ICT Service Imports and all-around strong Logistics Performance (11th).

Mumbai's Ranking & Score in the DII over time



Mumbai's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Graduates in Science and Engineering, %	4	▼1
No. of Unis in Top 200 World University Rankings	5	—
Perceived Tolerance of Ethnic Minorities	5	▲1
Perceived Tolerance of Immigrants	7	—
Institutional Trust	9	▼3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	12	▲17
Interpersonal Trust	20	▲8
Total Value of Stocks Traded (% of GDP)	11	▲4
Inward FDI Flow (US$ Million)	15	▲4
Value of Greenfield Investments by Destination	15	▲4

Mumbai's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Regulatory Enforcement	19	▲1
Trade Tariffs, %Duty	23	—
Government Integrity	26	—
Government Effectiveness	27	—
Regulatory Quality	27	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Regulatory Enforcement	19	▲1
Regulatory Quality	27	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	11	—
GDP (PPP) per kg of oil equivalent (Energy Use)	19	▼1
Healthcare Index	21	—
Computer Software Spending	28	—
Energy Sustainability Index (Energy Performance)	30	▼2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
ICT Services Import	30	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	15	▲4
Value of Greenfield Investments by Destination	15	▲4
Venture Capital Availability	19	▼1
Claims on Central Government, etc. (%GDP)	20	▲2
Number of Venture Capital Deals (fractional counting)	25	▼4

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	15	▲4
Value of Greenfield Investments by Destination	15	▲4
Claims on Central Government, etc. (%GDP)	20	▲2
Domestic Credit to Private Sector	26	▲1
Investment Environment	30	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Cost of Redundancy Dismissal, salary weeks	11	—
Total Value of Stocks Traded (% of GDP)	11	▲4
Creative Goods Exports, %	12	—
ICT Services Export	12	—
Manufacturing Value Added (annual % growth)	12	▲17

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	12	▲17
Total Value of Stocks Traded (% of GDP)	11	▲4
Market Capitalization (% of GDP)	13	▲3
Number of Trademark Applications Issued to Residents	18	▲2
Unemployment, total (% total labor force)	23	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Graduates in Science and Engineering, %	4	▼1
No. of Unis in Top 200 World University Rankings	5	—
Perceived Tolerance of Ethnic Minorities	5	▲1
Perceived Tolerance of Immigrants	7	—
Institutional Trust	9	▼3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Interpersonal Trust	20	▲8
Political Stability and Absence of Violence/Terrorism	28	▲2
Perceived Tolerance of Ethnic Minorities	5	▲1

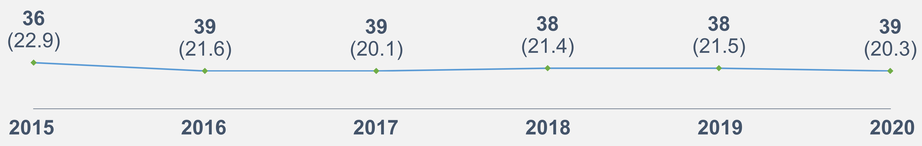
Nairobi, Kenya

DII 2020 Rank

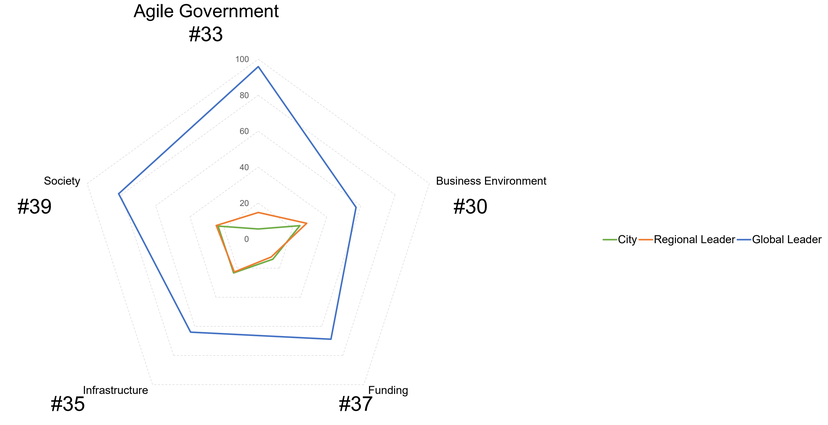
39

In 2020, Nairobi ranked 39th, down one rank from 38th in 2019. Despite this, the city did improve on the Infrastructure pillar, from 37th in 2019 to 35th in 2020. The improvement is attributable to enhanced performance in Energy Use, where the city gained two places between 2019 and 2020, as well as a one place improvement in ICT Import. On the other pillars, Nairobi's ranking was unchanged on Society (39th), Funding (37th) and Agile Government (33rd); while falling back on the Business Environment pillar. Although a drop in rankings of six places in Number of Joint Venture Strategic Alliances contributed heavily to the drop in overall ranking for the Business Environment pillar, Nairobi saw progress in other indicators within the pillar such as a rise from 29th place (2019) to 26th (2020) in Market Capitalization (% of GDP).

Nairobi's Ranking & Score in the DII over time



Nairobi's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Unemployment, total (% total labor force)	2	▲2
Labor Force Participation Rate (% of total pop ages 15+)	3	—
Perceived Tolerance of Ethnic Minorities	3	—
Rate of GDP Annual Growth	4	▼3
GDP per Capita Change (%)	4	▼2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Total Value of Stocks Traded (% of GDP)	25	▲4
Inward FDI Flow (US$ Million)	33	▲4
Interpersonal Trust	22	▲3
Market Capitalization (% of GDP)	26	▲3
Unemployment, total (% total labor force)	2	▲2

Nairobi's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	20	—
Regulatory Enforcement	20	▲1
E-Government Development Index	32	—
Regulatory Quality	32	—
Government Effectiveness	32	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Regulatory Enforcement	20	▲1
Government Effectiveness	32	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	14	—
Energy Sustainability Index (Energy Performance)	15	—
GDP (PPP) per kg of oil equivalent (Energy Use)	27	▲2
Environmental Performance	29	▼1
ICT Access	30	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP (PPP) per kg of oil equivalent (Energy Use)	27	▲2
ICT Services Import	31	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	11	▲1
Number of Venture Capital Deals (fractional counting)	25	▼6
Venture Capital Availability	28	—
Investment Environment	31	▼2
Inward FDI Flow (US$ Million)	33	▲4

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	33	▲4
Claims on Central Government, etc. (%GDP)	11	▲1
GERD: Performed by Business Enterprise	34	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Unemployment, total (% total labor force)	2	▲2
Labor Force Participation Rate (% of total pop ages 15+)	3	—
Rate of GDP Annual Growth	4	▼3
GDP per Capita Change (%)	4	▼2
ICT Services Export	10	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Total Value of Stocks Traded (% of GDP)	25	▲4
Market Capitalization (% of GDP)	26	▲3
Unemployment, total (% total labor force)	2	▲2

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Ethnic Minorities	3	—
Perceived Tolerance of Immigrants	4	▲1
No. of Unis in Top 200 World University Rankings	6	—
Population ages 15-64 (% of total)	20	—
Interpersonal Trust	22	▲3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Interpersonal Trust	22	▲3
Perceived Tolerance of Immigrants	4	▲1
Political Stability and Absence of Violence/Terrorism	32	▲1

New York, USA

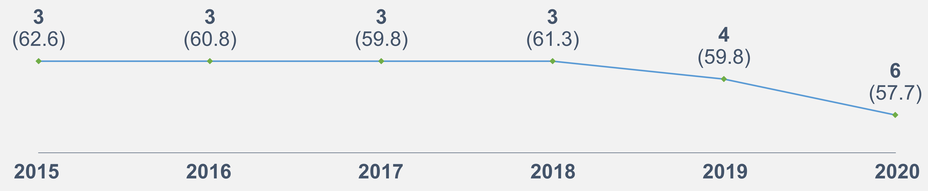
DII 2020 Rank

6

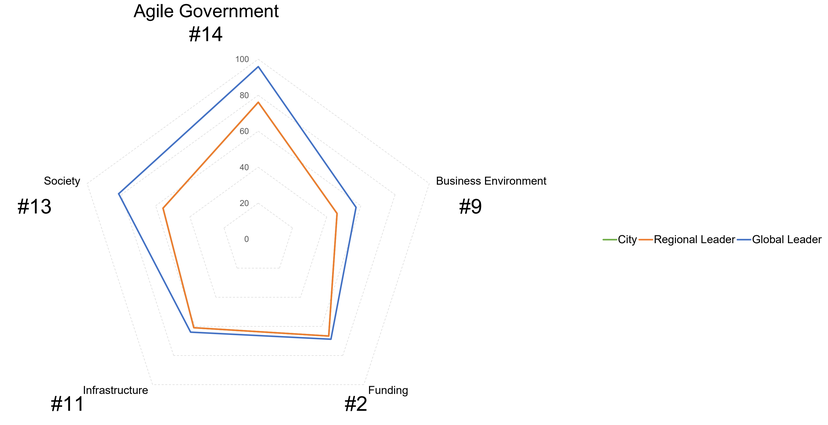
Top 10

In 2020, New York ranked 6th in the overall Dubai Innovation Index rankings, dropping two places from 4th in 2019. However, the drop in overall ranking does not reflect a fall across all elements of the ecosystem. The city progressed in Agile Government, moving from 15th in 2019 to 14th in 2020. On Funding and Infrastructure, New York holds 1st place rankings in several metrics: Global Financial Centre's Index, Computer Software Spending and ICT and Organization Model Creation. The single place slide in overall Funding can be attributed to a weaker ranking for Investment Environment (from 5th to 7th place) and a drop in Inward FDI Flow. Nonetheless, New York remains a leading city on this pillar, placing 2nd in 2020.

New York's Ranking & Score in the DII over time



New York's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Computer Software Spending	1	—
Domestic Credit to Private Sector	1	—
GERD: Performed by Business Enterprise	1	—
Global Financial Centres Index	1	—
ICTs & Organizational Model Creation	1	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Assessment in Reading, Mathematics & Science	15	▲5
E-Government Development Index	7	▲2
Claims on Central Government, etc. (%GDP)	25	▲2
ICT Services Import	25	▲2
Perceived Tolerance of Immigrants	2	▲1

New York's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	5	—
E-Government Development Index	7	▲2
Regulatory Enforcement	11	—
Government Effectiveness	11	▲1
Government Integrity	12	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
E-Government Development Index	7	▲2
Government Effectiveness	11	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Computer Software Spending	1	—
Logistics Performance	4	—
ICT Access	12	▼2
Environmental Performance	13	▲1
Energy Sustainability Index (Energy Performance)	14	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
ICT Services Import	25	▲2
Environmental Performance	13	▲1
GDP (PPP) per kg of oil equivalent (Energy Use)	21	▲1
Healthcare Index	26	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Domestic Credit to Private Sector	1	—
GERD: Performed by Business Enterprise	1	—
Global Financial Centres Index	1	—
Venture Capital Availability	1	—
Number of Venture Capital Deals (fractional counting)	2	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	25	▲2

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICTs & Organizational Model Creation	1	—
The Global Entrepreneurship & Development Index	1	—
No. of JV-Strategic Alliance Deals (fractional counting)	2	—
Enterprise Conditions	4	▼2
Global Entertainment and Media Output (/Th population)	5	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	2	▲1
Perceived Tolerance of Ethnic Minorities	3	▲1
No. of Unis in Top 200 World University Rankings	4	—
Human Development Index (HDI)	11	▼1
School Life Expectancy, years	11	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Assessment in Reading, Mathematics & Science	15	▲5
Perceived Tolerance of Immigrants	2	▲1
Perceived Tolerance of Ethnic Minorities	3	▲1
Institutional Trust	17	▲1

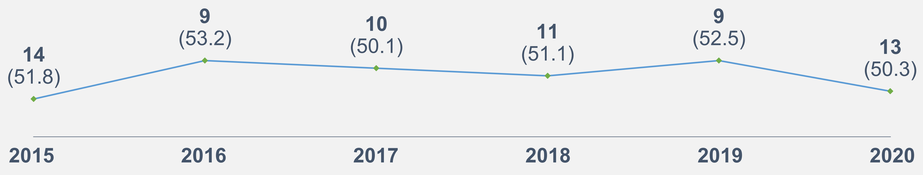
Paris, France

DII 2020 Rank

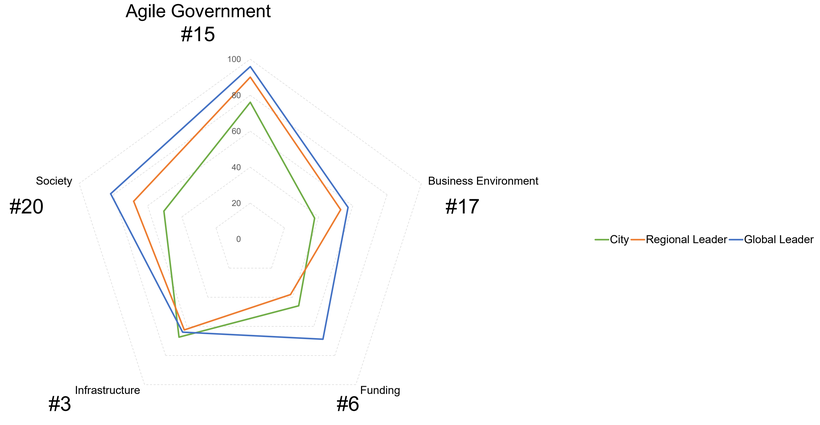
13

In 2020, Paris ranked 13th overall in the Dubai Innovation Index, dropping four places from its 2019 standing. Across the five pillars, the city lost ground on Society (19th to 20th), Business Environment (16th to 17th), and Agile Government (14th to 15th). But it progressed on Infrastructure (5th to 3rd) and held its ground on Funding (6th). The city's improvement on Infrastructure is attributable to its good showing on Energy Sustainability and Environmental Performance, ICT Access and Computer Software Spending. Its weaker ranking for the three other pillars may be attributed to drops in rank for Economic Quality, Manufacturing Value Added (Annual % Growth), E-Government Development, and Institutional and Interpersonal Trust.

Paris' Ranking & Score in the DII over time



Paris' Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Computer Software Spending	2	▲1
Market Capitalization (% of GDP)	2	NA
Energy Sustainability Index (Energy Performance)	3	—
Global Entertainment and Media Output (/Th population)	3	—
Trade Tariffs, %Duty	3	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
No. of JV-Strategic Alliance Deals (fractional counting)	5	▲10
New Business Density	9	▲5
ICT Access	7	▲4
Healthcare Index	7	▲2
Regulatory Enforcement	8	▲2

Paris' Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	3	—
Regulatory Enforcement	8	▲2
Regulatory Quality	11	▲2
E-Government Development Index	14	▼7
Government Effectiveness	14	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Regulatory Enforcement	8	▲2
Regulatory Quality	11	▲2

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Computer Software Spending	2	▲1
Energy Sustainability Index (Energy Performance)	3	—
Environmental Performance	4	▼2
Logistics Performance	5	—
Healthcare Index	7	▲2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
ICT Access	7	▲4
Healthcare Index	7	▲2
Computer Software Spending	2	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
GERD: Performed by Business Enterprise	4	—
Value of Greenfield Investments by Destination	4	—
Domestic Credit to Private Sector	5	▲1
Number of Venture Capital Deals (fractional counting)	6	▼1
Inward FDI Flow (US$ Million)	9	▼3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Domestic Credit to Private Sector	5	▲1
Claims on Central Government, etc. (%GDP)	19	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Market Capitalization (% of GDP)	2	NA
Global Entertainment and Media Output (/Th population)	3	—
Number of Trademark Applications Issued to Residents	5	—
No. of JV-Strategic Alliance Deals (fractional counting)	5	▲10
PCT Patents by Origin/bn PPP$ GDP	9	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
No. of JV-Strategic Alliance Deals (fractional counting)	5	▲10
New Business Density	9	▲5
ICT Services Export	9	▲2
PCT Patents by Origin/bn PPP$ GDP	9	▲1
Unemployment, total (% total labor force)	27	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
No. of Unis in Top 200 World University Rankings	4	—
Perceived Tolerance of Ethnic Minorities	4	—
Perceived Tolerance of Immigrants	4	—
Graduates in Science and Engineering, %	12	▼1
Rule of Law Index (Order and Security)	14	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Social Networks	17	▲2
Political Stability and Absence of Violence/Terrorism	18	▲1

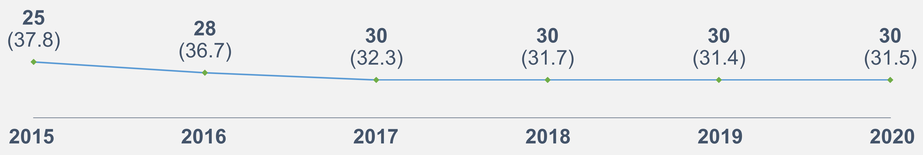
Riyadh, Saudi Arabia

DII 2020 Rank

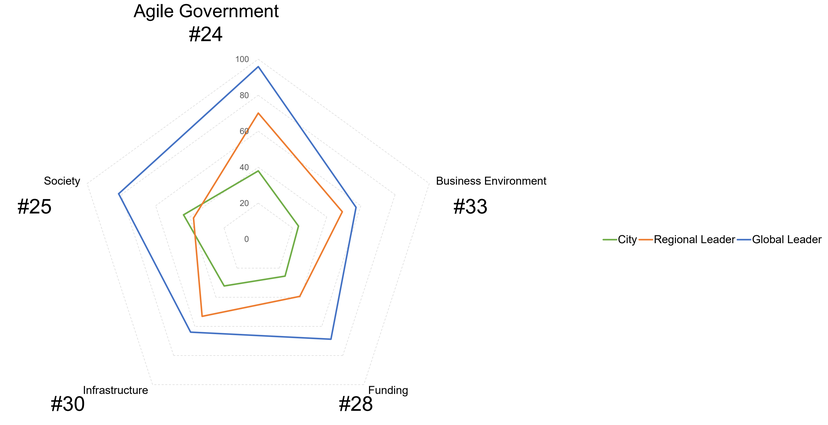
30

In 2020, Riyadh ranked 30th in the Dubai Innovation Index, maintaining its 2019 position. The city gained a place on Infrastructure (31st to 30th), Business Environment (34th to 33rd), and made good progress on Funding (35th to 28th). On Society, Riyadh ranked 22nd in 2019 and 25th in 2020, and in Agile Government the ranking remained the same in both years: 24th place. The city's areas of improvement include Inward FDI Flow, Value of Greenfield Investments, and Venture Capital Availability- the drivers behind the increase in ranking within the Funding pillar. On the Society front, Riyadh saw a drop in Graduates in Science and Engineering and Interpersonal Trust and School Life Expectancy. Additionally, the city significantly improved its ranking in Manufacturing Value Added (Annual % Growth), and it is among the top five for Market Capitalization.

Riyadh's Ranking & Score in the DII over time



Riyadh's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	3	—
Cost of Redundancy Dismissal, salary weeks	4	—
Institutional Trust	5	—
Perceived Tolerance of Ethnic Minorities	5	—
Market Capitalization (% of GDP)	5	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	18	▲14
Total Value of Stocks Traded (% of GDP)	12	▲7
Number of Trademark Applications Issued to Residents	30	▲6
Social Networks	10	▲5
Inward FDI Flow (US$ Million)	27	▲5

Riyadh's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	15	—
E-Government Development Index	22	▲3
Government Effectiveness	26	—
Regulatory Quality	26	—
Government Integrity	29	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
E-Government Development Index	22	▲3

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	13	—
ICT Access	18	▲3
ICT Services Import	22	▼9
GDP (PPP) per kg of oil equivalent (Energy Use)	22	▲1
Computer Software Spending	25	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
ICT Access	18	▲3
GDP (PPP) per kg of oil equivalent (Energy Use)	22	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Venture Capital Availability	9	▲2
Value of Greenfield Investments by Destination	10	▲4
Number of Venture Capital Deals (fractional counting)	25	▼4
Domestic Credit to Private Sector	25	—
Investment Environment	27	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	27	▲5
Value of Greenfield Investments by Destination	10	▲4
Venture Capital Availability	9	▲2
Global Financial Centres Index	33	▲2

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Cost of Redundancy Dismissal, salary weeks	4	—
Market Capitalization (% of GDP)	5	▲1
Services etc., Value Added (annual % growth)	5	▲3
Total Value of Stocks Traded (% of GDP)	12	▲7
Rate of GDP Annual Growth	18	▼10

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	18	▲14
Total Value of Stocks Traded (% of GDP)	12	▲7
Number of Trademark Applications Issued to Residents	30	▲6
Services etc., Value Added (annual % growth)	5	▲3
Enterprise Conditions	23	▲2

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	3	—
Institutional Trust	5	—
Perceived Tolerance of Ethnic Minorities	5	—
No. of Unis in Top 200 World University Rankings	6	—
Population ages 15-64 (% of total)	9	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Social Networks	10	▲5
Safety Index	11	▲1
Political Stability and Absence of Violence/Terrorism	25	▲1

San Francisco, USA

DII 2020 Rank

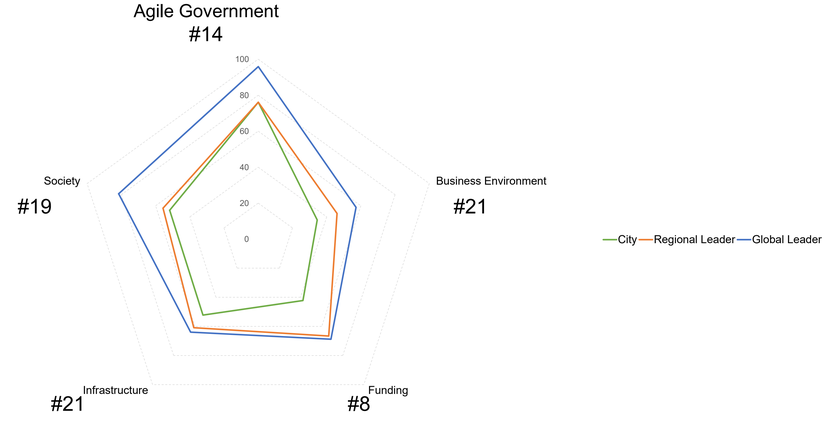
17

In 2020, San Francisco ranked 17th overall, a fall of three ranks from 14th in 2019. Across the five pillars, the city increased in ranking between 2019 and 2020 for Agile Government (15th to 14th) but fell on four pillars: Society (18th to 19th), Infrastructure (16th to 21st), Funding (5th to 8th) and Business Environment (15th to 21st). Certain drops in ranking, such as those seen in Infrastructure and Funding, are attributable to drops in indicators such as the Healthcare Index and Domestic Credit to the Private Sector. Despite the fall in its ranking, San Francisco still holds a top 10 place on the Funding pillar, and it continues to hold top ranks in various indicators across the pillars. For example, it ranked 3rd in computer software spending and 4th in enterprise conditions. It also continues to rank 1st (tied with New York) in ICT and organizational model creation, and its logistics performance ranked 4th for the second consecutive year.

San Francisco's Ranking & Score in the DII over time



San Francisco's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICTs & Organizational Model Creation	1	—
The Global Entrepreneurship & Development Index	1	—
Venture Capital Availability	1	—
Perceived Tolerance of Immigrants	2	▲1
Computer Software Spending	3	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Assessment in Reading, Mathematics & Science	15	▲5
E-Government Development Index	7	▲2
Claims on Central Government, etc. (%GDP)	25	▲2
Perceived Tolerance of Immigrants	2	▲1
Perceived Tolerance of Ethnic Minorities	3	▲1

San Francisco's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	5	—
E-Government Development Index	7	▲2
Regulatory Enforcement	11	—
Government Effectiveness	11	▲1
Government Integrity	12	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
E-Government Development Index	7	▲2
Government Effectiveness	11	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Computer Software Spending	3	▼1
Logistics Performance	4	—
ICT Access	12	▼2
Environmental Performance	13	▲1
Energy Sustainability Index (Energy Performance)	14	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Environmental Performance	13	▲1
GDP (PPP) per kg of oil equivalent (Energy Use)	21	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Venture Capital Availability	1	—
Domestic Credit to Private Sector	7	▼4
Number of Venture Capital Deals (fractional counting)	7	▼3
Investment Environment	7	▼2
GERD: Performed by Business Enterprise	8	▼3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	25	▲2

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICTs & Organizational Model Creation	1	—
The Global Entrepreneurship & Development Index	1	—
Enterprise Conditions	4	▼2
No. of JV-Strategic Alliance Deals (fractional counting)	7	—
Creative Goods Exports, %	10	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Number of Trademark Applications Issued to Residents	24	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	2	▲1
Perceived Tolerance of Ethnic Minorities	3	▲1
No. of Unis in Top 200 World University Rankings	6	—
Human Development Index (HDI)	11	▼1
School Life Expectancy, years	11	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Assessment in Reading, Mathematics & Science	15	▲5
Perceived Tolerance of Immigrants	2	▲1
Perceived Tolerance of Ethnic Minorities	3	▲1
Institutional Trust	17	▲1

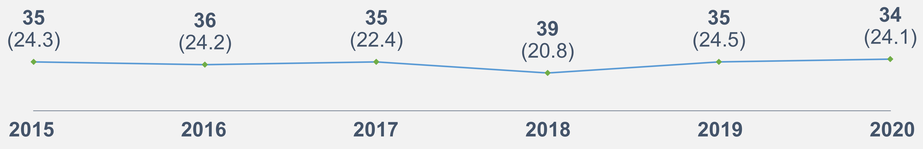
São Paulo, Brazil

DII 2020 Rank

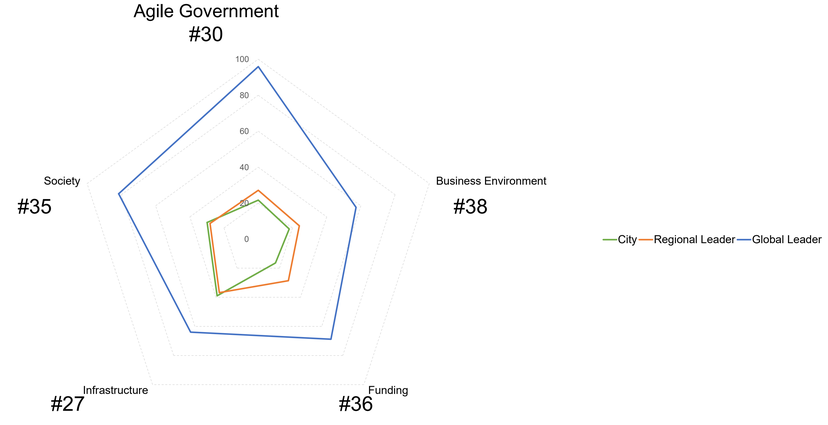
34

In 2020, São Paulo ranked 34th overall, - moving up a spot from 35th place in 2019. The city's performance across the five pillars varied, maintaining the same position across both years in Business Environment (38th) and Agile Government (30th), and dropping in ranking for Society (33rd to 35th), Infrastructure (26th to 27th) and Funding (32nd to 36th). Although the city dropped a place in Infrastructure, this remains the pillar on which it performs best. This performance is attributable to Energy Performance, where it ranked 4th overall for both years, to Energy Use, in which it ranked 16th consistently, and to Logistics Performance in which it ranked 13th for both years. Its weakness, contributing to the overall drop between 2019 and 2020 was a poor performance on the Healthcare Index and computer software spending. Economic Quality and Labor Force Participation come were weak points on Business Environment, the pillar on which the city ranks lowest. However, São Paulo performs strongly in Total Value of Stocks Traded, ranking 10th in 2020.

São Paulo's Ranking & Score in the DII over time



São Paulo's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Social Networks	2	▲3
Perceived Tolerance of Ethnic Minorities	3	—
Energy Sustainability Index (Energy Performance)	4	—
Perceived Tolerance of Immigrants	4	—
No. of Unis in Top 200 World University Rankings	5	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	17	▲14
Manufacturing Value Added (annual % growth)	10	▲12
New Business Density	21	▲9
Services etc., Value Added (annual % growth)	17	▲6
Social Networks	2	▲3

São Paulo's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Regulatory Enforcement	18	—
Trade Tariffs, %Duty	22	—
E-Government Development Index	25	▼3
Government Integrity	25	▼1
Regulatory Quality	29	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Government Effectiveness	30	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Energy Sustainability Index (Energy Performance)	4	—
Logistics Performance	13	—
GDP (PPP) per kg of oil equivalent (Energy Use)	16	—
Environmental Performance	21	—
ICT Services Import	24	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
ICT Services Import	24	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Value of Greenfield Investments by Destination	14	▼1
Inward FDI Flow (US$ Million)	18	▼8
Domestic Credit to Private Sector	22	▲1
Number of Venture Capital Deals (fractional counting)	25	▼4
Venture Capital Availability	26	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	26	▲2
Domestic Credit to Private Sector	22	▲1
Investment Environment	29	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Total Value of Stocks Traded (% of GDP)	10	▲3
Manufacturing Value Added (annual % growth)	10	▲12
Rate of GDP Annual Growth	12	▼1
Cost of Redundancy Dismissal, salary weeks	12	—
Number of Trademark Applications Issued to Residents	16	▲2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	17	▲14
Manufacturing Value Added (annual % growth)	10	▲12
New Business Density	21	▲9
Services etc., Value Added (annual % growth)	17	▲6
Total Value of Stocks Traded (% of GDP)	10	▲3

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Social Networks	2	▲3
Perceived Tolerance of Ethnic Minorities	3	—
Perceived Tolerance of Immigrants	4	—
No. of Unis in Top 200 World University Rankings	5	—
Population ages 15-64 (% of total)	14	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Social Networks	2	▲3
Political Stability and Absence of Violence/Terrorism	27	▲1
Interpersonal Trust	31	▲1

Seoul, South Korea

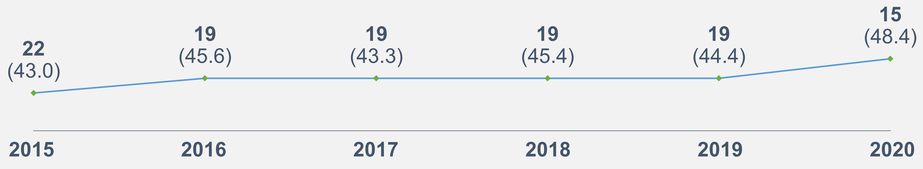
DII 2020 Rank

15

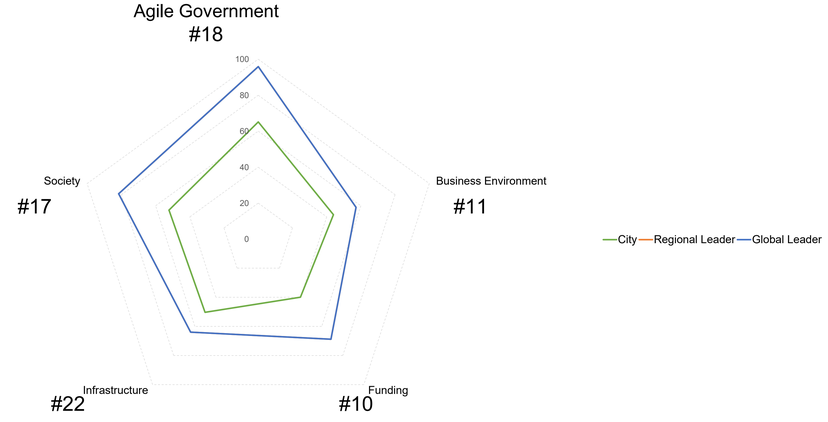
Rising Star

In 2020, Seoul ranked 15th overall in the Dubai Innovation Index, up 3 places from 2019. The city has either stayed the same in rank on the pillars or moved up. The three pillars in which it made significant strides are Funding (from 17th in 2019 to 10th in 2020), Business Environment (from 18th in 2019 to 11th in 2020) and Society (from 20th in 2019 to 17th in 2020). Such significant improvements in rankings are attributable to a number of factors, including stronger performance in Investment Environment, Number of Venture Capital Deals, and Manufacturing Value Added (Annual % Growth).

Seoul's Ranking & Score in the DII over time



Seoul's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Healthcare Index	1	—
Cost of Redundancy Dismissal, salary weeks	2	—
No. of Unis in Top 200 World University Rankings	2	—
E-Government Development Index	2	▲1
GERD: Performed by Business Enterprise	3	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	7	▲25
Unemployment, total (% total labor force)	5	▲9
Services etc., Value Added (annual % growth)	4	▲8
Manufacturing Value Added (annual % growth)	5	▲8
Environmental Performance	14	▲6

Seoul's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
E-Government Development Index	2	▲1
Regulatory Enforcement	10	▲1
Government Effectiveness	13	▲3
Trade Tariffs, %Duty	17	—
Regulatory Quality	18	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Government Effectiveness	13	▲3
E-Government Development Index	2	▲1
Regulatory Enforcement	10	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Healthcare Index	1	—
ICT Access	5	▼1
Logistics Performance	7	—
Environmental Performance	14	▲6
Computer Software Spending	18	▲2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Environmental Performance	14	▲6
Computer Software Spending	18	▲2
GDP (PPP) per kg of oil equivalent (Energy Use)	26	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
GERD: Performed by Business Enterprise	3	—
Claims on Central Government, etc. (%GDP)	5	—
Domestic Credit to Private Sector	10	—
Global Financial Centres Index	11	▲4
Investment Environment	14	▲3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Number of Venture Capital Deals (fractional counting)	15	▲6
Inward FDI Flow (US$ Million)	19	▲5
Global Financial Centres Index	11	▲4
Investment Environment	14	▲3
Venture Capital Availability	24	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Cost of Redundancy Dismissal, salary weeks	2	—
Total Value of Stocks Traded (% of GDP)	4	▲4
Services etc., Value Added (annual % growth)	4	▲8
New Business Density	5	▼1
PCT Patents by Origin/bn PPP$ GDP	5	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	7	▲25
Unemployment, total (% total labor force)	5	▲9
Services etc., Value Added (annual % growth)	4	▲8
Manufacturing Value Added (annual % growth)	5	▲8
Total Value of Stocks Traded (% of GDP)	4	▲4

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
No. of Unis in Top 200 World University Rankings	2	—
Perceived Tolerance of Ethnic Minorities	5	▲1
Perceived Tolerance of Immigrants	5	▲2
Assessment in Reading, Mathematics & Science	6	—
Graduates in Science and Engineering, %	7	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Safety Index	12	▲3
Political Stability and Absence of Violence/Terrorism	13	▲3
Perceived Tolerance of Immigrants	5	▲2
Interpersonal Trust	24	▲2
Perceived Tolerance of Ethnic Minorities	5	▲1

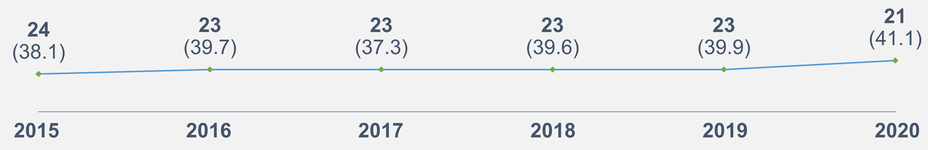
Shanghai, China

DII 2020 Rank

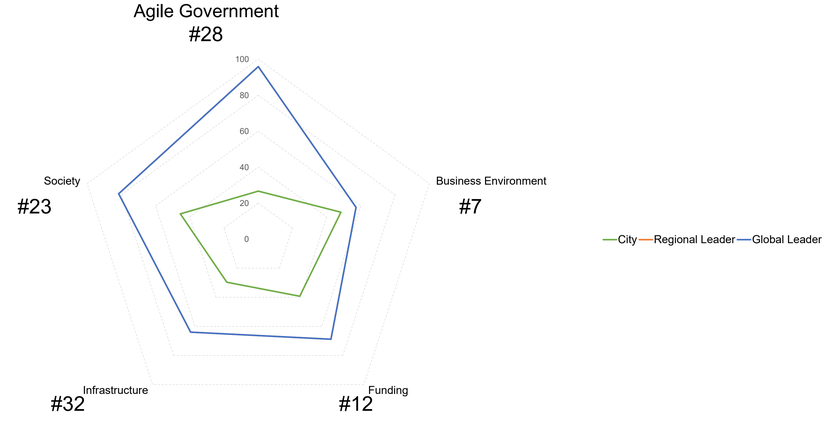
21

In 2020, Shanghai ranked 21st overall on our innovation ranking, a two-place rise since 2019. Consistently among the top performers with respect to the Business Environment, the city maintained its top 10 (7th) ranking in both 2019 and 2020. A key strength of the city on this pillar was in Creative Goods Exports and Market Capitalization. Shanghai as a city has invested heavily in Agile Government to create a better quality of life for its people. The city has also seen notable progress in the Society pillar, going from 25th place in 2019 to 23rd in 2020. The indicators driving the overall progress in the Society pillar include Social Networks, the Safety Index, and Assessment in Reading, Mathematics and Science

Shanghai's Ranking & Score in the DII over time



Shanghai's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Creative Goods Exports, %	1	—
Number of Trademark Applications Issued to Residents	1	—
Services etc., Value Added (annual % growth)	1	▲3
Assessment in Reading, Mathematics & Science	1	▲6
Cost of Redundancy Dismissal, salary weeks	2	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Safety Index	20	▲9
Assessment in Reading, Mathematics & Science	1	▲6
Inward FDI Flow (US$ Million)	7	▲6
Unemployment, total (% total labor force)	14	▲6
Social Networks	11	▲5

Shanghai's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Regulatory Enforcement	19	▲1
Trade Tariffs, %Duty	21	—
Government Effectiveness	23	—
E-Government Development Index	23	▲4
Government Integrity	27	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
E-Government Development Index	23	▲4
Regulatory Enforcement	19	▲1
Government Integrity	27	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Computer Software Spending	7	—
Logistics Performance	7	—
GDP (PPP) per kg of oil equivalent (Energy Use)	25	▲1
ICT Access	25	▲1
Environmental Performance	27	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
ICT Services Import	33	▲2
GDP (PPP) per kg of oil equivalent (Energy Use)	25	▲1
ICT Access	25	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Global Financial Centres Index	3	—
Domestic Credit to Private Sector	3	▲2
GERD: Performed by Business Enterprise	5	▲1
Inward FDI Flow (US$ Million)	7	▲6
Number of Venture Capital Deals (fractional counting)	9	▼2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	7	▲6
Claims on Central Government, etc. (%GDP)	21	▲3
Domestic Credit to Private Sector	3	▲2
GERD: Performed by Business Enterprise	5	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Creative Goods Exports, %	1	—
Number of Trademark Applications Issued to Residents	1	—
Services etc., Value Added (annual % growth)	1	▲3
Cost of Redundancy Dismissal, salary weeks	2	—
Total Value of Stocks Traded (% of GDP)	2	▲2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Unemployment, total (% total labor force)	14	▲6
Market Capitalization (% of GDP)	6	▲4
Services etc., Value Added (annual % growth)	1	▲3
Total Value of Stocks Traded (% of GDP)	2	▲2
Global Entertainment and Media Output (/Th population)	26	▲2

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Assessment in Reading, Mathematics & Science	1	▲6
No. of Unis in Top 200 World University Rankings	4	—
Interpersonal Trust	5	▼1
Perceived Tolerance of Ethnic Minorities	7	▲1
Perceived Tolerance of Immigrants	7	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Safety Index	20	▲9
Assessment in Reading, Mathematics & Science	1	▲6
Social Networks	11	▲5
Perceived Tolerance of Ethnic Minorities	7	▲1
Perceived Tolerance of Immigrants	7	▲1

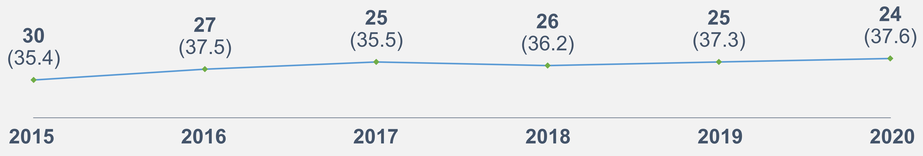
Shenzhen, China

DII 2020 Rank **24**

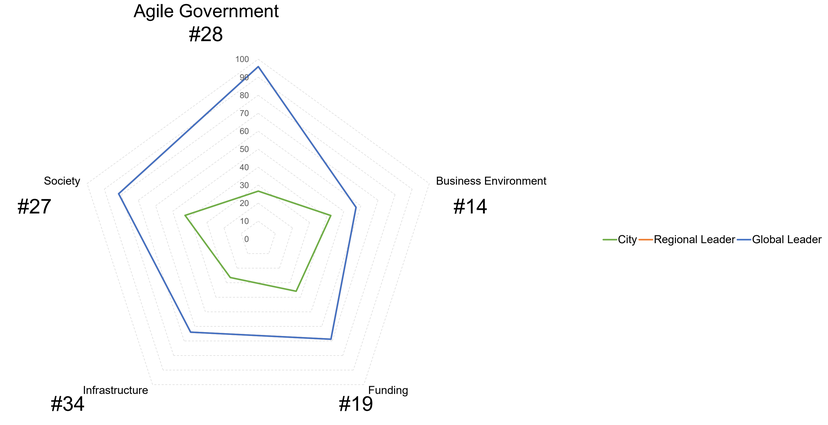
New City

In 2020, Shenzhen progressed to 24th place overall, up one spot on 2019. The city advanced in its ranking for both Agile Government (going from 29th to 28th) and Society (going from 29th to 27th), and it marked time on Infrastructure (34th in both 2019 and 2020). Shenzhen lost a place on Funding and fell five places on Business Environment. The drop in Business Environment is mainly explained by fewer joint venture strategic alliance deals. On the other hand, the city's investment in the digital transformation of its government is reflected by progress on the Agile Government pillar, and on both the institutional and interpersonal trust indicators.

Shenzhen's Ranking & Score in the DII over time



Shenzhen's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Creative Goods Exports, %	1	—
Services etc., Value Added (annual % growth)	1	▲3
Assessment in Reading, Mathematics & Science	1	▲6
Cost of Redundancy Dismissal, salary weeks	2	—
Number of Trademark Applications Issued to Residents	3	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Safety Index	16	▲16
Assessment in Reading, Mathematics & Science	1	▲6
Unemployment, total (% total labor force)	14	▲6
Social Networks	11	▲5
Inward FDI Flow (US$ Million)	13	▲4

Shenzhen's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Regulatory Enforcement	19	▲1
Trade Tariffs, %Duty	21	—
Government Effectiveness	23	—
E-Government Development Index	23	▲4
Government Integrity	27	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
E-Government Development Index	23	▲4
Regulatory Enforcement	19	▲1
Government Integrity	27	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	7	—
Computer Software Spending	11	—
GDP (PPP) per kg of oil equivalent (Energy Use)	25	▲1
ICT Access	25	▲1
Environmental Performance	27	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP (PPP) per kg of oil equivalent (Energy Use)	25	▲1
ICT Access	25	▲1
ICT Services Import	36	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Global Financial Centres Index	8	▲1
Domestic Credit to Private Sector	9	—
GERD: Performed by Business Enterprise	9	▲1
Number of Venture Capital Deals (fractional counting)	12	▼2
Venture Capital Availability	12	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	13	▲4
Claims on Central Government, etc. (%GDP)	21	▲3
Global Financial Centres Index	8	▲1
GERD: Performed by Business Enterprise	9	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Creative Goods Exports, %	1	—
Services etc., Value Added (annual % growth)	1	▲3
Cost of Redundancy Dismissal, salary weeks	2	—
Number of Trademark Applications Issued to Residents	3	—
Rate of GDP Annual Growth	5	▼3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Unemployment, total (% total labor force)	14	▲6
Services etc., Value Added (annual % growth)	1	▲3
Total Value of Stocks Traded (% of GDP)	5	▲2
Market Capitalization (% of GDP)	11	▲2
ICT Services Export	35	▲2

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Assessment in Reading, Mathematics & Science	1	▲6
Interpersonal Trust	5	▼1
No. of Unis in Top 200 World University Rankings	6	—
Perceived Tolerance of Ethnic Minorities	7	▲1
Perceived Tolerance of Immigrants	7	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Safety Index	16	▲16
Assessment in Reading, Mathematics & Science	1	▲6
Social Networks	11	▲5
Perceived Tolerance of Ethnic Minorities	7	▲1
Perceived Tolerance of Immigrants	7	▲1

Singapore, Singapore

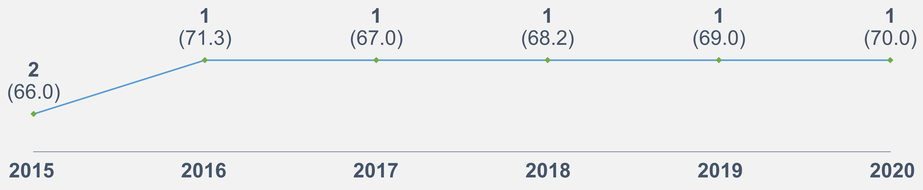
DII 2020 Rank

1

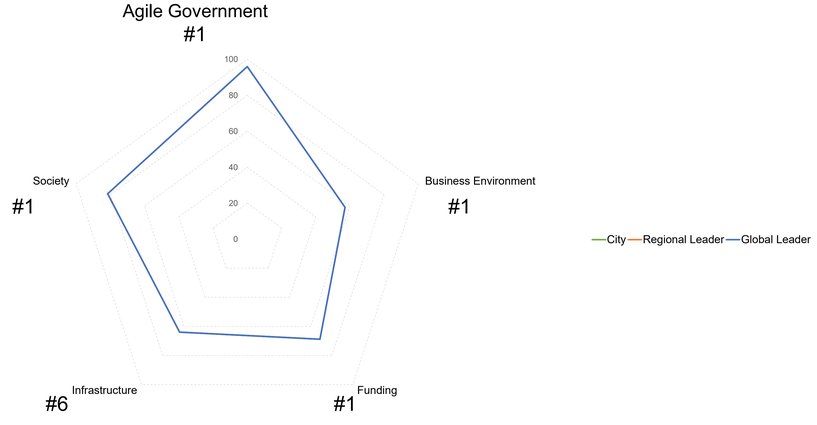
Top 10

In 2020, Singapore was our innovation champion once again, maintaining the leading position as it has held for the past four years. The city ranked first across four of the five pillars: Society, Funding, Business Environment, and Agile Government. Although the city did not rank first on Infrastructure, it was among the leaders in both years, scoring 4th in 2019 and 6th in 2020. This strength across all pillars makes Singapore an ideal environment for innovation from all angles. Whilst the city performs exceptionally well across most of the indicators, the most notable performances in 2020 include those in: Rule of Law (2nd), perceived tolerance of ethnic minorities (1st) Assessment in Reading, Mathematics and Science (2nd), Investment Environment (1st), Inward FDI Flow (2nd), Number of Venture Capital Deals (1st), and Economic Quality (2nd).

Singapore's Ranking & Score in the DII over time



Singapore's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Government Effectiveness	1	—
ICT Services Import	1	—
Institutional Trust	1	—
Investment Environment	1	—
No. of JV-Strategic Alliance Deals (fractional counting)	1	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	1	▲34
GDP per Capita Change (%)	18	▲9
Rule of Law Index (Order and Security)	2	▲3
ICT Access	3	▲3
Healthcare Index	14	▲3

Singapore's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Government Effectiveness	1	—
Regulatory Quality	1	—
Regulatory Enforcement	2	—
Trade Tariffs, %Duty	2	—
Government Integrity	4	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICT Services Import	1	—
Logistics Performance	3	—
ICT Access	3	▲3
GDP (PPP) per kg of oil equivalent (Energy Use)	7	▼4
Healthcare Index	14	▲3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
ICT Access	3	▲3
Healthcare Index	14	▲3

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Investment Environment	1	—
Number of Venture Capital Deals (fractional counting)	1	—
Inward FDI Flow (US$ Million)	2	▼1
Value of Greenfield Investments by Destination	2	▲1
Global Financial Centres Index	5	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Value of Greenfield Investments by Destination	2	▲1
Global Financial Centres Index	5	▲1
Claims on Central Government, etc. (%GDP)	14	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
No. of JV-Strategic Alliance Deals (fractional counting)	1	—
Manufacturing Value Added (annual % growth)	1	▲34
Economic Quality	2	—
Global Entertainment and Media Output (/Th population)	2	—
New Business Density	2	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	1	▲34
GDP per Capita Change (%)	18	▲9
Enterprise Conditions	2	▲2
Market Capitalization (% of GDP)	3	▲2

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Institutional Trust	1	—
Perceived Tolerance of Ethnic Minorities	1	—
Political Stability and Absence of Violence/Terrorism	1	—
Population ages 15-64 (% of total)	1	—
Assessment in Reading, Mathematics & Science	2	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Rule of Law Index (Order and Security)	2	▲3
Interpersonal Trust	14	▲2
Perceived Tolerance of Immigrants	2	▲1
School Life Expectancy, years	10	▲1

Stockholm, Sweden

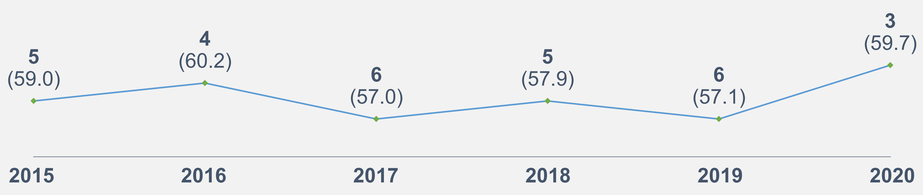
DII 2020 Rank

3

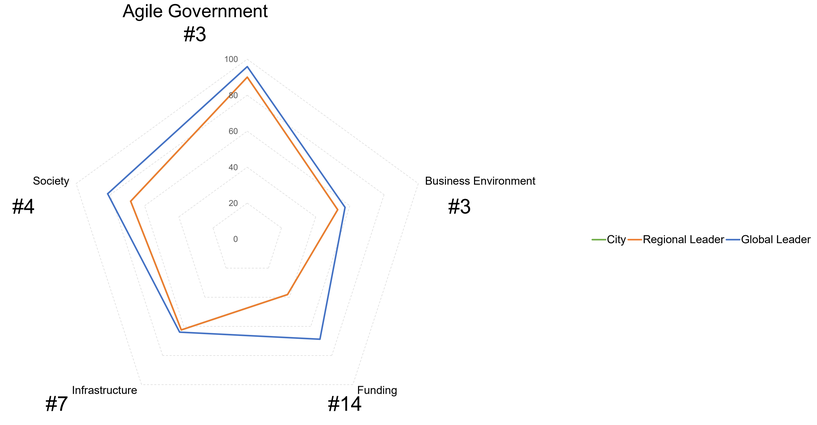
Top 10

In 2020, Stockholm ranked 3rd overall, up three places from its 6th place in 2019. The improvements driving this gain arose in the Society pillar, where it climbed from 5th to 4th, and Business Environment, where it surged from 11th to 3rd. The significant improvement on the Business Environment pillar is attributable to the increase in GDP per Capita Change (%), Services etc., Value Added, and Labor Force Participation Rate. Stockholm also scored better on Funding, climbing from 16th in 2019 to 14th in 2020. As for the rest of the pillars, the city slipped in rank for Infrastructure (6th to 7th) between 2019 and 2020, and its ranking remained the same for Agile Government (3rd) between the two years. While the city dropped in ranking in the Financial Centre's Index and Venture Capital Availability – lowering its ranking for the overall Funding pillar - it also witnessed a notable increase in ranking for Inward FDI Flow.

Stockholm's Ranking & Score in the DII over time



Stockholm's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Rate of GDP Annual Growth	1	▲11
GDP per Capita Change (%)	1	▲33
Energy Sustainability Index (Energy Performance)	2	—
ICTs & Organizational Model Creation	2	—
Logistics Performance	2	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	1	▲33
Inward FDI Flow (US$ Million)	5	▲13
Services etc., Value Added (annual % growth)	11	▲13
Rate of GDP Annual Growth	1	▲11
Assessment in Reading, Mathematics & Science	10	▲5

Stockholm's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Government Integrity	3	▼1
Trade Tariffs, %Duty	3	—
Government Effectiveness	4	—
Regulatory Enforcement	4	—
E-Government Development Index	5	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Energy Sustainability Index (Energy Performance)	2	—
Logistics Performance	2	—
Environmental Performance	6	▼2
ICT Services Import	6	▲1
ICT Access	13	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Computer Software Spending	15	▲2
ICT Services Import	6	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Investment Environment	5	▲1
Inward FDI Flow (US$ Million)	5	▲13
Claims on Central Government, etc. (%GDP)	6	▲2
GERD: Performed by Business Enterprise	14	▼1
Venture Capital Availability	16	▼2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	5	▲13
Value of Greenfield Investments by Destination	31	▲4
Claims on Central Government, etc. (%GDP)	6	▲2
Investment Environment	5	▲1
Domestic Credit to Private Sector	16	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Rate of GDP Annual Growth	1	▲11
GDP per Capita Change (%)	1	▲33
ICTs & Organizational Model Creation	2	—
PCT Patents by Origin/bn PPP$ GDP	2	—
Scientific & Technical Articles	3	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	1	▲33
Services etc., Value Added (annual % growth)	11	▲13
Rate of GDP Annual Growth	1	▲11
Labor Force Participation Rate (% of total pop ages 15+)	9	▲4
Number of Trademark Applications Issued to Residents	25	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	2	—
Interpersonal Trust	2	▲1
School Life Expectancy, years	2	▲2
Perceived Tolerance of Ethnic Minorities	3	—
Rule of Law Index (Order and Security)	4	▼2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Assessment in Reading, Mathematics & Science	10	▲5
School Life Expectancy, years	2	▲2
Social Networks	5	▲2
Interpersonal Trust	2	▲1

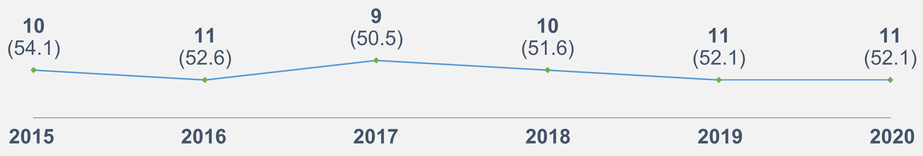
Sydney, Australia

DII 2020 Rank

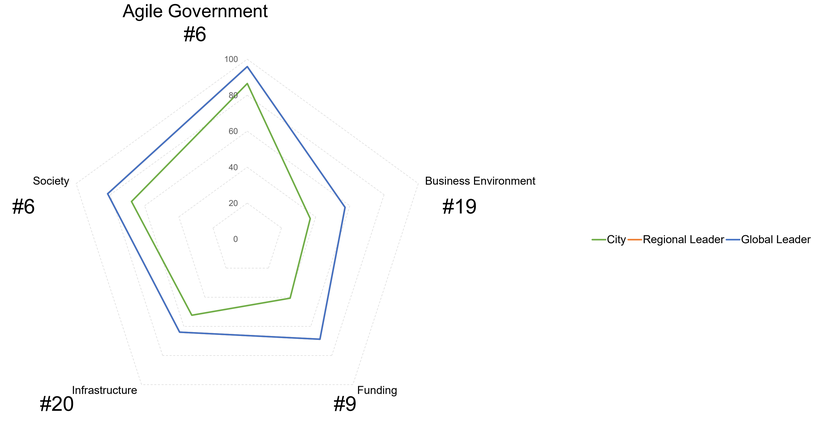
11

In 2020, Sydney ranked 11th overall in the Dubai Innovation Index, unchanged from 2019. The city either held its position or advanced across all five pillars. The pillars on which Sydney moved up in its ranking were Infrastructure (from 21st to 20th), Funding (from 12th to 9th), and Agile Government (7th to 6th). The improvements in Infrastructure are attributable to enhanced Environmental Performance and a better showing on the Healthcare Index. As for the Funding pillar, although the city saw fewer VC Deals and less Inward FDI Flow, its progress on indicators such as the Global Financial Centre's Index and Claims on Central Government, etc. (% GDP) outweighed the slide in other indicators. Sydney retained its strong showing on Society (6th) and was unchanged on Business Environment (19th).

Sydney's Ranking & Score in the DII over time



Sydney's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	1	—
School Life Expectancy, years	1	—
No. of Unis in Top 200 World University Rankings	3	—
Perceived Tolerance of Ethnic Minorities	3	—
Political Stability and Absence of Violence/Terrorism	3	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	7	▲24
Global Financial Centres Index	12	▲7
Healthcare Index	6	▲4
Interpersonal Trust	4	▲3
Total Value of Stocks Traded (% of GDP)	8	▲3

Sydney's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Regulatory Quality	3	—
E-Government Development Index	4	▼2
Trade Tariffs, %Duty	4	—
Regulatory Enforcement	5	▲2
Government Integrity	6	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Regulatory Enforcement	5	▲2
Government Effectiveness	8	▲2
Government Integrity	6	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	5	—
Healthcare Index	6	▲4
Environmental Performance	10	▲2
ICT Access	17	▼1
Computer Software Spending	19	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Healthcare Index	6	▲4
Environmental Performance	10	▲2

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Value of Greenfield Investments by Destination	5	▲2
Investment Environment	9	▼1
Claims on Central Government, etc. (%GDP)	9	▲1
Domestic Credit to Private Sector	11	—
Inward FDI Flow (US$ Million)	12	▼5

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Global Financial Centres Index	12	▲7
Value of Greenfield Investments by Destination	5	▲2
Claims on Central Government, etc. (%GDP)	9	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Services etc., Value Added (annual % growth)	3	NA
Scientific & Technical Articles	5	—
Manufacturing Value Added (annual % growth)	7	▲24
No. of JV-Strategic Alliance Deals (fractional counting)	8	▼2
The Global Entrepreneurship & Development Index	8	▼2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	7	▲24
Total Value of Stocks Traded (% of GDP)	8	▲3
Labor Force Participation Rate (% of total pop ages 15+)	8	▲1
Unemployment, total (% total labor force)	22	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	1	—
School Life Expectancy, years	1	—
No. of Unis in Top 200 World University Rankings	3	—
Perceived Tolerance of Ethnic Minorities	3	—
Political Stability and Absence of Violence/Terrorism	3	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Interpersonal Trust	4	▲3
Graduates in Science and Engineering, %	23	▲2

Tallinn, Estonia

DII 2020 Rank

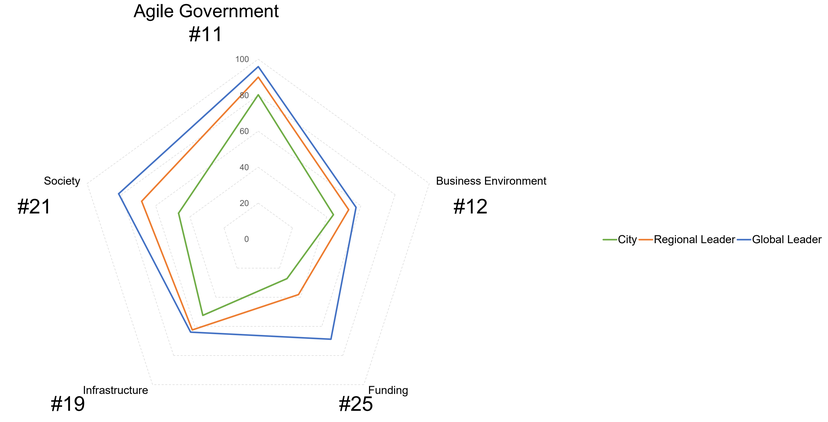
19

In 2020, Tallinn ranked 19th overall, sliding three places from its 2019 ranking of 16th. Across the five pillars between 2019 and 2020, the city gained ranks for Infrastructure (23rd to 19th), Agile Government (12th to 11th), and Funding (29th to 25th), but slumped on Business Environment (3rd to 12th), while level pegging on its ranking for Society (21st). Key strengths and drivers of improvements in Tallinn's performance include ICT Access, in which it ranked 3rd in 2019 and 2nd in 2020, and E-Government Development in which it ranked 13th in 2019 and 3rd in 2020. But its overall performance was weighed down by a slide on several pillars, and notably Creative Goods Exports, % and GDP per Capita Change (%).

Tallinn's Ranking & Score in the DII over time



Tallinn's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICT Services Export	2	▲1
ICT Services Import	2	▲1
Trade Tariffs, %Duty	3	—
E-Government Development Index	3	▲10
Assessment in Reading, Mathematics & Science	4	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
E-Government Development Index	3	▲10
Inward FDI Flow (US$ Million)	21	▲6
Value of Greenfield Investments by Destination	35	▲4
Healthcare Index	13	▲3
Labor Force Participation Rate (% of total pop ages 15+)	14	▲2

Tallinn's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	3	—
E-Government Development Index	3	▲10
Regulatory Enforcement	7	▲1
Regulatory Quality	10	—
Government Integrity	11	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
E-Government Development Index	3	▲10
Regulatory Enforcement	7	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICT Services Import	2	▲1
Logistics Performance	10	—
Healthcare Index	13	▲3
ICT Access	15	▼1
Environmental Performance	16	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Healthcare Index	13	▲3
ICT Services Import	2	▲1
GDP (PPP) per kg of oil equivalent (Energy Use)	24	▲1
Computer Software Spending	37	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	4	—
Investment Environment	16	—
Inward FDI Flow (US$ Million)	21	▲6
Venture Capital Availability	23	▼2
Number of Venture Capital Deals (fractional counting)	24	▼4

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	21	▲6
Value of Greenfield Investments by Destination	35	▲4
Global Financial Centres Index	30	▲1
GERD: Performed by Business Enterprise	32	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICT Services Export	2	▲1
ICTs & Organizational Model Creation	4	—
Scientific & Technical Articles	4	—
New Business Density	7	▼1
Services etc., Value Added (annual % growth)	8	▼6

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Labor Force Participation Rate (% of total pop ages 15+)	14	▲2
ICT Services Export	2	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Assessment in Reading, Mathematics & Science	4	—
Population ages 15-64 (% of total)	4	—
Safety Index	5	▲1
No. of Unis in Top 200 World University Rankings	6	—
Graduates in Science and Engineering, %	8	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Safety Index	5	▲1

Tel Aviv, Israel

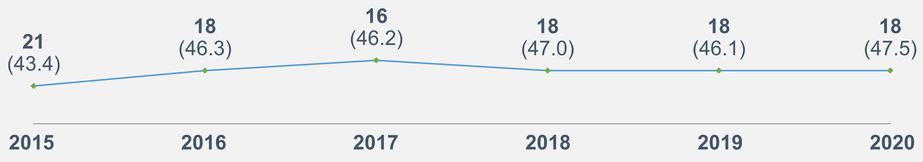
DII 2020 Rank

18

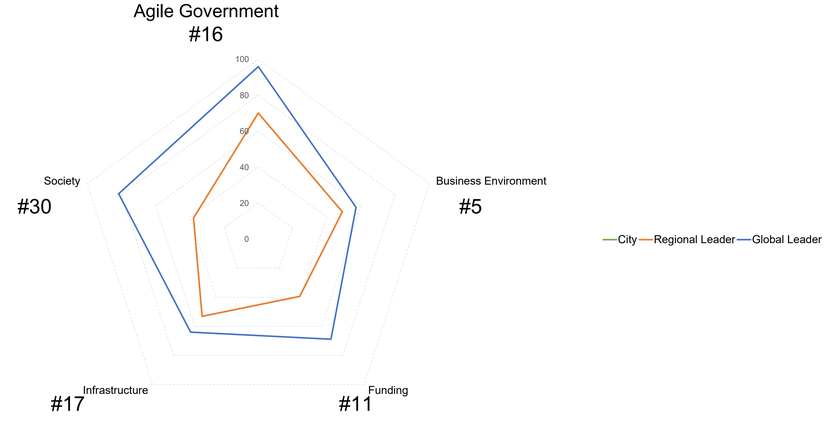
New City

In 2020, Tel Aviv ranked 18th overall in the Dubai Innovation Index, unchanged from 2019. The city improved its ranking on Society (32nd to 30th) and Infrastructure (19th to 17th). Tel Aviv maintained a top 5 rank in Business Environment for both years and was also ranked 16th for Agile Government in both years. On Funding, the city dropped a rank from 10th place in 2019 to 11th in 2020. A key to the city's strong standing on Business Environment is its consistent first place ranking in ICT Services Export and continuing first place ranking in PCT Patents by Origin. Contributors to the lower ranking on Funding include decreases in Investment Environment and Number of Venture Capital Deals.

Tel Aviv's Ranking & Score in the DII over time



Tel Aviv's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICT Services Export	1	—
PCT Patents by Origin/bn PPP$ GDP	1	—
Cost of Redundancy Dismissal, salary weeks	2	—
Venture Capital Availability	2	—
Inward FDI Flow (US$ Million)	3	▲5

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	3	▲5
Safety Index	9	▲4
Unemployment, total (% total labor force)	11	▲4
Market Capitalization (% of GDP)	15	▲4
Total Value of Stocks Traded (% of GDP)	17	▲4

Tel Aviv's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	8	—
Government Integrity	16	—
Regulatory Quality	16	—
Government Effectiveness	17	—
E-Government Development Index	19	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICT Services Import	5	—
GDP (PPP) per kg of oil equivalent (Energy Use)	7	▲1
Logistics Performance	10	—
Healthcare Index	10	▲1
Environmental Performance	15	▼5

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP (PPP) per kg of oil equivalent (Energy Use)	7	▲1
Healthcare Index	10	▲1
ICT Access	16	▲1
Computer Software Spending	26	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Venture Capital Availability	2	—
Inward FDI Flow (US$ Million)	3	▲5
GERD: Performed by Business Enterprise	7	▲1
Number of Venture Capital Deals (fractional counting)	10	▼1
Investment Environment	12	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	3	▲5
Global Financial Centres Index	21	▲3
GERD: Performed by Business Enterprise	7	▲1
Value of Greenfield Investments by Destination	24	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICT Services Export	1	—
PCT Patents by Origin/bn PPP$ GDP	1	—
Cost of Redundancy Dismissal, salary weeks	2	—
GDP per Capita Change (%)	5	—
Rate of GDP Annual Growth	6	▼3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Unemployment, total (% total labor force)	11	▲4
Market Capitalization (% of GDP)	15	▲4
Total Value of Stocks Traded (% of GDP)	17	▲4
No. of JV-Strategic Alliance Deals (fractional counting)	9	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
No. of Unis in Top 200 World University Rankings	6	—
Perceived Tolerance of Immigrants	8	1
Perceived Tolerance of Ethnic Minorities	9	1
Safety Index	9	▲4
School Life Expectancy, years	12	▲2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Safety Index	9	▲4
Institutional Trust	20	▲3
Social Networks	26	▲3
School Life Expectancy, years	12	▲2
Interpersonal Trust	19	▲2

Tokyo, Japan

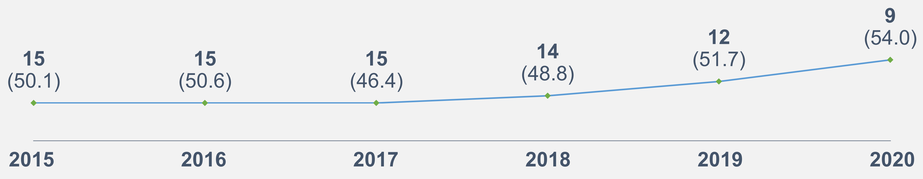
DII 2020 Rank

9

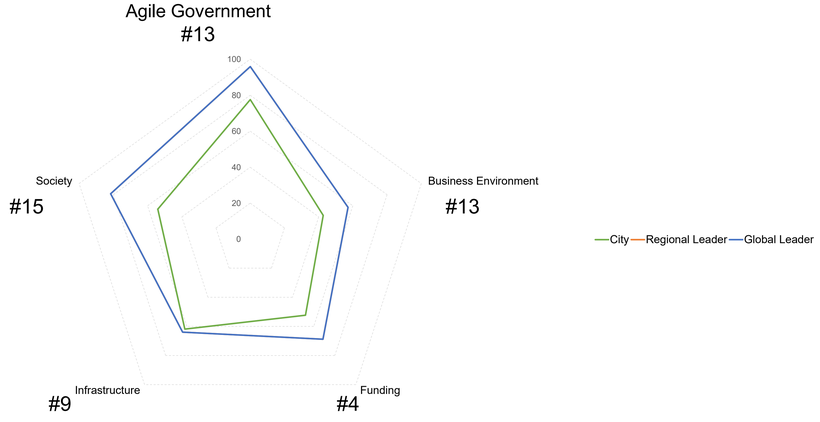
Top 10

In 2020, Tokyo ranked 9th, entering the Dubai Innovation Index's top 10 cities for the first time, climbing three spots from 12th place in 2019. Tokyo reached the top 10 by improving its overall rank on four of the five pillars. While the city marked time on Agile Government (13th), it improved across Society (17th to 15th), Infrastructure (11th to 9th), Business Environment (14th to 13th), and most notably on Funding (7th to 4th). In Number of Joint Venture Deals alone, Tokyo went from 21st in 2019 to 8th in 2020. Venture Capital Availability in the city also improved, taking it from 16th in 2019 to 14th in 2020. On Infrastructure, the city holds a top 5 ranking across Computer Software Spending, Logistics Performance and the Healthcare Index - strongly contributing to its top 10 position on the pillar. Tokyo lost ground on Government Effectiveness but improved on Regulatory Enforcement.

Tokyo's Ranking & Score in the DII over time



Tokyo's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Unemployment, total (% total labor force)	1	▲2
Domestic Credit to Private Sector	2	—
GERD: Performed by Business Enterprise	2	—
Healthcare Index	2	—
No. of Unis in Top 200 World University Rankings	2	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Number of Venture Capital Deals (fractional counting)	8	▲13
Investment Environment	10	▲5
Value of Greenfield Investments by Destination	16	▲5
New Business Density	16	▲3
Labor Force Participation Rate (% of total pop ages 15+)	17	▲3

Tokyo's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	6	—
Regulatory Enforcement	7	▲2
E-Government Development Index	10	▼2
Government Effectiveness	10	▼2
Government Integrity	13	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Regulatory Enforcement	7	▲2

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Healthcare Index	2	—
Logistics Performance	3	—
Computer Software Spending	5	—
ICT Access	8	—
Environmental Performance	9	▲2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Environmental Performance	9	▲2

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Domestic Credit to Private Sector	2	—
GERD: Performed by Business Enterprise	2	—
Global Financial Centres Index	7	▼3
Number of Venture Capital Deals (fractional counting)	8	▲13
Investment Environment	10	▲5

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Number of Venture Capital Deals (fractional counting)	8	▲13
Investment Environment	10	▲5
Value of Greenfield Investments by Destination	16	▲5
Venture Capital Availability	14	▲2

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Unemployment, total (% total labor force)	1	▲2
Global Entertainment and Media Output (/Th population)	4	—
Number of Trademark Applications Issued to Residents	6	—
PCT Patents by Origin/bn PPP$ GDP	7	—
Enterprise Conditions	8	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
New Business Density	16	▲3
Labor Force Participation Rate (% of total pop ages 15+)	17	▲3
Unemployment, total (% total labor force)	1	▲2
Economic Quality	18	▲2
GDP per Capita Change (%)	12	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
No. of Unis in Top 200 World University Rankings	2	▲1
Assessment in Reading, Mathematics & Science	5	▼2
Safety Index	6	▼4
Political Stability and Absence of Violence/Terrorism	6	▼1
Perceived Tolerance of Ethnic Minorities	6	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
No. of Unis in Top 200 World University Rankings	2	▲1

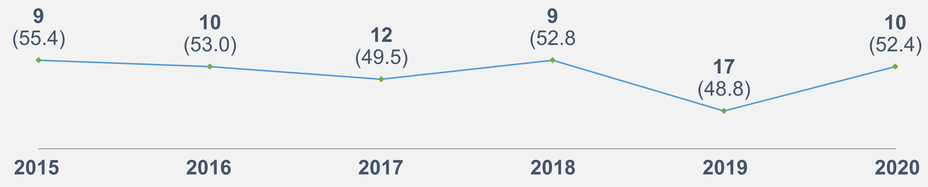
Toronto, Canada

DII 2020 Rank **10**

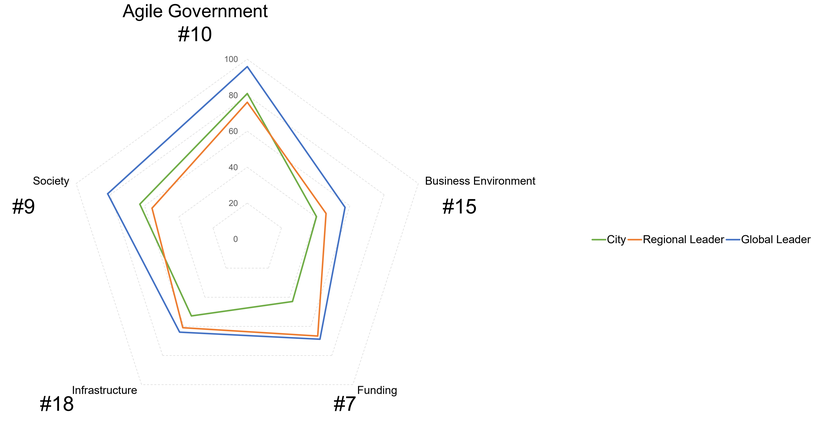
Top 10 & Rising Star

In 2020, Toronto ranked 10th in the Dubai Innovation Index, soaring from 17th in 2019. The big improvement in Toronto's overall ranking stems from a relatively elevated performance across four of the five pillars: Society (10th to 9th), Infrastructure (20th to 18th), Funding (14th to 7th), and Business Environment (25th to 15th) – though the city's ranking on Agile Government was unchanged, at 10th place. The rise in rankings for Business Environment is strongly attributed to GDP per Capita Change (%), Global Entertainment and Media Output, ICT Services Export and Market Capitalization. As for Funding, where the city also rose strongly, it performed well on Inward FDI Flow, Number of Venture Capital Deals, and Venture Capital Availability.

Toronto's Ranking & Score in the DII over time



Toronto's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	1	—
Perceived Tolerance of Ethnic Minorities	2	—
Rate of GDP Annual Growth	2	▲12
No. of JV-Strategic Alliance Deals (fractional counting)	3	—
GDP per Capita Change (%)	3	▲34

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	3	▲34
Rate of GDP Annual Growth	2	▲12
Value of Greenfield Investments by Destination	6	▲12
ICT Services Import	17	▲7
Global Entertainment and Media Output (/Th population)	7	▲5

Toronto's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Government Effectiveness	6	1
Regulatory Enforcement	6	1
Regulatory Quality	7	—
Trade Tariffs, %Duty	7	—
Government Integrity	8	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Government Effectiveness	6	▲1
Regulatory Enforcement	6	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Computer Software Spending	6	—
Logistics Performance	6	—
Healthcare Index	9	▼1
Energy Sustainability Index (Energy Performance)	11	—
Environmental Performance	12	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
ICT Services Import	17	▲7
Environmental Performance	12	▲1
ICT Access	17	▲1
GDP (PPP) per kg of oil equivalent (Energy Use)	27	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Number of Venture Capital Deals (fractional counting)	5	▲1
Inward FDI Flow (US$ Million)	6	▲3
Value of Greenfield Investments by Destination	6	▲12
Investment Environment	17	▼5
Global Financial Centres Index	17	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Value of Greenfield Investments by Destination	6	▲12
Inward FDI Flow (US$ Million)	6	▲3
Number of Venture Capital Deals (fractional counting)	5	▲1
Global Financial Centres Index	17	▲1
GERD: Performed by Business Enterprise	18	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Rate of GDP Annual Growth	2	▲12
No. of JV-Strategic Alliance Deals (fractional counting)	3	—
GDP per Capita Change (%)	3	▲34
The Global Entrepreneurship & Development Index	4	▼1
Market Capitalization (% of GDP)	4	▲3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	3	▲34
Rate of GDP Annual Growth	2	▲12
Global Entertainment and Media Output (/Th population)	7	▲5
Market Capitalization (% of GDP)	4	▲3
ICT Services Export	17	▲3

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Immigrants	1	—
Perceived Tolerance of Ethnic Minorities	2	—
No. of Unis in Top 200 World University Rankings	5	—
Assessment in Reading, Mathematics & Science	7	▼2
Political Stability and Absence of Violence/Terrorism	7	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Interpersonal Trust	8	▲3
School Life Expectancy, years	12	▲1
Graduates in Science and Engineering, %	19	▲1

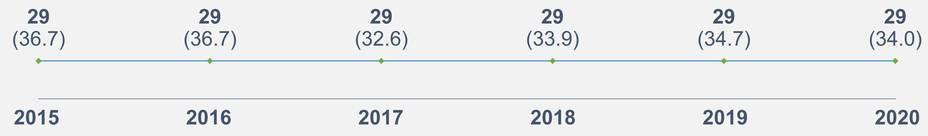
Turin, Italy

DII 2020 Rank

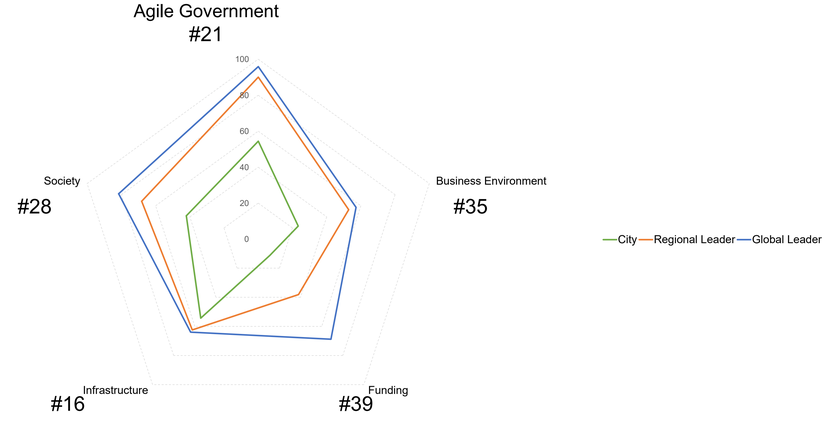
29

In 2020, Turin ranked 29th in the Dubai Innovation Index, unchanged from 2019. The city edged up in ranking for Infrastructure (17th to 16th) and for Business Environment (36th to 35th) between the two years but slipped on it's ranking for Society (24th to 28th) and Funding (38th to 39th). The improvement in Infrastructure can be attributed to enhancements in the Healthcare Index, Energy Use, and Compute Software Spending. The fall in ranking for Society is attributable to a slide in relative performance on Institutional Trust, Interpersonal Trust, and the Human Development Index. As for Agile Government, Turin ranked the same in both years, taking the 21st place. Within this pillar, the city's ranking on the E-Government Development Index fell but rose with respect to Regulatory Quality.

Turin's Ranking & Score in the DII over time



Turin's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	3	—
Perceived Tolerance of Ethnic Minorities	4	▲1
Perceived Tolerance of Immigrants	4	▲1
GDP (PPP) per kg of oil equivalent (Energy Use)	5	▲1
Logistics Performance	6	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Social Networks	14	▲12
Manufacturing Value Added (annual % growth)	13	▲10
Healthcare Index	16	▲7
Services etc., Value Added (annual % growth)	27	▲3
Regulatory Quality	19	▲2

Turin's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	3	—
Regulatory Enforcement	15	—
Regulatory Quality	19	▲2
E-Government Development Index	21	▼3
Government Integrity	21	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Regulatory Quality	19	▲2

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
GDP (PPP) per kg of oil equivalent (Energy Use)	5	▲1
Logistics Performance	6	—
Energy Sustainability Index (Energy Performance)	7	—
Environmental Performance	12	▼4
Healthcare Index	16	▲7

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Healthcare Index	16	▲7
GDP (PPP) per kg of oil equivalent (Energy Use)	5	▲1
Computer Software Spending	24	▲1
ICT Services Import	28	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Investment Environment	21	▲1
GERD: Performed by Business Enterprise	24	▲1
Number of Venture Capital Deals (fractional counting)	25	▼4
Claims on Central Government, etc. (%GDP)	27	▲2
Domestic Credit to Private Sector	28	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Claims on Central Government, etc. (%GDP)	27	▲2
Value of Greenfield Investments by Destination	36	▲2
Investment Environment	21	▲1
GERD: Performed by Business Enterprise	24	▲1
Domestic Credit to Private Sector	28	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Creative Goods Exports, %	13	—
Scientific & Technical Articles	13	▲1
Manufacturing Value Added (annual % growth)	13	▲10
Rate of GDP Annual Growth	15	▼7
No. of JV-Strategic Alliance Deals (fractional counting)	21	▼6

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	13	▲10
Services etc., Value Added (annual % growth)	27	▲3
Number of Trademark Applications Issued to Residents	28	▲2
Scientific & Technical Articles	13	▲1
PCT Patents by Origin/bn PPP$ GDP	23	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Perceived Tolerance of Ethnic Minorities	4	▲1
Perceived Tolerance of Immigrants	4	▲1
No. of Unis in Top 200 World University Rankings	6	—
School Life Expectancy, years	13	▼1
Social Networks	14	▲12

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Social Networks	14	▲12
Safety Index	31	▲2
Perceived Tolerance of Ethnic Minorities	4	▲1
Perceived Tolerance of Immigrants	4	▲1
Political Stability and Absence of Violence/Terrorism	16	▲1

Vienna, Austria

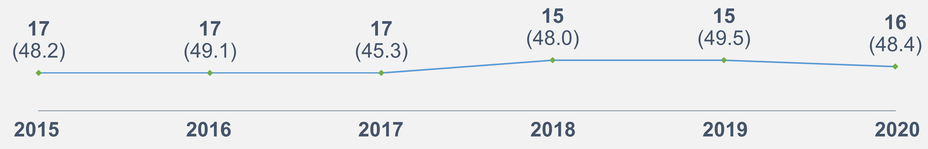
DII 2020 Rank

16

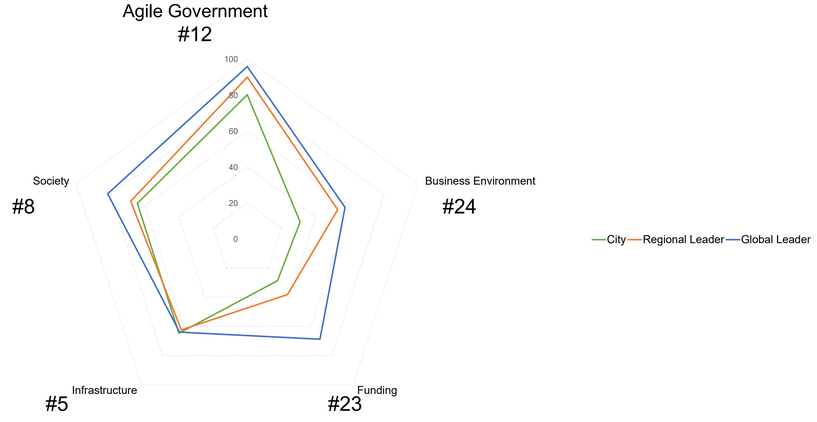
New City

In 2020, Vienna ranked 16th in the Dubai Innovation Index, down one place from 15th in 2019. Between the two years, the city improved in ranking across three pillars: Funding (25th to 23rd), Infrastructure (7th to 5th), and Society (9th to 8th). Improvements in Venture Capital Availability and the Investment Environment contributed to its higher ranking within the Funding pillar. Similarly, the city did better on both Energy Use and Environment Performance. On the two remaining pillars, Vienna's ranking fell: on Business Environment it slipped from 22nd to 24th, and on Agile Government from 11th to 12th. The decline in the quality of its Business Environment arose from its lower ranking for GDP per Capita Change (%) and Manufacturing Value Added (Annual % Growth).

Vienna's Ranking & Score in the DII over time



Vienna's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	3	—
Trade Tariffs, %Duty	3	—
Rule of Law Index (Order and Security)	3	▲1
Healthcare Index	4	▼1
No. of Unis in Top 200 World University Rankings	4	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
E-Government Development Index	11	▲4
Social Networks	9	▲3
Market Capitalization (% of GDP)	24	▲3
Labor Force Participation Rate (% of total pop ages 15+)	23	▲2
Services etc., Value Added (annual % growth)	23	▲2

Vienna's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	3	—
Regulatory Enforcement	4	▲1
E-Government Development Index	11	▲4
Government Effectiveness	12	▼1
Regulatory Quality	13	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
E-Government Development Index	11	▲4
Regulatory Enforcement	4	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	3	—
Healthcare Index	4	▼1
Environmental Performance	5	▲1
Energy Sustainability Index (Energy Performance)	6	—
ICT Services Import	10	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Environmental Performance	5	▲1
GDP (PPP) per kg of oil equivalent (Energy Use)	10	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Investment Environment	8	▲1
Claims on Central Government, etc. (%GDP)	17	▲1
GERD: Performed by Business Enterprise	20	—
Venture Capital Availability	22	▲1
Number of Venture Capital Deals (fractional counting)	23	▼2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Investment Environment	8	▲1
Claims on Central Government, etc. (%GDP)	17	▲1
Venture Capital Availability	22	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
ICT Services Export	7	▲1
Scientific & Technical Articles	8	—
PCT Patents by Origin/bn PPP$ GDP	10	▼1
Economic Quality	12	—
Enterprise Conditions	13	▼1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Market Capitalization (% of GDP)	24	▲3
Labor Force Participation Rate (% of total pop ages 15+)	23	▲2
Services etc., Value Added (annual % growth)	23	▲2
ICT Services Export	7	▲1
Unemployment, total (% total labor force)	18	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Rule of Law Index (Order and Security)	3	▲1
No. of Unis in Top 200 World University Rankings	4	—
Perceived Tolerance of Ethnic Minorities	4	—
Perceived Tolerance of Immigrants	4	—
Graduates in Science and Engineering, %	5	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Social Networks	9	▲3
Rule of Law Index (Order and Security)	3	▲1
Graduates in Science and Engineering, %	5	▲1
Interpersonal Trust	7	▲1
Safety Index	7	▲1

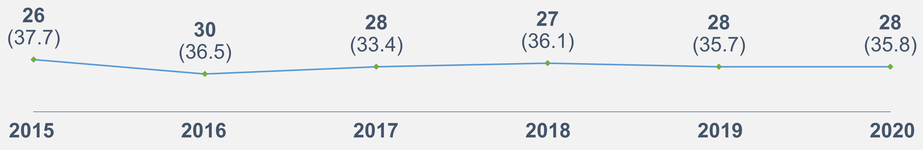
Warsaw, Poland

DII 2020 Rank

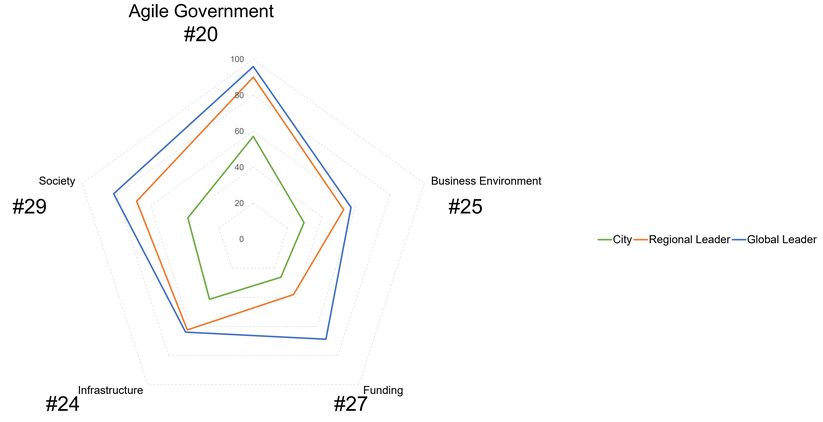
28

In 2020, Warsaw ranked 28th overall on the Dubai Innovation Index, unchanged from 2019. The city's key improvements in rank from 2019 to 2020, across the pillars, were in Infrastructure (25th to 24th), Funding (28th to 27th) and Business Environment (28th to 25th). Better rankings for GDP per Capita Change (%), Market Capitalization, and Unemployment Rate helped it rise two places on our Business Environment metric. Although its performance in Agile Government was unchanged, this remains the pillar where Warsaw performs best, at 20th place. With respect to Society, the city slipped from 28th place in 2019 to 29th place in 2020.

Warsaw's Ranking & Score in the DII over time



Warsaw's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	3	—
Unemployment, total (% total labor force)	4	▲4
Creative Goods Exports, %	6	▼1
No. of Unis in Top 200 World University Rankings	6	—
Value of Greenfield Investments by Destination	7	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	10	▲12
E-Government Development Index	16	▲5
Unemployment, total (% total labor force)	4	▲4
Assessment in Reading, Mathematics & Science	8	▲4
Inward FDI Flow (US$ Million)	22	▲4

Warsaw's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Trade Tariffs, %Duty	3	—
Regulatory Enforcement	14	—
E-Government Development Index	16	▲5
Regulatory Quality	20	▼1
Government Integrity	20	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
E-Government Development Index	16	▲5

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	8	—
GDP (PPP) per kg of oil equivalent (Energy Use)	16	▲1
Environmental Performance	17	▲1
ICT Services Import	18	▲2
ICT Access	21	▲2

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Computer Software Spending	29	▲3
ICT Services Import	18	▲2
ICT Access	21	▲2
GDP (PPP) per kg of oil equivalent (Energy Use)	16	▲1
Environmental Performance	17	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Value of Greenfield Investments by Destination	7	▲1
Claims on Central Government, etc. (%GDP)	15	▲2
Investment Environment	22	▼1
Inward FDI Flow (US$ Million)	22	▲4
Number of Venture Capital Deals (fractional counting)	25	▼4

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	22	▲4
Claims on Central Government, etc. (%GDP)	15	▲2
GERD: Performed by Business Enterprise	25	▲2
Value of Greenfield Investments by Destination	7	▲1
Domestic Credit to Private Sector	33	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Unemployment, total (% total labor force)	4	▲4
Creative Goods Exports, %	6	▼1
Cost of Redundancy Dismissal, salary weeks	8	—
Rate of GDP Annual Growth	8	—
GDP per Capita Change (%)	10	▲12

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	10	▲12
Unemployment, total (% total labor force)	4	▲4
Total Value of Stocks Traded (% of GDP)	22	▲4
Market Capitalization (% of GDP)	25	▲3
Labor Force Participation Rate (% of total pop ages 15+)	26	▲2

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
No. of Unis in Top 200 World University Rankings	6	—
Perceived Tolerance of Ethnic Minorities	8	▲1
Perceived Tolerance of Immigrants	8	▲1
Assessment in Reading, Mathematics & Science	8	▲4
Safety Index	10	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Assessment in Reading, Mathematics & Science	8	▲4
Perceived Tolerance of Ethnic Minorities	8	▲1
Perceived Tolerance of Immigrants	8	▲1

Zurich, Switzerland

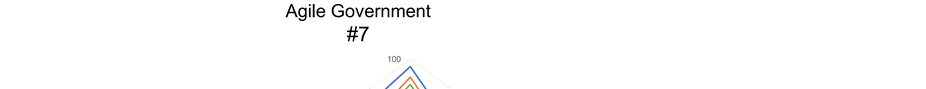
DII 2020 Rank

4

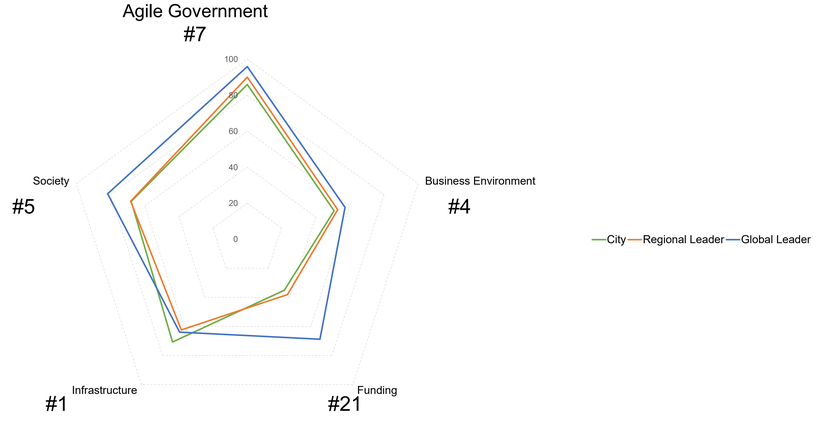
Top 10

In 2020, Zurich climbed to 4th place on the Dubai Innovation Index, entering the top 5 for the first time, and advancing three places from 7th in 2019. The city's improvement and strong innovative performance is reflected in its top 5 placing on three pillars in 2020: Society (5th), Infrastructure (1st), and Business Environment (4th). It also gets a top 10 slot on a fourth pillar, Agile Government, where it achieved 7th place, down one step from 6th place in 2019. On Funding, its weakest point, the city edged up from 22nd in 2019 to 21st in 2020. Zurich has the highest economic quality for the fifth year in a row, as well as the highest performance on our energy sustainability index and human development index. It ranks in the top two for government effectiveness and government integrity and was 4th for logistics performance. Zurich has also performed well in the safety index this year, rising two places to 2nd.

Zurich's Ranking & Score in the DII over time



Zurich's Performance vs Regional & Global Leader (2020)



Top 5 KPI Performances

KPI	Rank	Δ from 2019
Economic Quality	1	—
Energy Sustainability Index (Energy Performance)	1	—
Government Integrity	1	—
Human Development Index (HDI)	1	—
Rule of Law Index (Order and Security)	1	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
GDP per Capita Change (%)	2	▲26
Services etc., Value Added (annual % growth)	6	▲22
Rate of GDP Annual Growth	3	▲6
Value of Greenfield Investments by Destination	30	▲6
Unemployment, total (% total labor force)	13	▲4

Zurich's Performance by Pillar (2020)

Agile Government

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Regulatory Enforcement	19	▲1
Trade Tariffs, %Duty	23	—
Government Integrity	26	—
Government Effectiveness	27	—
Regulatory Quality	27	▲1

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Regulatory Enforcement	19	▲1
Regulatory Quality	27	▲1

Infrastructure

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Logistics Performance	11	—
GDP (PPP) per kg of oil equivalent (Energy Use)	19	▼1
Healthcare Index	23	▼4
Energy Sustainability Index (Energy Performance)	30	▼2
Environmental Performance	30	—

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
ICT Services Import	32	▲1

Funding

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	17	▲5
Venture Capital Availability	19	▼1
Claims on Central Government, etc. (%GDP)	20	▲2
Value of Greenfield Investments by Destination	23	—
Number of Venture Capital Deals (fractional counting)	25	▼4

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Inward FDI Flow (US$ Million)	17	▲5
Claims on Central Government, etc. (%GDP)	20	▲2
GERD: Performed by Business Enterprise	29	▲1
Investment Environment	30	▲1

Business Environment

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	8	▲18
Cost of Redundancy Dismissal, salary weeks	11	—
Creative Goods Exports, %	12	—
Rate of GDP Annual Growth	13	▼10
Total Value of Stocks Traded (% of GDP)	13	▲4

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Manufacturing Value Added (annual % growth)	8	▲18
Total Value of Stocks Traded (% of GDP)	13	▲4
Market Capitalization (% of GDP)	17	▲3
Number of Trademark Applications Issued to Residents	21	▲3
Unemployment, total (% total labor force)	23	▲1

Society

Top 5 KPI Performances

KPI	Rank	Δ from 2019
Graduates in Science and Engineering, %	4	▼1
No. of Unis in Top 200 World University Rankings	5	—
Perceived Tolerance of Ethnic Minorities	5	▲1
Perceived Tolerance of Immigrants	7	—
Institutional Trust	9	▼3

KPIs with the Greatest Improvement

KPI	Rank	Δ from 2019
Interpersonal Trust	20	▲8
Political Stability and Absence of Violence/Terrorism	28	▲2
Perceived Tolerance of Ethnic Minorities	5	▲1