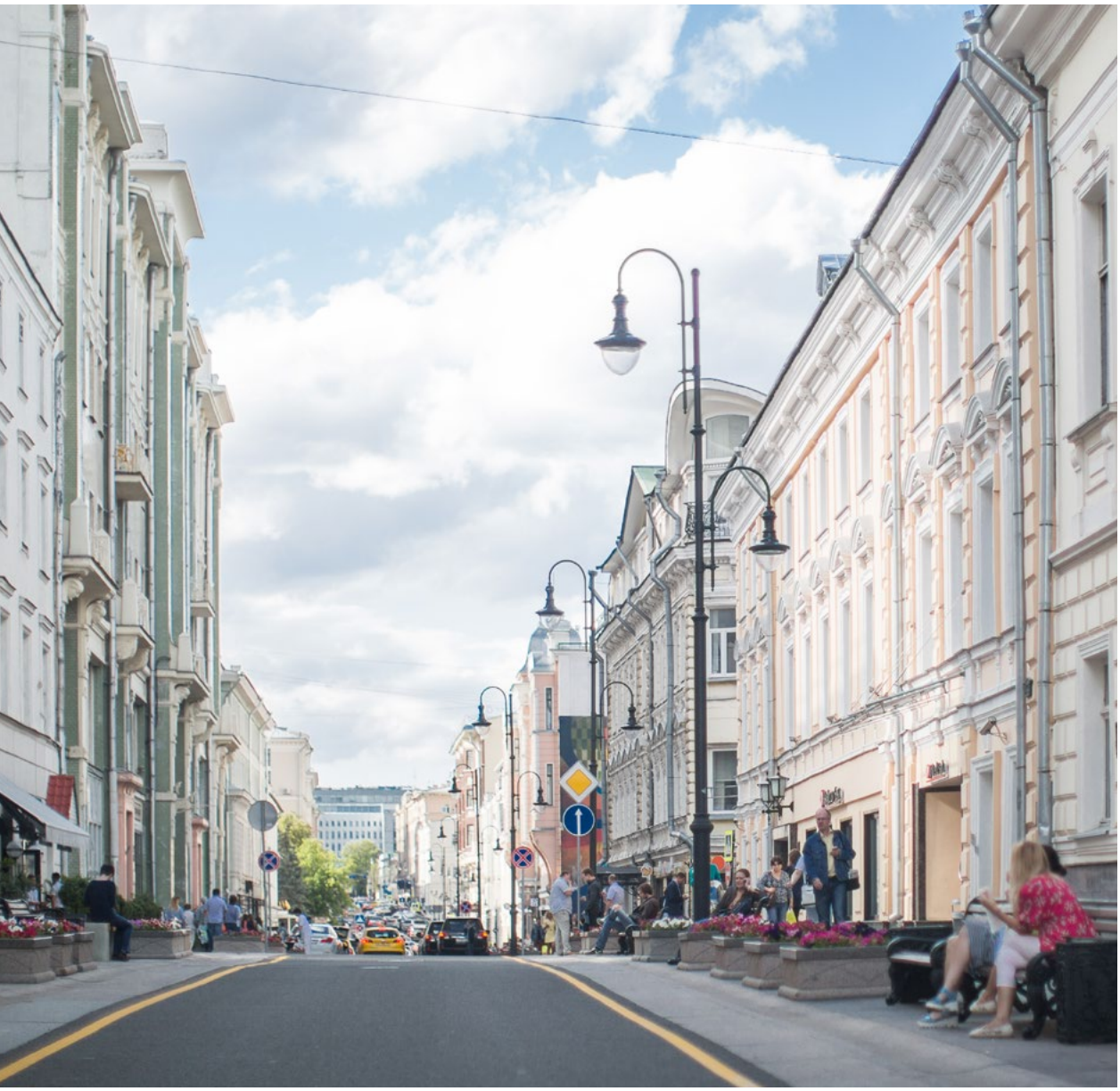
Emerging 7 Cities Report – 2016

«From Moscow to São Paulo»



Moscow

Beijing

Mexico City

Istanbul

São Paulo

Mumbai

Jakarta

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Introduction

In the last century, more buildings and pieces of infrastructure were erected on our planet than at any other time during the previous 2,000 years! In particular, urban areas in emerging economies have been marked by poorly planned, hasty development carried out in a random, helter-skelter fashion.

And, so, one of the most pressing issues facing the world's major cities today is how to preserve the best of the existing cityscape while also conserving those remaining islands of nature within urban areas from being engulfed by glass and concrete, and enhancing quality of life for city residents, despite the relentless pressures of population growth and gigantic urban development projects. In my view, this challenge should be met with comprehensive solutions that would factor in the local nuances of a city's political, social, economic and environmental make-up. This is one of the critical conditions for ensuring the harmonious growth of major metropolitan areas, while also creating an attractive quality of life for city dwellers both today and into the future.

Of course, doing so will inevitably require the transformation of many architectural ensembles and even entire cities. But, the important thing here is that metropolitan areas should be more rationally planned and more convenient for both living and working, and cities must be better integrated with the natural environment.

Numerous seemingly fantastic innovations, including "smart" housing and driver-less cars, will soon become commonplace. And, urban residents can only welcome them. However, making such projects, which only yesterday seemed so surreal, an everyday reality will require considerable joint efforts on the part of the business community, politicians, municipal authorities and, of course, city dwellers themselves.

I believe that you'll find the latest edition of our study — From Moscow to São Paulo: Emerging 7 Cities Report — to be of great interest. It takes a close-up look at how the top cities (E7 Group) of seven major emerging markets are evolving. Moreover, its publication coincides with the 5th Moscow Urban Forum.

Just like previous editions, this study compares the social and economic advantages and disadvantages of Moscow, Beijing, Mexico City, Istanbul, São Paulo, Mumbai and Jakarta, all global cities that are characterised by a highly dynamic pace of growth in many critical areas. These seven cities are hubs of intellectual capital and leading-edge advanced technologies, which represent the main wealth of our modern civilisation.

I am confident that the information presented in this study will help facilitate the development of strategies for enhancing the competitiveness of major metropolitan areas and further improving the quality of life enjoyed by their residents.

Sincerely,

Igor Lotakov
Managing Partner
PwC Russia

A megacity is likely to succeed in the analysis overall due to, among other things, a well-balanced mix of key components

Review of main study findings
Overall rating of E7 Group cities
06

Against tough competition, the Russian capital city took the lead in this year's edition of From Moscow to São Paulo: Emerging 7 Cities Report, published by PwC. Moscow overtook Beijing, which was relegated to second place, ranking just above Mexico City, which remained in third place.

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In line with continuing efforts to enhance our approach, the biggest change in this edition has been to bolster the study's research foundation. In order to make each of our 10 indicators ever more accurate and representative, we've increased our variables to 67.

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Understanding the data points that underpin the study

Today, Mumbai, Beijing, Jakarta, Moscow, São Paulo, Mexico City and Istanbul are the most populated urban agglomerations in their respective countries. These seven megacities are major economic, scientific and cultural centres that contribute significantly to overall GDP.

The natural tendency of millions of people to strive for a better, wealthier life inevitably increases the burden on the Earth's natural resources, climate and environment.

Many cities, as their populations grow and the need for mobility increases, face the priority of resolving transport and housing issues, which requires more and more investment.

Moscow

Mumbai

“Nonetheless, in terms of growth, Moscow has advanced by 46 points overall

Istanbul

Review of main study findings

Overall rating of E7 Group cities

Moscow scored 338 points, or 11 more than the Chinese capital and 46 more than Mexico City. Russia’s biggest city took first place in five of the 10 indicators used in our analysis.

Russia’s current economic challenges notwithstanding, Moscow took the top spot in PwC’s latest global rating of the largest cities within the E7 Group of seven major emerging economies. Against tough competition, the Russian capital city took the lead in this year’s edition of From Moscow to São Paulo: Emerging 7 Cities Report, published by PwC. Moscow overtook Beijing, which was relegated to second place, ranking just above Mexico City, which remained in third place. This progress speaks to Moscow’s strong growth dynamic, which persists even under adverse conditions, and highlights the city’s significant potential in many important areas.

Moscow scored 338 points, or 11 more than the Chinese capital and 46 more than Mexico City. Russia’s biggest city took first place in five of the 10 indicators used in our analysis.

These five indicators, which are critical for any modern urban centre, are Intellectual Capital and Innovation, Technology Readiness (here Moscow and Beijing scored an equal number of points), Transport and Infrastructure, Sustainability and the Natural Environment, and Demographics and Livability. Istanbul reached the median position in the rating with 278 points, followed by São Paulo with 260 points. The two lowest-ranking cities are Jakarta with 209 points and Mumbai with 195 points overall.

As we have significantly increased the number of variables in this year’s report, it should come as no surprise that each city has achieved a higher overall score of points in this edition.

Nonetheless, in terms of growth, Moscow has advanced by 46 points overall, with São Paulo 8 points behind at 38. The next position is held by Mumbai with 33 points, followed by Mexico City with 30 points, outranking Jakarta’s gain by two points. For their part, Beijing and Istanbul gained 28 and 23 points correspondingly to close out the table.

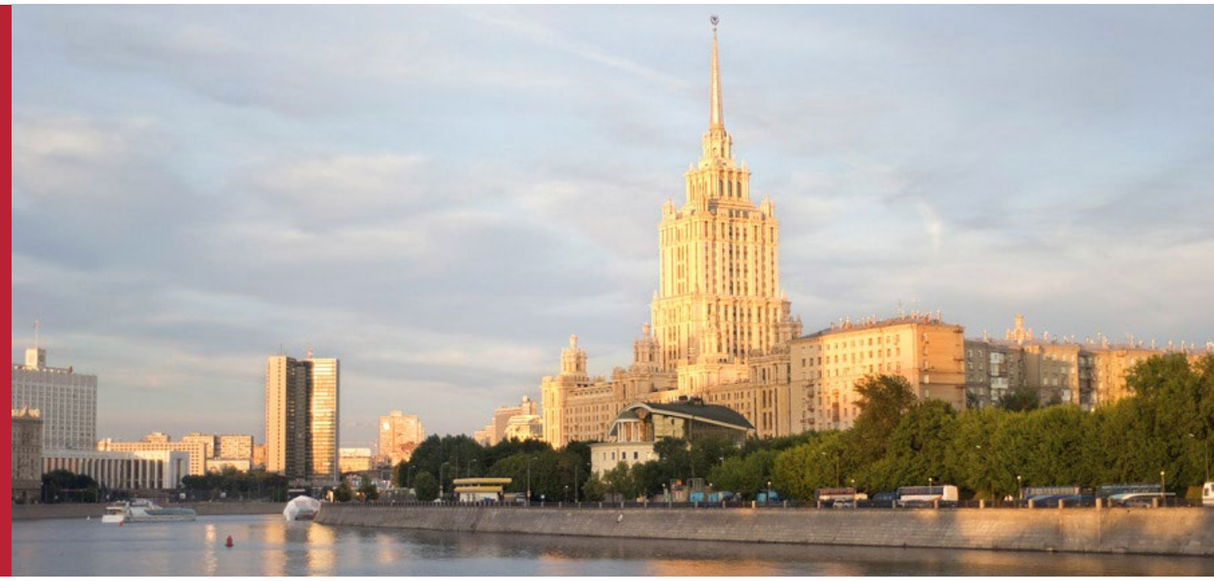
Compared to the 2014 report, Jakarta managed to achieve more positive results in two indicators: Technology Readiness and Health, Safety and Security. Meanwhile, Mumbai slightly improved its positions in Demographics and Livability and Ease of Doing Business.

Rank	Intellectual capital and innovation	Technology readiness	City gateway	Transportation and infrastructure	Health, safety and security	Sustainability and the natural environment	Demographics and livability	Economic clout	Ease of doing business	Cost	Score
1 Moscow	43	35	36	46	22	36	28	27	38	27	338
2 Beijing	42	35	43	34	21	33	25	38	38	18	327
3 Mexico City	32	20	23	33	28	33	27	24	42	30	292
4 Istanbul	36	21	40	33	16	29	19	21	32	31	278
5 São Paulo	28	26	23	32	24	26	17	20	27	37	260
6 Mumbai	26	15	15	28	13	23	15	23	27	24	209
7 Jakarta	17	17	20	21	17	23	9	19	23	29	195

Highest score in each indicator

> *In light of this, major cities, especially those that are not high-ranking in our current study, must pay more attention to implementing innovations, improving their transport systems and developing human capital in order to further boost their competitiveness.*

Istanbul



Moscow

São Paulo, the biggest city in Brazil and in all of South America, retained its fifth-place spot in the current rankings. In accordance with its aggregate indicators, the city still lags behind each of the top-three leaders as well as Istanbul, which came in fourth.

Looking at the indicators in their three family groups, the Brazilian megacity attained 20 points less than Istanbul in Tools for a Changing World. Yet, São Paulo is two points ahead of Istanbul in Quality of Life. This is primarily due to the Turkish megacity's low scoring in the Health, Safety and Security indicator. However, these two competitors managed to tie in Economics with 84 points each. Please note that in general the gap between these two has shrunk substantially — from 33 to 18 points overall — as compared to 2014.

Istanbul's mid-table position overall, consistent with 2014, reflects the balance in the city's performance across the board, advancing or remaining level in four indicators while falling in six. A prime example of this trend is Transportation and Infrastructure, where the city's improvement by three places since 2014 is somewhat outweighed by a decline of two places in Economic Clout.

Mexico's capital city has settled again in third place, remaining fairly stable in most indicators, but has fared slightly worse than in 2014 in just two indicators, falling one place in both Technology Readiness and Cost.

In accordance with other indicators, Mexico City's only other deviation since 2014 comes in the form of a two-place rise in Demographics and Livability, which helped the city climb to the second place of the table here. In addition, the Latin American megacity managed to score two more points for this edition in Health, Safety and Security, thus ensuring its position at the top of that indicator.

Interestingly, although Beijing appears further down our list of cities in four of the ten indicators, it only slips one place overall as a result of remaining at the top in both City Gateway and Economic Clout, along with six other second-place indicator finishes. Of these second-place finishes, Moscow and Beijing have switched positions in two, Intellectual Capital and Innovation and Transportation and Infrastructure, in which the Russian capital has risen to the top.

Moscow comes in on top in five of the ten indicators — Intellectual Capital and Innovation, Technology Readiness, Transportation and Infrastructure, Sustainability and the Natural Environment, and Demographics and Livability. That's more than any other city, with improvements in four and a consistent performance in another five. The most notable of these improvements for Moscow is in Ease of Doing Business, where the Russian capital advances three places.

Russia's biggest city attained its highest point difference 2014 (+16) in Transport and Infrastructure, helped in part by its first-place position in two variables that were shifted to this group from Demographics and Livability in order to provide a more comprehensive picture of urban transport — Traffic Congestion and Ease of Commute. In addition to this, the city also achieves pole position in another one of the report's revised variables, Major Construction Activity, giving Moscow more No. 1 finishes in this indicator (Transport and Infrastructure) than any other city. This pushes the Russian capital from second place to first place, edging out the Chinese capital, which now lags 12 points behind. This result was achieved despite a decline by one place in Mass Transit Coverage, caused in part by the recent expansion of the city's borders through the annexation of adjacent municipalities.

The Russian capital displayed continued strength in Technology Readiness and Sustainability and the Natural Environment. At the same time, however, Moscow has ample opportunity to improve its progress in a number of important indicators. First of all, there is City Gateway, in which the Russian capital lost one point and remains third, behind only Beijing and Istanbul. In accordance with the variables that form this indicator, Moscow failed to take the lead in any. But, Moscow ranks second in International Tourists, Incoming/Outgoing Passenger Flows, Top 100 Airports, Airport Connectivity and Airport to CBD access; third together with Istanbul in Airport to CBD Access; fourth in Hotel Rooms; and fifth (its worst ranking) in Number of International Association Meetings.

In terms of Health, Safety and Security, Moscow finds itself in third place, conceding to Mexico City, the leader, as well as São Paulo. One of the main reasons behind this is the low level of life expectancy, which effectively pushes the city down in Health System Performance (assessed at the country level). In 2014, the Russian capital shared fourth place with São Paulo, while Beijing and Mexico City were the joint leaders and Istanbul took third spot.

Where Demographics and Livability is concerned, Moscow and Beijing previously were joint leaders among the E7 cities. Yet, this time, the Russian capital alone takes pole position with Mexico City runner-up and Beijing in the third position.

Cost is Moscow's poorest indicator performance, where the city has moved down to fifth place from a second-place tie with Mexico City previously. Moscow suffers here in Cost of Living, where it appears at the bottom of all seven cities, down one spot since 2014.

Beijing has increased its lead over Moscow to 11 points in the Economic Clout indicator in this edition, partly due to its strong performance in Employment Growth, a new variable introduced this year, where Beijing tops the table. This leaves the Russian capital holding second position, ahead of Mexico City by just three points. Still, this is quite an impressive result in the wake of the economic problems Russia has been facing since 2014. The same can be said about its tie for second place with Beijing in Ease of Doing Business, up from fifth since the 2014 edition.

Our correlation analysis of the variables that make up the report's indicators shows that a megacity is likely to succeed in the analysis overall due to, among other things, a well-balanced mix of key components. Public Transport Systems, Housing, Disaster Preparedness, and Literacy and Enrolment all relate strongly with overall score and top performance. Balance works best in today's complex urban ecosystems. Education, transit, health, economics, and governance all have to line up for a city to lead.

Likewise, good quality of life must be inherent, as it is no longer a luxury and could be considered a basic requirement for cities to attract and retain essential talent. It is imperative for every country's economic well-being to attract successful entrepreneurs and people with diverse talents to their major cities, which are the nerve centres of their national financial, economic, scientific and cultural life, as well as hubs for entire regions. Today, nothing short of harmony between intellectual endeavours and government economic policies can contribute significantly to GDP growth and accelerate the pace of modern urban development. Successful entrepreneurship and the attractiveness of each city, in turn, largely depend on fair taxation of businesses and individuals alike.

In light of this, major cities, especially those that are not high-ranking in our current study, must pay more attention to implementing innovations, improving their transport systems and developing human capital in order to further boost their competitiveness. Moscow, as the leader among the seven cities covered in this report, must also focus on mitigating operational risks and reducing crime rates.

Methodology

In line with continuing efforts to enhance our approach, the biggest change in this edition has been to bolster the study's research foundation. In order to make each of our 10 indicators ever more accurate and representative, we've increased our variables from 59 in our last report to 67 in this one and, in the process, added 13 entirely new variables while deleting or modifying another 10. While this enriches our information and strengthens the balance, a combination of our revised mix of measures, each city's own actions, and the relative performance of other cities all affect edition-on-edition comparisons.

True to our purpose and established practice of continually updating and improving our data and enriching our methodology, we continually upgrade and enhance the research. In each edition, we try to develop the most comprehensive quantitative view of urban reality that we can in order to shed further light on the tools needed, and the directions to be taken, to support and sustain urban development.

In this year's edition, we have bolstered both the depth and breadth of our core data variables (with details on refinements presented in the 10 indicator discussions).

We took a step back in a few areas of the core data to spotlight several specific issues of importance to major urban areas: disaster preparedness, taxation, and metropolitan transit. In the first two cases, we added data variables to create a more complete view, and we discuss the findings as a subtext of the main results. In the last instance, we gathered intra-city mobility data into one grouping to develop a street-level picture.

Urban resilience is an area that today demands critical attention across a wide front. Our variables begin with exposure to the wind, water, and earthquakes of natural disasters, as measured by their economic and human effect rather than the likelihood of occurrence, as we've done in the past. We have added a separate measure of the risk of man-made threats and pandemics (including cyberattacks, market crashes, nuclear accidents, oil price shocks, sovereign defaults, acts of terrorism, power outages, human pandemics, and plant pandemics). Then, with the help of PwC's actuarial and forensics practice who also developed our natural disaster exposure variable, we have factored in each city's natural disaster preparedness, accounting for active strategies and their implementation, and the robustness of municipal systems such as transport and health. All in all, we now present a fuller view of risk and preparedness than in past years.

The tax picture builds from the total corporate tax rate included in previous reports. This time, we have also engaged the PwC team that collaborates with the World Bank Group to produce the Paying Taxes report. They have added personal tax and tax efficiency to our evaluation in order to reflect the tax system influence on citizens and provide a broad sense of wider systems and process effectiveness.

To better reflect the reality of public transport, we have realigned and refined our mix of data to complement our perspective on system engineering and efficiency. We moved two variables, Traffic Congestion and Ease of Commute, to the Transportation and Infrastructure indicator to capture the reality of city life as experienced on the ground. And, what had been the straightforward Cost of Public Transport in our previous editions has now been superseded by a new variable called Affordability of Public Transport. In addition, we've revised the Major Construction Activity variable, which is now derived from three equally weighted measures: number of buildings planned or under construction; number of properties sold; and construction employment.

The basic study itself, however, remains essentially the same (although the devil is always in the details, which are touched upon here and enumerated throughout the following pages).

With 67 variables constituting our 10 indicator groups this year, we've added 13 new variables to our report, increasing the number from 59 in the previous edition. Moreover, 10 variables have been deleted or modified. The only indicator in our current edition that contains the same variables as in our previous report is Intellectual Capital and Innovation, but, even here, we've further refined the variable measuring each city's population with higher education.

Our Cities of Opportunity publications are based on publicly available information supported by extensive research. Three main sources are used to gather the relevant data: global multilateral development organisations, such as the World Bank and the International Monetary Fund; national statistics organisations; and commercial data providers. The data were collected during the second quarter of 2016. In most cases, the data in the study refer to 2015.

In some cases, national data are used as a proxy for city data. Use of national data tends to disadvantage the seven cities in our study, however, as all of them are either national or regional financial and business hubs that tend to outperform national averages in measures of socioeconomic advancement. Moreover, this effect may be even more pronounced in developing economies and those with larger rural populations. Nonetheless, because consistent comparisons across all cities are critical to maintain objectivity, country-level data are used when other consistent, highly reliable sources of publicly accessible data are unavailable for all seven cities (as with Math/Science Skills Attainment, for example).

Our scoring methodology has been developed to ensure transparency and simplicity for readers, as well as comparability across cities. The output makes for a robust set of results and a strong foundation for analysis and discussion.

Initially, we decided that maximum transparency and simplicity required that we avoid overly complicated weightings of variables. Consequently, each of the 67 variables in this report is treated with equal importance and, thus, weighted equally. This approach makes the study easy to understand and use for business leaders, public policymakers, academics, and laypersons alike.

Taking the data for each variable, the seven cities are sorted from best-performing to worst. They are then assigned a score from 7 (best-performing) to 1 (worst-performing). In the case of a tie, they are given the same score.

Once all 67 variables are ranked and scored, they are placed within their respective indicator group (for example, Intellectual Capital and Innovation or Ease of Doing Business), of which there are 10 altogether. Within each group, the variable scores are then summed up to produce an overall score for that indicator. This produces 10 indicator league tables that display the relative performance of our seven cities. The overall table represents the sum of the cities' performance across all 67 variables.

Tools for a changing world

Moscow

Out of the seven cities comprising the E7 Group, which are the most dynamic in terms of creating the right conditions for building on intellectual and technological capacities? And, which are most attractive as economic and cultural centres?

To answer these questions, we used Tools for a Changing World as a category for our research, which includes three indicators: Intellectual Capital and Innovation, Technology Readiness, and City Gateway.

The first indicator focuses on education and innovation. Significant intellectual capital as well as the creation and introduction of innovative solutions are imperative preconditions for improving any megacity's competitiveness. Yet, such improvement is also impossible without the successful development and application of advanced technologies in major industries. As for a city's overall appeal, this often depends on its level of progress in these indicators. For example, a quality base of advanced technologies open doors for "virtual visitors" from the outside world.

Our research identified three leaders in terms of these three critical indicators. Just as in the last edition, Beijing, Moscow and Istanbul are ranked as the top three.

"Our research identified three leaders in terms of these three critical indicators: Intellectual Capital and Innovation, Technology Readiness, and City Gateway. Just as in the last edition, Beijing, Moscow and Istanbul are ranked as the top three.

Beijing

Istanbul

Intellectual Capital and Innovation

Moscow has become the top performer in this indicator, swapping positions with Beijing, which is runner-up by just one point.

Moscow

Beijing

Rank	Libraries with public access	Math/science skills attainment*	Literacy and enrollment*	Percent of population with higher education	World university rankings	Innovation Cities Index	Intellectual property protection*	Entrepreneurial environment*	Score
1 Moscow	6	6	7	7	5	6	1	5	43
2 Beijing	1	7	3	6	7	7	5	6	42
3 Mexico City	3	5	4	4	6	4	3	7	36
4 Istanbul	7	3	5	5	2	2	4	4	32
5 São Paulo	5	2	6	3	4	3	2	3	28
6 Mumbai	4	4	1	1	3	5	6	2	26
7 Jakarta	2	1	2	2	1	1	7	1	17

Highest score in each variable

* Country-level data

If we visualise today's megacity as a multifaceted system, it becomes clear that city residents and their collective knowledge represent an essential driver of this highly complicated entity. Significant intellectual potential does not develop overnight; nor can it be imported to the required extent. Such potential must be fostered, preserved, developed and enriched if the host megacity is to be attractive enough for investors, successful businesspeople and talented individuals.

In this edition of From Moscow to São Paulo, we have attempted to reflect our assessments of such important parameters through the Intellectual Capital and Innovation indicator. As in previous editions, this indicator is composed of eight variables: Libraries with Public Access, Math/Science Skills Attainment, Literacy and Enrolment, Percent of Population with Higher Education, World University Rankings, Innovation Cities Index, Intellectual Property Protection, and Entrepreneurial Environment.

Moscow has become the top performer in this indicator, swapping positions with Beijing, which is runner-up by just one point. Russia's biggest city has managed to perform above all of its E7 peers in both Literacy and Enrolment and Percent of Population with Higher Education. The Russian capital also attained the second-best result in another three variables: Libraries with Public Access, Math/Science Skills Attainment and Innovation Cities Index. Thus, it's clear that Moscow has displayed some noticeable stability since our last report, remaining in pole position or second in the same five variables here.

Where Math/Science Skills Attainment (country-level data) is concerned, Beijing maintained the maximum ranking, while Moscow and Istanbul held their previous positions (second and third place, respectively).

Percent of Population with Higher Education has historically been a strong point for Moscow as well. Just as in previous editions, the Russian capital ranks ahead of its peers in this indicator. Beijing has risen from fourth place to become the runner-up here, replacing Mexico City in second place.

The World University Rankings variable, which has now been included in the report for the second time, shows the same rank order as in 2014, with Beijing leading the pack, followed by Istanbul and then Moscow in third place.

In terms of the Innovation Cities Index variable, which reflects how advanced the subject cities' economies are in this critical area, Beijing has again outperformed its closest competitor, Moscow, which took second place, followed by Mumbai, which maintained its third-place position.

As the Internet-driven economy develops apace, protection of intellectual property (IP) has gained critical importance. Copyright infringement will not only drive potential investors away from countries with inadequate safeguards for IP rights, but will also damage such jurisdictions' international reputations.

In accordance with our report, Jakarta remains the E7 city with the most rigorous copyright protections. The Indonesian capital is followed by Mumbai, while Beijing lost one place to land in third. Moscow, meanwhile, just as before, finds itself in last place, emphasising the need for dramatic improvement in the Intellectual Property Protection variable. Mexico City rose one position here, while Istanbul fell one spot, with São Paulo remaining second to last.

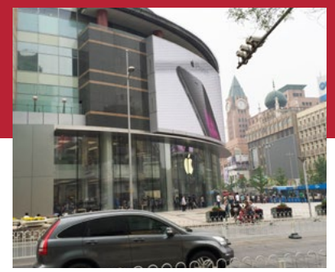
> *"Jakarta remains the E7 city with the most rigorous copyright protections. The Indonesian capital is followed by Mumbai.*

For the third year running, Turkey's largest city has maintained first place in Entrepreneurial Environment, again managing to surpass Beijing and Moscow (second and third place, respectively). Fourth position went to Mexico City, which had tied for second place with Beijing in the last edition, followed by São Paulo, which now remains in fifth place. As before, the lowest-ranking cities are Mumbai and Jakarta, which this time traded the sixth and seventh spots.

Technology readiness

In the previous report, Moscow had ranked first in Technology readiness with one point over Beijing. However, the Chinese capital has now bridged that gap in our current ranking to tie with Moscow for first place.

Mumbai



Beijing

Jakarta

Rapid technological growth and the adoption of new, mainly digital-based technologies invariably ushers in radical change in people's lives by improving educational opportunities, expanding access to humankind's accumulated knowledge, catalysing scientific breakthroughs, opening windows to explore new creative opportunities, and significantly boosting labour productivity. Each year that telecommunications improve, people become more and more accustomed to working outside of a traditional office setting and socialising online with friends and relatives abroad. It looks as though the planet is indeed shrinking and turning into a "global village", as Canadian media philosopher Marshall McLuhan's famous phrase put it.

Technology Readiness is an indicator used in regular editions of our From Moscow to São Paulo report. It allows us to give an unbiased assessment of the conditions for technological development in the seven E7 Group cities covered in the report.

As compared to the 2014 report, in order to represent the best data available we discontinued one variable, modified another and added three new ones, increasing the number of variables from four to six. The new variables are Mobile Broadband Speed, ICT Usage and Digital Security.

Although Mumbai and Jakarta are positioned at the bottom of Technology Readiness, both cities performed well in some variables. Mumbai takes pole position in Digital Security, followed by Mexico City and Beijing, respectively. Jakarta, in turn, managed to gain one place in Internet Access in Schools, taking second position in this variable.

In the previous report, Moscow had ranked first in Technology readiness with one point over Beijing. However, the Chinese capital has now bridged that gap in our current ranking to tie with Moscow for first place.

Nonetheless, Moscow has secured first place in half of Technology Readiness' constituent variables: Internet Access in Schools (country-level data), Broadband Quality and ICT Usage. Moreover, Moscow also took second place in Software Development and Multimedia Design, as well as third in Mobile Broadband Speed. If the Russian capital can bring its Digital Security ranking up from fifth place, it may once again overtake Beijing in future reports.

Beijing managed to occupy the top spots in Mobile Broadband Speed, Software Development and Multimedia Design. The Chinese capital also ranks second in Broadband Quality and racked up three third-place finishes in Internet Access in Schools, ICT Usage, and Digital Security.

São Paulo moves up from a fifth-place tie with Mumbai in the previous report to the third spot this edition, leaving the remaining cities behind. Brazil's biggest city attained this result by placing second in ICT Usage, third in Broadband Quality and Software Development and Multimedia Design, and fourth in Mobile Broadband Speed and Digital Security.

Rank	Internet access in schools*	Broadband quality score	Mobile broadband speed	ICT Usage	Software development and multi-media design	Digital security	Score
1 Moscow	7	7	5	7	6	3	35
1 Beijing	5	6	7	5	7	5	35
3 São Paulo	2	5	4	6	5	4	26
4 Istanbul	4	3	6	5	2	1	21
5 Mexico City	3	4	3	3	1	6	20
6 Jakarta	6	2	2	2	3	2	17
7 Mumbai	1	1	1	1	4	7	15

Highest score in each variable

* Country-level data

Although Istanbul was edged out from third to fourth place in this indicator, Turkey's biggest city came in second in Mobile Broadband Speed and third in ICT Usage.

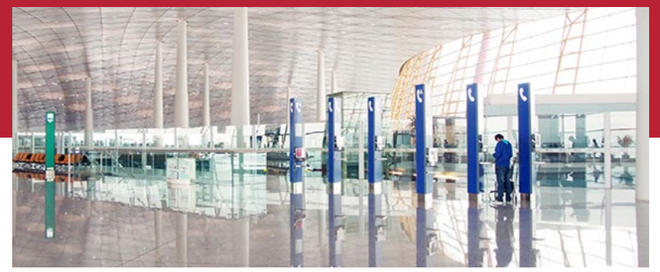
> *"Although Mumbai and Jakarta are positioned at the bottom of Technology Readiness, both cities performed well in some variables.*

Meanwhile, the Mexican capital also failed to maintain 2014 year's position and moved down from fourth to fifth. However, it did rank second in Digital Security, which is an important measure. Mexico City should focus, first and foremost, on improving its ranking in Software Development and Multimedia Design, in which it currently holds last place.

Jakarta moved up from the seventh to the sixth spot, owing mainly to slight improvement on its second-place position in Internet Access in Schools. The Indonesian capital together with Mumbai must make a greater effort in many of the Technology Readiness indicator's constituent variables.

City gateway

Just as in our 2014 research, Beijing achieved first place, attaining the highest rank in four of the seven variables.



Beijing

Istanbul

The City Gateway indicator allows us to determine whether the megacities covered are open to the outside world, provide a convenient and interesting locale for international conferences, and possess the required modern infrastructure to handle international traffic.

In this year's report, six out of seven variables are repeated from the previous report without any change in approach. The seventh variable, Airport Connectivity, reflects the number of direct routes and replaces On-Time Flight Arrivals.

Just as in our 2014 research, Beijing achieved first place, attaining the highest rank in four of the seven variables. These include Hotel Rooms, Incoming/Outgoing Passenger Flows, Airport to CBD Access, and World Top-100 Airports. The Chinese capital also achieved second place in the Number of International Association Meetings and the third spot in Air Connectivity.

Beijing's solid position is entirely expected as China plays a huge economic, political and cultural role not only across Asia, but also boasts a rich historical and cultural heritage if its own. All of these factors attract many business travellers and tourists from all over the world to Beijing. In addition, the city has became a major air traffic hub, serving many air travellers, among other functions. That said, an increase in the inflow of foreign visitors could potentially be hindered by an adverse ecological situation, primarily air pollution.

Istanbul retained its second-place position, which is understandable given that the Turkish megacity has long been considered one of the biggest centres for global tourism, which annually welcomes many foreign visitors attracted by its historical monuments and unique mix of Muslim and Christian cultures. The city has good infrastructure and serves as a major air and marine hub.

It is no mere coincidence that Istanbul has achieved the top spot in such variables as International Tourists, Number of International Association Meetings and Air Connectivity,

Rank		Hotel rooms	International tourists	Number of international association meetings	Incoming/ outgoing passenger flows	Airport to CBD access	World Top 100 airports	Airport connectivity	Score
1	Beijing	7	4	6	7	7	7	5	43
2	Istanbul	6	7	7	5	5	3	7	40
3	Moscow	4	6	3	6	5	6	6	36
4	Mexico City	2	3	4	2	6	3	3	23
4	São Paulo	5	1	5	3	2	3	4	23
6	Jakarta	3	2	2	4	3	5	1	20
7	Mumbai	1	5	1	1	1	4	2	15

Highest score in each variable

Jakarta and Mumbai have retained their positions (sixth and seventh, respectively). While they perform on the lower end in most of this indicator's variables, Jakarta and Mumbai's international airports do appear within the World Top-100 Airports (third and fourth place, respectively, among our seven cities), while Mumbai ranks among the top three cities in Number of International Tourists.

Moscow retained its third-place showing in the current edition, placing four points behind Istanbul. As in the 2014 study, Moscow's strengths were in International Tourists and Incoming/ Outgoing Passenger Flows, as well as World Top-100 Airports and Air Connectivity, in which the city attained the second position in each. The Russian capital still lags behind its closest rivals in terms of Number of International Association Meetings (retaining fifth position) and Hotel Rooms (down two places).

In recent years, the number of foreign tourists visiting Moscow has been growing. Chinese, German and French tourists visit the Russian capital most often[1]. However, some potential foreign visitors believe that the inflow of tourists is hindered by snags in the issuing of entry visas, which sometimes are not issued in time.

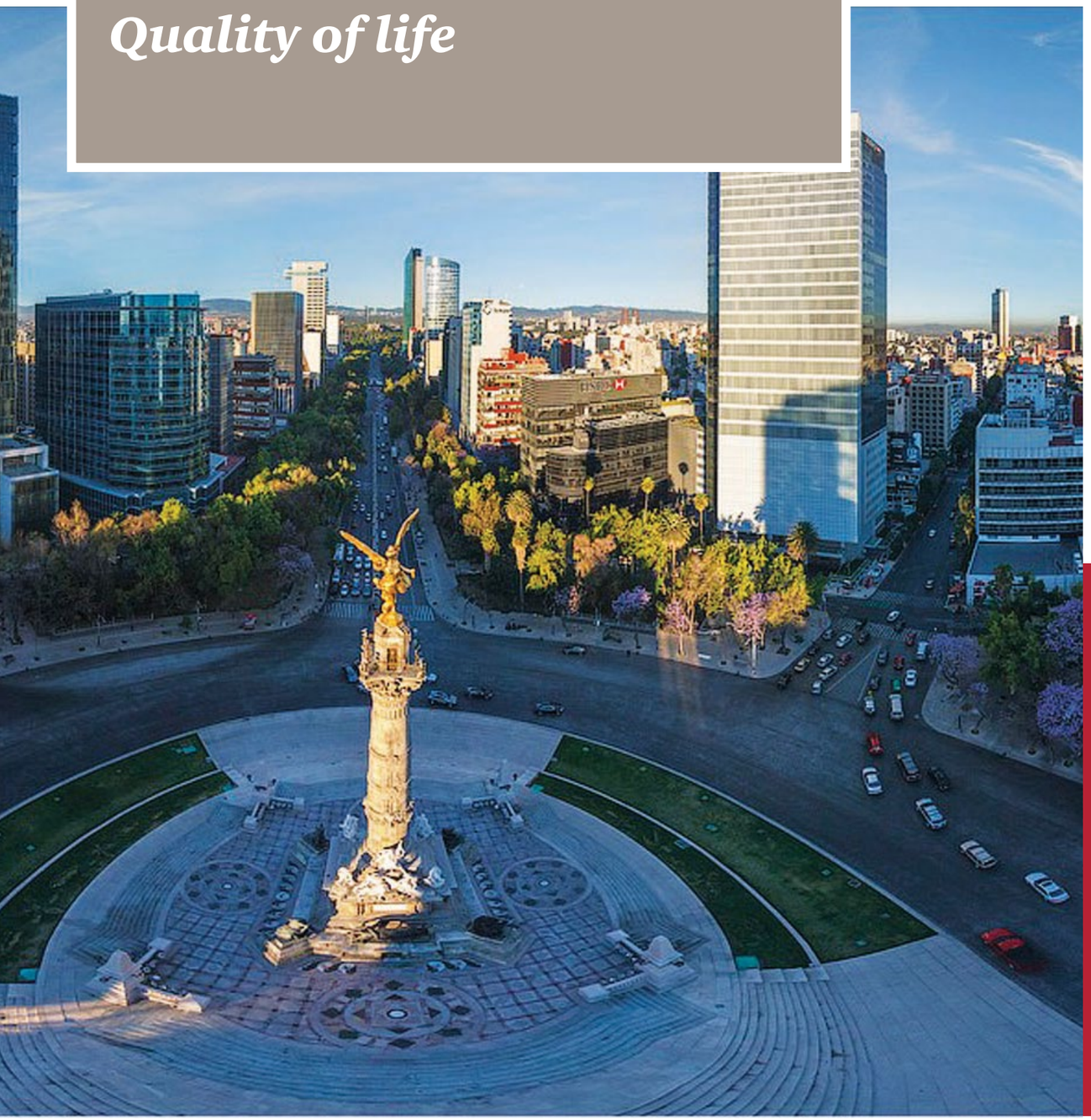
The fourth position is shared by the two subject Latin American cities, Mexico City and São Paulo. The former is well known for its historical landmarks and cuisine, and serves as a major transit hub for tourists going to seaside resorts, while the Brazilian giant is attractive mainly for its rich cultural attractions, nightlight and sports. The strongest performance for each is second place for Mexico City in Airport to CBD Access and São Paulo in third-place positions in Hotel Rooms and Number of International Association Meetings.

[1] According to the Moscow City Department for Multicultural Policy, Interregional Cooperation and Tourism (http://welcome.mos.ru/)

Istanbul

> *"Istanbul retained its second-place position, which is understandable given that the Turkish megacity has long been considered one of the biggest centres for global tourism.*

Quality of life



Mexico City

The Quality of Life category allows us to determine to what degree the megacities covered are hospitable, comfortable and interesting for different social and demographic groups of both local residents and foreign visitors. This category groups together four closely interrelated indicators for evaluating the quality of urban life: Transportation and Infrastructure; Health, Safety and Security; Sustainability and the Natural Environment; and Demographics and Livability.

This year, Moscow has taken the lead in three from four indicators within the category — in Transport and Infrastructure, Sustainability and the Natural Environment, and Demographics and Liveability. Mexico has taken the lead in Healthcare, Safety and Security. Meanwhile, the Chinese capital city entered the top three in three from four indicators, but does not lead in any of them.

> *“This year, Moscow has taken the lead in three from four indicators within the category — in Transport and Infrastructure, Sustainability and the Natural Environment, and Demographics and Liveability.*

Moscow

Mexico City

Beijing

Transportation and infrastructure

Despite the fact that the Russian economy is now facing a crisis, the city continues to impress with its top-spot ranking in Major Construction Activity.

Moscow

Istanbul

It is difficult to overestimate the importance of stable, reliable public transport infrastructure and accessible, comfortable housing in assessing the quality of life in any big city. Such infrastructure, which is in constant use, plays a vital role in people's mental disposition, physical well-being, capacity to work and learn, raise children, and enjoy interesting, useful leisure activities.

Many cities, as their populations grow and the need for mobility increases, face the priority of resolving transport and housing issues, which requires more and more investment. But, cities around the world are not taking a uniform approach in resolving these issues.

In this report, we have increased the number of variables for the Transport and Infrastructure indicator from six to eight, by adding the Traffic Congestion and Ease of Commute variables, as well as replacing the Cost of Public Transport variable with one called Affordability of Public Transport, and changing the Volume of Property Transactions to Major Construction Activity. Affordability of Public Transport expands on the previous variable to incorporate a comparison of the subject city's average wage against one-way public transport fare from the city limits to the central business district (CBD). Major Construction Activity is now derived from three equally weighted measures: number of buildings planned or under construction; number of properties sold; and construction employment.

Moscow takes the lead in the Transport and Infrastructure indicator this year (followed by Beijing in second place, and Istanbul and Mexico City tied in third).

Despite the fact that the Russian economy is now facing a crisis, the city continues to impress with its top-spot ranking in Major Construction Activity.

The Russian capital has managed to achieve two more first-place showings with the least Traffic Congestion and the greatest Ease of Commute among the seven cities. Moscow holds three second-place positions in Public Transport Systems,

Rank	Public transport systems	Mass transit coverage	Affordability of public transport	Licensed taxis	Major construction activity	Housing	Traffic congestion	Ease of commute	Score
1 Moscow	6	6	5	6	7	2	7	7	46
2 Beijing	5	2	1	5	2	7	6	6	34
3 Istanbul	7	4	3	1	4	5	4	5	33
3 Mexico City	3	5	7	7	1	5	1	4	33
5 São Paulo	4	3	6	2	5	6	3	3	32
6 Mumbai	2	7	2	4	6	1	5	1	28
7 Jakarta	1	1	4	3	3	5	2	2	21

Highest score in each variable

Mass Transit Coverage and Licensed Taxis, with a third position in Affordability of Public Transport. The city's lowest ranking was posted in Housing Accessibility and Quality (based on a survey of expatriates living in Moscow).

Housing proved to be Beijing's strongest point among the Transportation and Infrastructure variables with its sole first position in this indicator. The Chinese capital came in a close second in Traffic Congestion and Ease of Commute.

Beijing's weakest performances were posted in Affordability of Public Transport (last place), Mass Transit Coverage and Major Construction Activity (with only two points achieved in each).

Istanbul leaped from sixth place to a third-place tie with Mexico City. The Turkish city takes first place in Public Transport Systems and ranks third in Housing and Ease of Commute. However, Istanbul came in last in Licensed Taxis.

Together with Licensed Taxis, Mexico City also claimed the top spot in Affordability of Public Transport. However, it landed in last place in two of the variables, Traffic Congestion and Major Construction Activity.

São Paulo has slipped from fourth to fifth place since 2014 in Transport and Infrastructure. The Brazilian city benefitted from the incorporation of averages wages in Affordability of Public Transport and retained its position in Housing, both at second place. The weakest relative performance of São Paulo is in Licensed Taxis with two points (sixth place).

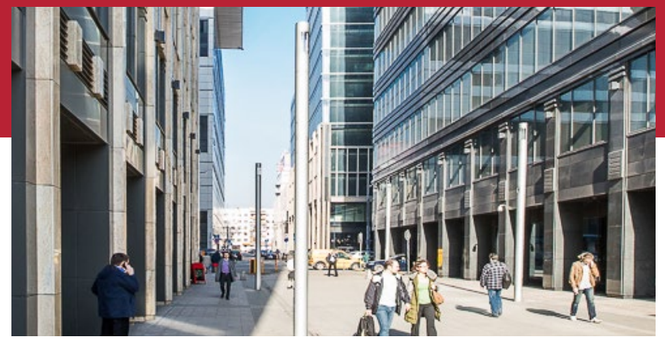
Mumbai has taken the lead in Mass Transit Coverage, which helped the city to move up from last place to sixth place in this indicator, along with a favourable performance in the revised Major Construction Activity and Traffic Congestion variables. The Indian megacity gained only one point each in Housing and Ease of Commute. Other areas for focus are Public Transport Systems and Affordability of Public Transport.

Jakarta ranks last in Transport and Infrastructure, falling two positions since the 2014 study. The Indonesian capital is generally on the lower end of ranking performance in this indicator, but in particular should focus greater effort on public transport options offered in the city as it ranks last in both Public Transport Systems and Mass Transit Coverage.

> *"Istanbul leaped from sixth place to a third-place tie with Mexico City. The Turkish city takes first place in Public Transport Systems.*

Health, safety and security

As compared to the previous study, Mexico City held onto the top spot but there is a fair amount of movement below that.



Moscow

Mexico City

There are few things that affect urban quality of life more than the level of healthcare provision and the physical safety of city residents.

To reflect the vulnerabilities of cities in the modern world, we have added a new variable to the Health, Safety and Security indicator — Security and Disease Risk. This variable (derived from the Lloyd's City Risk Index 2015–2025) weighs a range of nine man-made and disease risks to collective economic security — which is to say, to social wellbeing in a very broad sense.

As compared to the previous study, Mexico City held onto the top spot (previously shared with Beijing) but there is a fair amount of movement below that. Beijing moved from a first-place tie down to fourth, primarily due to improvements in other cities and the introduction of the new variable. São Paulo moved up from a fourth-place tie to claim second place. Meanwhile, Moscow moved from fourth to third place, but Istanbul suffered the biggest loss by falling from third to sixth.

The Mexican capital held first place with its strongest performances in Hospitals and Health Employment and Security and Disease Risk. Mexico City ranked second in Health System Performance and End of Life Care. The weakest point for the Mexican capital is Crime, where it ranked just above last-place São Paulo.

São Paulo entered the top three thanks to achieving first place in End of Life Care this year; a good performance in the new variable; and holding second place in Hospitals and Health Employment, tied with Moscow. The weakest area for São Paulo is Crime (last place).

Beijing's strongest achievement is first place in Health System Performance and second place for Crime. In terms of Crime, the Chinese capital slipped from first place in 2014, yet it can still be regarded as one of the safest subject megacities. Jakarta has the least crime of the seven cities. Beijing's lowest ranking is in End of Life Care, where it slipped to last place among the seven cities.

Rank		Hospitals and health employment	Health system performance*	End of life care*	Crime	Security and disease risk	Score
1	Mexico City	7	6	6	2	7	28
2	São Paulo	6	5	7	1	5	24
3	Moscow	6	2	4	4	6	22
4	Beijing	3	7	1	6	4	21
5	Jakarta	1	3	3	7	3	17
6	Istanbul	2	4	5	3	2	16
7	Mumbai	4	1	2	5	1	13

■ Highest score in each variable

* Country-level data

As our research shows, Moscow moves from fourth place to third, jointly holding second place (with São Paulo) in Hospitals and Health Employment, as well achieving second place in the new Security and Disease Risk variable. The city retained two points in its Health System Performance. While the Russian capital ranks fourth again in terms of Crime.

Jakarta achieved one top spot with the least crime of the seven cities. The city moved up from last place to the fifth spot, overtaking both Mumbai and Istanbul, with the latter's best achievement being third place in End of Life Care.

Mumbai, which dropped to the bottom of the table this year just behind Istanbul, should focus first on improving its position in Health System Performance and Security and Disease Risk.

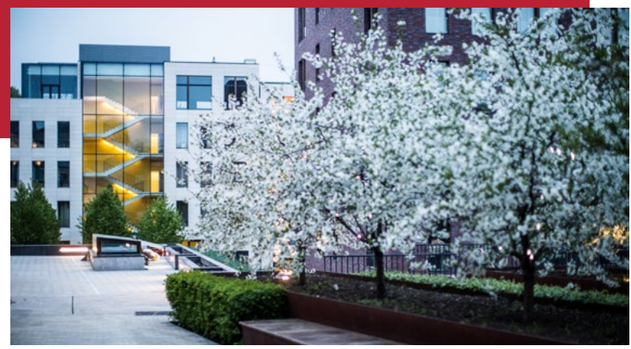
São Paulo

> *"São Paulo entered the top three thanks to achieving first place in End of Life Care this year; a good performance in the new variable; and holding second place in Hospitals and Health Employment.*

Sustainability and the natural environment

As with our previous report, this indicator is topped by Moscow, which sits three points ahead of the now-tied Beijing and Mexico City in second place.

Mexico City



Moscow

The natural tendency of millions of people to strive for a better, wealthier life inevitably increases the burden on the Earth's natural resources, climate and environment. Some compelling examples of this situation include gradual global warming and the increasing occurrence of various natural disasters.

The familiar term "sustainable development" is hard to define and scientists continue to dispute its components. Yet, vague wordings and imprecise interpretations cannot diminish this phenomenon's colossal importance for humankind's existence.

We have attempted to give a more vivid assessment of the efforts made by our seven subject cities in From Moscow to São Paulo and, thus, have added two more indicators to the five we already had: Natural Disaster Preparedness and Water-Related Business Risk. In addition, we have modified and renamed Natural Disaster Risk to Natural Disaster Exposure in order to reflect the lost GDP and effect on people of natural disasters rather than simply the likelihood of their occurrence.

Rank		Natural disaster exposure	Natural disaster preparedness*	Thermal comfort	Recycled waste	Air pollution	Public park space	Water-related business risk	Score
1	Moscow	7	4	3	2	7	7	6	36
2	Beijing	6	7	4	6	2	6	2	33
2	Mexico City	3	5	7	4	5	4	5	33
4	Istanbul	3	6	5	3	6	2	4	29
5	São Paulo	5	1	6	1	5	1	7	26
6	Jakarta	1	2	1	6	5	5	3	23
6	Mumbai	4	3	3	7	2	3	1	23

Highest score in each variable

* Country-level data

As with our previous report, this indicator is topped by Moscow, which sits three points ahead of the now-tied Beijing and Mexico City in second place.

Moscow's areas of strength include such variables as Natural Disaster Exposure, Air Pollution and Public Park Space, in which the city has attained pole position.

The main focus areas for Moscow lie in Recycled Waste, down from third to sixth place (however, modernisation of this process is currently underway) and Thermal Comfort, tied for fifth with Mumbai. However, Moscow has reached second place in Water-Related Business Risk, a new variable introduced in this edition.

The Chinese capital's only first-place finish this time around came in Natural Disaster Preparedness. However, the city also ranks second in a further three variables: Natural Disaster Exposure, Recycled Waste (tied with Jakarta) and Public Park Space. If Beijing wants to continue to rise further up the table for this indicator in future, the city authorities will need to improve on Air Pollution (tied for last place with Mumbai) and Water-Related Business Risk (second from last-place Mumbai).

For Mexico City, Thermal Comfort is where it shines at the top of the table, consistent with the previous report. Moreover, what has also contributed to its second-place tie here with Beijing is its top-three finish in a further three variables: Natural Disaster Preparedness, Air Pollution (tied with Jakarta and São Paulo) and Water-Related Business Risk.

Meanwhile, Istanbul falls out of a third-place tie to fourth overall, with strong performances in Natural Disaster Preparedness (second) and Thermal Comfort (third) but could move up the ranks with improved Recycled Waste (fifth) and Public Park Space (sixth).

São Paulo has also dropped out of a third-place tie to fifth place, but has surpassed all other cities in Water-Related Business Risk. In addition, the city takes second place in Thermal Comfort and third in Natural Disaster Exposure and Air Pollution (tied with Mexico City and Jakarta). However, what is holding this megacity back is Recycled Waste, Natural Disaster Preparedness and Public Park Space, where it ranks last in all three.

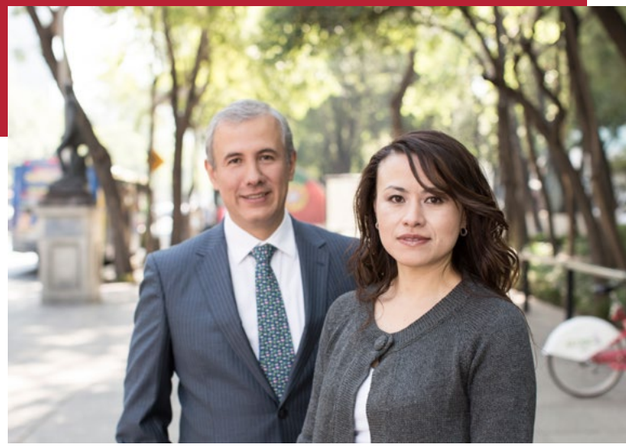
Mumbai fell by one place this edition to tie with Jakarta at the bottom of the table, partly impacted by a poor performance in the new Water-Related Business Risk variable as well as Jakarta's improvement in Recycled Waste and Air Pollution.

> *"For Mexico City, Thermal Comfort is where it shines at the top of the table, consistent with the previous report.*

Demographics and livability

Moscow is leading in Demographics and Livability, one point above Mexico City and three points above Beijing.

Moscow



Mexico City

Today, Mumbai, Beijing, Jakarta, Moscow, São Paulo, Mexico City and Istanbul are the most populated urban agglomerations in their respective countries. These seven megacities are major economic, scientific and cultural centres that contribute significantly to overall GDP.

We have added two new variables to Demographics and Livability this year and moved Traffic Congestion and Ease of Commute to Transportation and Infrastructure. As a result of these changes, Moscow now takes the lead, and Mexico City gained two places from fourth off the back of a first-place spot in a new variable Youthful Cities. The Mexican capital is followed by the previous leader, Beijing and Istanbul.

Moscow is leading in Demographics and Livability, one point above Mexico City and three points above Beijing, and attained pole position in Cultural Vibrancy. However, it fell one place below Beijing in Quality of Living. Nonetheless, Moscow again outranks them both in City Brand at second, and is just one place behind Mexico City in the Youthful Cities variable. The lowest score for the Russian capital was posted in Working Age Population.

Complementing Mexico City's position in second place is its runner-up position in Working Age Population. However, Beijing outperforms Mexico City in Working age population and also finishes above all of its rivals in Quality of Living. Other notable strengths of Beijing here include a second spot in Cultural Vibrancy. In order to cement its position in this indicator for future editions, Beijing must improve on City Brand, where it currently sits at the bottom of the table.

Istanbul fell one place this time around to fourth place in Demographics and Livability. However, it has achieved headline results at the top of the list in City Brand, only to be pulled down at the opposite end of the scale in Youthful Cities.

Rank	Cultural vibrancy	Quality of living	Working age population	City brand	Youthful Cities	Score
1 Moscow	7	6	3	6	6	28
2 Mexico City	5	4	6	5	7	27
3 Beijing	6	7	7	1	4	25
4 Istanbul	4	3	4	7	1	19
5 São Paulo	3	5	2	2	5	17
6 Mumbai	1	2	5	4	3	15
7 Jakarta	2	1	1	3	2	9

Highest score in each variable

São Paulo loses out to Istanbul, remaining in fifth place this year largely due to its performance in Working Age Population and City Brand at one from the bottom.

The lowest-ranking cities in Demographics and Livability this edition are Mumbai and Jakarta, which swapped places this year, with just one last-place variable performance for Mumbai, but two for Jakarta.

Beijing

"Beijing finishes above all of its rivals in Working age population and Quality of Living.

Economics

The last, but by no means least, category in this year's edition of From Moscow to São Paulo deals with the E7 cities as centres of financial and economic activity.

How have the "emerging seven" performed in these areas? What are the relative strengths and weaknesses of each subject megacity? How do they ensure growth and what opportunities lie ahead? Our report sheds some light on these and other questions.

The Economics section covers three indicators: Economic Clout, Ease of Doing Business, and Cost.

São Paulo

> *"Leaders in Economic clout, Ease of doing business and Cost are Beijing, Mexico City and São Paulo respectively.*

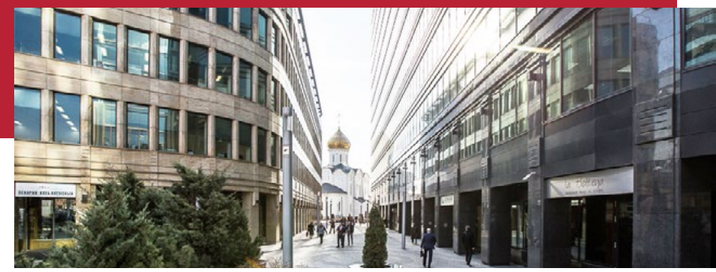
Mexico City

Beijing

Economic clout

Beijing ranked first across five out of six Economic Clout variables.
China's capital city also took the lead in the previous report.

Beijing



Moscow

As the name of this indicator implies, it measures not only the level of maturity of a city's economy, but also the extent of its economic influence on the global economy overall. At the same time, this indicator reflects the megacities' level of competitiveness in a closely fought struggle to raise investment and attract a qualified workforce.

We added an Employment Growth variable to this indicator group given the essential role of employment as a fundamental bellwether of economic progress.

Beijing ranked first across five out of six Economic Clout variables. China's capital city also took the lead in the previous report. This is an impressive result, especially given that the Chinese capital outstripped its closest runner-up, Moscow, by 11 points. This time, Beijing took a back seat in the same single variable, Productivity, where it landed in fifth place.

Rank		Number of Global 500 headquarters	Employment growth	Financial and business services employment	Attracting FDI	Productivity	Rate of real GDP growth	Score
1	Beijing	7	7	7	7	3	7	38
2	Moscow	6	1	6	6	6	2	27
3	Mexico City	4	4	4	2	7	3	24
4	Mumbai	6	3	3	4	1	6	23
5	Istanbul	1	6	2	3	5	4	21
6	São Paulo	4	2	5	6	2	1	20
7	Jakarta	2	5	1	2	4	5	19

Highest score in each variable

Last year, Moscow topped Productivity, but now ranks second (resulting from depreciation of the rouble and a slumping GDP growth rate) in this variable. The city also comes in second in Number of Global 500 Headquarters, Financial and Business Service Employment, and Attracting FDI. In terms of Employment Growth, the Russian capital city got its lowest rating in Rate of Real GDP Growth, where it scored only two points. This is understandable given that Russia's economy is still struggling with the effects of a crisis that began in 2014.

Mexico City retained its third-place position with a steady performance and continued strength in Productivity.

Mumbai remained in fourth place, achieving two second-place finishes in Number of Global 500 Headquarters and Rate of Real GDP Growth.

Istanbul rose from last place to fifth in this indicator by achieving a strong result (second place) in our new Employment Growth variable. The city has the lowest ranking in Number of Global 500 Headquarters, however.

São Paulo fell slightly to second-to-last place in this indicator group due to a lacklustre performance in the new Employment Growth variable and a relative rank decline in Productivity.

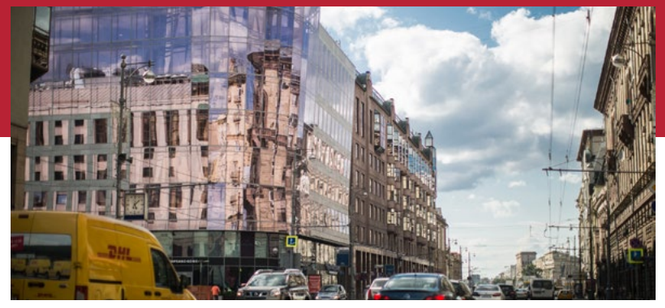
Jakarta takes up the rear with a last-place finish in this indicator group.

> *"Last year, Moscow topped Productivity, but now ranks second (resulting from depreciation of the rouble and a slumping GDP growth rate) in this variable.*

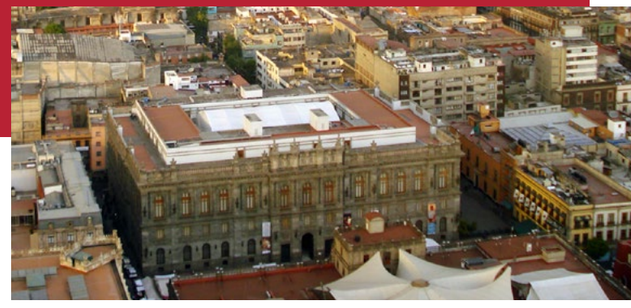
Moscow

Ease of doing business

Mexico City tops this indicator group, achieving two first-place positions compared to Beijing's three top spots.



Moscow



Mexico City

This indicator characterises the cities of the E7 Group in terms of the conditions they offer for local and foreign businesses. The quality of these conditions necessarily influence the economic development of any megacity as well as a host of other important factors.

We retained the same number of variables, but have removed Employee Regulations while introducing Tax Efficiency.

Mexico City tops this indicator group, achieving two first-place positions compared to Beijing's three top spots. The Mexican capital achieved the top score in Resolving Insolvency and Operational Risk Climate.

Second-ranking Beijing leads the seven cities in Foreign Embassies and Consulates, Operational Risk Climate and Workforce Management Risk.

Moscow, which moves up from fifth place to a second-place tie with Beijing, leads in Ease of Starting a Business and Tax Efficiency. The Russian megacity's weakest variable is Operational Risk Climate, where it landed in last place.

Istanbul falls from second to fourth place, as compared to 2014. The Turkish megacity continued its poor performance in Workforce Management Risk (one point) and Resolving Insolvency (two points), while dropping relatively in Operational Risk Climate and showing a medium-range performance in the new Tax Efficiency variable.

Mumbai is strongest in Level of Shareholder Protection and has seen relative improvement in Ease of Starting a Business, while São Paulo receives the highest position in Ease of Entry: Number of Countries with Visa Waiver, continuing to lead as the most open of the seven cities to foreigners.

Rank		Ease of starting a business	Resolving insolvency	Ease of entry: Number of countries with visa waiver	Number of foreign embassies and consulates	Level of shareholder protection	Operational risk climate*	Workforce management risk	Tax efficiency	Score
1	Mexico City	6	7	5	3	4	7	4	6	42
2	Beijing	4	5	2	7	1	7	7	5	38
2	Moscow	7	6	5	6	3	1	3	7	38
4	Istanbul	5	2	6	5	6	3	1	4	32
5	Mumbai	3	1	2	2	7	4	5	3	27
5	São Paulo	1	4	7	1	5	2	6	1	27
7	Jakarta	2	3	3	4	2	5	2	2	23

■ Highest score in each variable

* Country-level data

Moscow

> *Moscow, which moves up from fifth place to a second-place tie with Beijing, leads in Ease of Starting a Business and Tax Efficiency.*

Moscow

Cost

São Paulo has made a huge leap from second-to-last place to the top spot, coming out as No. 1 in four variables.

It is very difficult to assess city expenses comparatively, not only as regards trade but also as concerns basic business and living expenses, which is why this indicator has seen the greatest change in its constituent variables from edition to edition. In addition to those variables added in 2014, and to better reflect affordability rather than simply "cheapest", we have also now included Personal Tax and Affordability of Rent variables.

In accordance with our research, São Paulo has made a huge leap from second-to-last place to the top spot, coming out as No. 1 in four variables. The Brazilian megacity's continuing favourable performance in iPhone Index and Purchasing Power, coupled with improvement in Cost of Business Occupancy and strong positions in the new Personal Tax and Affordability of Rent variables have allowed the city to take the top spot in the Cost indicator. However, São Paulo posted poor results in Total Corporate Tax Rate (one point) and Cost of Living (two points).

Istanbul is in second place in this indicator, six points behind São Paulo. The Turkish megacity failed to achieve the top spot in any individual variable but ranked among the top three cities in four out of seven variables.

It is followed by Mexico City, Jakarta and Moscow, the latter taking fifth spot. The Russian capital scored only one point to take last place in Cost of Living and two points in Cost of Business Occupancy. Moscow's greatest strengths were in Purchasing Power, where it ranked second, as well as third-place positions in Total Corporate Tax Rate and iPhone Index. The Russian capital city achieved a medium-point performance in the two new variables, Personal Tax and Affordability of Rent, taking fourth place in each.

Mumbai slipped to the penultimate spot, but came out first again in Cost of Living and third in Personal Tax.

Beijing came in last place again this edition for Cost overall, landing among the bottom three cities in six out of the seven variables, including the two newest.

Istanbul

São Paulo

Rank		Corporate total tax rate	Personal tax	Cost of business occupancy	Cost of Living	iPhone index	Purchasing Power	Affordability of rent	Score
1	São Paulo	1	6	7	2	7	7	7	37
2	Istanbul	6	1	4	3	6	5	6	31
3	Mexico City	4	3	5	5	4	4	5	30
4	Jakarta	7	7	6	6	1	1	1	29
5	Moscow	5	4	2	1	5	6	4	27
6	Mumbai	3	5	3	7	2	2	2	24
7	Beijing	2	2	1	4	3	3	3	18

■ Highest score in each variable

Mumbai

> *"Mumbai slipped to the penultimate spot, but came out first again in Cost of Living.*

Governor Basuki Tjahaja Purnama—popularly known as Pak Ahok—unveils infrastructure plans in Jakarta.

In Jakarta, clean government lays the foundation

…for a better future, explains Governor Basuki Tjahaja Purnama

Governor Basuki Tjahaja Purnama—popularly known as Pak Ahok—took the reins of the city in 2014 from now President Joko Widodo and continued the campaign for good government, better infrastructure, and quality of life. In a discussion with PwC's Julian Smith, lead global transportation partner based in Jakarta, the governor explains why official corruption is so corrosive for city life and what needs to be done to improve transit, education, housing, and parks.

What short- or long-term challenges are at the top of your priority list?

Our first priority is to reform the bureaucracy. We need the bureaucrat to become a servant. That is why we launched a one-stop service in all subdistrict and district offices. After four months, we faced some difficulties because if we take somebody's authority, there are vested interests to become a one-stop service, with no tipping fee, no need to bribe.

We are still having difficulties in construction licenses because there is a lot of money you can take from bribes. This June [2015] maybe, we will fire some of our bureaucrats if they do not want to help solve the construction license [problem], as an example of reform in the bureaucracy. We already launched a new salary package for our employees. Even the lowest bureaucrat will receive a monthly salary of at least 9 million rupiah (Rp).

Why did you start with the reform of the bureaucracy? It is the most difficult task.

Because we hold the authority. What we want to do is very difficult. If you are a corrupt official, what you will purchase is garbage and rubbish, so there is no use. That's why for me, the important thing is the bureaucrat.

How would you define your job as governor of the city?

For me, if the leader is clean and does not accept bribery, then your bureaucrats will not have the courage to do that.

You have been described as direct, to the point, and not afraid to confront people and issues in order to accomplish your goals. Is that your natural way of doing things?

I would like to make a joke for this question. Do you have other options to solve the problems in Indonesia… Maybe not. So you have to follow me. That is my way.

How would you describe your city?

Jakarta is very *benang kusut*…complicated. Putting your finger on it is like finding a needle in a haystack. The first problem to solve is you have to have a clean, transparent, and professional bureaucrat. That is important. No bribery, no partiality, and never be afraid.

What is the city doing to address infrastructure problems?

Forty percent of economic activities [in Indonesia] are in Jakarta. Logistics cost is very expensive. But for us, our problem is we do not control even the harbor, seaport, Tanjung Priok. That is why our program is to use our own enterprise to get involved in the logistics business, so we will form a joint venture with Pelindo II (the state-owned port operator) and the train company. We also want to control many toll roads; that is why this year we will develop six city toll roads to improve logistics infrastructure, including transportation.

I think it is important for us in Jakarta to have good transportation. MRT [mass rapid transit] is already under construction. At the end of [2015], we will start the construction of Light Rapid Transit, seven corridors of it, connecting airports, malls, business centers, and middle-class real estate. We also want to provide bus rapid transit; this way every kind of bus transportation will be integrated into bus rapid transit. It is also important to get involved in the logistics business. We already have entered into an agreement with the train company to use its property near train stations. We want to have good logistics for food, and we will have a food station [distributor] company. We want to control this to better our competitiveness.

For me, infrastructure goals begin with providing better mass transportation. Regarding traffic jams, I cannot stop people from purchasing cars. Jakarta now has 17.5 million vehicles, including 13 million motorcycles, because we cannot provide low-cost transportation. This June [2015], we will establish one company as a provider of low-cost transportation. By the end of 2016, integration of all transportation systems will be accomplished. I think that is what Jakarta wants to do.

Is access from the airport important?

Yes. We've already developed a railroad system directly into Dukuh Atas. And also we will provide Light Rapid Transit from the airport to Pantai Indah Kapuk, the old city area to Ancol and Jakarta Expo into Kelapa Gading. We will also provide free, double-decker shuttle buses to get around business districts.

What is Jakarta doing to improve education and skills?

The problem is poverty. The basic needs for singles is Rp 2.5 million monthly, and the basic salary is Rp 2.8 million. Just imagine, if you have three kids, you would need Rp 600,000 to 800,000 monthly to get them to school. That is why 40% of the young population cannot go to school. This year, we are providing scholarships for 489,000 students worth a total of Rp 2.4 trillion. But the students can draw only 50,000 weekly or use a cashless system. This July [2015], we will bring those 489,000 students to the book fair to buy school supplies. The city provides Rp 3 trillion for students so they are able to graduate from vocational high school.

What quality of life elements are you targeting to improve?

We just completed six integrated parks. We call them integrated parks because they have a kindergarten, playgroup, medical clinic, and library. We encourage the young and the old to interact because these public spaces are children- and elderly-friendly. We accomplished building six this month. We will build a total of 50 this year [2015] and 150 next year. The philosophy of developing these parks is very easy: Every household has its own difficulty. That is why we want to unite them together as one community.

In the slum area, the inhabitants need parks that will open from 5 a.m. to 12 a.m., complete with fences, adequate lighting, and Wi-Fi connection. We hire locals to manage these parks and also a women's organization, Family Welfare Movement PKK) to help.

How did you develop this solution?

From brainstorming, Chinese philosophy, and the Church. I am a Christian, so most of my ideas come from the Church. We want to have a caring community, so when people come, we want to know who they are, where they came from. That is very important. So it is important in Jakarta to be united in one community.

How do you deal with the fact that you can only help a small percentage of those who need housing?

Housing for me is very easy. The poor will always be with you until the end of this world. That is why I stopped providing low-cost, subsidized apartments to sell. I do not want to sell them. That is a very wrong policy. The occupants will just sell them again, and you cannot control it. That is why I provide low-cost apartments and subsidize the lease price: only Rp 5,000, or about half a dollar daily. This serves as an incubator to the tenants.

What sectors of the economy are you targeting for development?

The services sector and the other one is tourism. Regarding manufacturing, we want to ask the manufacturer to move out of Jakarta.

Do you really think Jakarta can compete with Bangkok or Singapore for tourism?

I believe we could if we could solve the transportation problem.

As the leader of a city at the heart of the developing world, what lessons are you learning that might apply to other fast-growing cities?

I think the most important point is not to accept bribery. Bribery is very common in developing countries. They pass it off as business as usual. That is why you have to say that we do not accept bribery. Second, no partiality. You cannot be partial anymore, so no partiality.

Third, never be afraid to die because death is a gain. If you are afraid to die, somebody will oppress you, and you will be discouraged. I think these three things are important if you want to be a leader in a developing country. No bribery, no partiality, and have courage so you can say death is a gain.

Key to the variables

I. Tools for a changing world

Intellectual capital and innovation

Libraries with public access
Number of libraries within each city that are open to the public divided by the total population and then multiplied by 100,000.

Math/science skills attainment*
Top performers' combined mean scores on the math and science components of the Program for International Student Assessment (PISA), an Organisation for Economic Co-operation and Development (OECD) assessment of 15-year-olds' academic preparedness. Top performers are defined as those students who achieved in the top two proficiency levels (Level 5 and Level 6) on the math and science portions of the test. Comparable examinations are used wherever possible to place cities not included in the OECD assessment.

Literacy and enrollment*
Measurement of a country's ability to generate, adopt, and diffuse knowledge. The World Bank's Knowledge Economy Index is derived by averaging a country's normalized performance scores on variables in three categories — education and human resources, the innovation system, and information and communications technology. The variables used to compose education and human resources are adult literacy rate, secondary education enrollment, and tertiary education enrollment. The adult literacy rate from the United Nations Educational, Scientific and Cultural Organization refers to the percentage of people aged 15 and above who can, with understanding, read and write a short, simple statement on their everyday life.

Percent of population with higher education
Number of people who have completed at least a university-level education divided by the population aged 15+. A university-level education is set equivalent to a bachelor's degree or higher from a US undergraduate institution.

World university rankings
The Times Higher Education World University Rankings 2015–2016 powered by Thomson Reuters are the only global university performance tables to judge world-class universities across all of their core missions — teaching, research, knowledge transfer, and international outlook. The top university rankings employ 13 carefully calibrated performance indicators to provide the most comprehensive and balanced comparisons available, which are trusted by students, academics, university leaders, industry, and governments.

Innovation Cities Index
The 2thinknow Innovation Cities Index, 2015 is composed of 500 cities selected from 1,700 cities based on basic factors of health, wealth, population, and geography. The selected cities had data extracted from a city benchmarking data program on 162 indicators. Each of the benchmarking data was scored by analysts using best available qualitative analysis and quantitative statistics. (Where data were unavailable, national or state estimates were used). Data were then trend balanced against global trends. The final index had a zeitgeist (analyst confidence) factor added and the score reduced to a three-factor score for cultural assets, human infrastructure, and networked markets. For city classification, these scores were competitively graded into five bands (Nexus, Hub, Node, Influencer, Upstart). The top 33% of Nexus and Hub (and selected Node cities of future interest) final graded scores were ranked by analysts based on trends over two to five years. A Node ranking is considered globally competitive.

Intellectual property protection*
Leading business executives' responses to the question in the World Economic Forum's Global Competitiveness Report 2015–16 that asks, "In your country, how strong is the protection of intellectual property, including anti-counterfeiting measures?" [1 = extremely weak; 7 = extremely strong]. The 2015 edition of the survey captured the opinions of more than 14,000 business leaders in 144 economies between February and June 2015.

Entrepreneurial environment*
The Global Entrepreneurship and Development Index measures the 3A's of entrepreneurial development: attitudes, aspirations, and activity. The index was created by the Global Entrepreneurship and Development Institute to help provide better understanding of economic development by analyzing the contextual nature of business formation, expansion, and growth.

Technology readiness

Internet access in schools*
Leading business executives' responses to the question in the World Economic Forum's Global Competitiveness Report 2015–16 that asks, "In your country, how widespread is Internet access in schools?" [1 = nonexistent; 7 = extremely widespread] The 2015 edition of the survey captured the opinions of more than 14,000 business leaders in 144 economies between February and June 2015.

Broadband quality score
Based on millions of recent test results from Pingtest.net, this global broadband index from Ookla compares and ranks consumer broadband connections around the globe. Our overall broadband index score encompasses the following weighted metrics that were collated over a six-month period to generate an average: upload speed (40%), download speed (40%), quality of connection (10%), and value/cost (10%).

Mobile broadband speed
Based on millions of recent cellular test results from Ookla Speedtest iOS and Android apps, this index compares and ranks cellular upload and download speeds around the globe. Each city receives a score based on the rolling mean speed in megabits per second over the previous 30 days. Only tests taken within 300 miles of the server are eligible for inclusion in the index. Data were collected and averaged over a three-month period in 2015.

ICT usage
Ericsson's Networked Society City Index 2014 measures the performance of 40 cities from two perspectives: their maturity in information and communications technology (ICT) and triple bottom line, specifically sustainable urban development in a connected society. The ICT usage score is based on three variables—technology use, individual use, and public and market use. Within technology use, the following metrics were analyzed: mobile phone subscriptions per 100 habitants, number of smartphones per capita, percentage with a computer at home, and number of tablets per capita. Within individual use, the following metrics were considered: Internet usage as a percentage of the population and social networking penetration. Within public and market use, the following metrics were analyzed: open data and web presence, and electronic and mobile phone payments.

Software development and multimedia design
Combination of scores for each city in fDi magazine's Best Cities for Software Development and Best Cities for Multimedia Design Centres. Both fDi indices weight a city's performance 70% based on the quality of the location and 30% based on the cost of the location. The Software development index is based on an assessment of 120 quality competitiveness indicators. These indicators include availability and track record in ICT, availability of specialized skills professionals such as scientists and engineers, access to venture capital, R&D capabilities, software experts, quality of ICT infrastructure, and specialization in software development. The multimedia design centre rankings are based on an assessment of 120 quality competitiveness indicators, including the size of the location's leisure and entertainment sector, its specialization and track record, information technology infrastructure, quality of life, and skills availability.

Digital security
This variable measures a city's levels of digital security based on factors such as dedicated cyber security teams (input) and the frequency of identity theft (output). Input metrics measured are privacy policy, citizen awareness of digital threats, public-private partnerships, level of technology employed, and dedicated cyber security teams. Output metrics are frequency of identity theft, percentage of computers infected, and percentage with Internet access. Data are produced by the Economist Intelligence Unit's Safe Cities Index 2015.

City gateway

Hotel rooms
Count of all hotel rooms within each city.

International tourists
Annual international tourist arrivals for 100 cities collected by Euromonitor International. Euromonitor's figures include travelers who pass through a city, as well as actual visitors to the city.

Number of international association meetings
Number of international association meetings per city per year that take place on a regular basis and rotate among a minimum of three countries. Figures provided by the International Congress and Convention Association.

Incoming/outgoing passenger flows
Total number of incoming and outgoing passengers, including originating, terminating, transfer, and transit passengers in each of the major airports servicing a city. Transfer and transit passengers are counted twice. Transit passengers are defined as air travelers coming from different ports of departure who stay at the airport for brief periods, usually one hour, with the intention of proceeding to their first port of destination (includes sea, air, and other transport hubs).

Airport to CBD access
A measure of the ease of using public transit to travel between a city's central business district and the international terminal of its busiest airport in terms of international passenger traffic. Cities are separated into categories according to whether a direct rail link exists: if so, the number of transfers required; and if not, whether there is a public express bus route to the airport. Cities with direct rail links are preferred to those with express bus services. Cities with rail links with the fewest transfers are ranked higher than those with more. Within categories, cities are ranked against one another according to the cost of a single one-way, adult weekday trip and the length of the trip, with each factor weighted equally.

World Top 100 Airports
Each city receives a score based on the ranking of that city's top airport in the World's Top 100 Airports ranking, compiled by Skytrax. The World Airport awards are based on survey questionnaires completed by more than 13 million airline customers between May 2015 and February 2016 across 550 airports worldwide. The survey evaluates travelers' experiences across different airport service and performance indicators from check-in, arrivals, transfers, shopping, security and immigration, to departure at the gate.

Airport connectivity
A measure of the number of routes operating from the airports servicing a city as identified by World Airport Codes. A greater weight is given to international destinations, but domestic routes are also included so as not to penalize countries with larger land areas.

II. Quality of living

Transportation and infrastructure

Public transport systems
Reflects the efficiency, reliability, and safety of public transport networks as defined and rated by the Mercer Quality of Living 2015 survey. Cities also received additional points for each multi-modal transport system available to the public, including: subway, bus/bus rapid transit (BRT), taxi, light rail, tram/trolley/streetcar, commuter rail, and bike share systems. Each city received a tenth of a point for the modes of transport available within the city to differentiate between the 1–10 scores awarded by Mercer. Cities that had a fully operational BRT system received 0.05 points (in addition to the tenth of a point for a public bus system). Ferry systems were excluded to avoid penalizing land-locked cities for the absence of such a system.

Mass transit coverage
Ratio of kilometers of mass transit track to every 100 square kilometers of the developed and developable portions of a city's land area. A city's developable land area is derived by subtracting green space and governmentally protected natural areas from total land area.

Affordability of public transport
The affordability of the longest mass transit rail trip from a city's boundary to the central business district (CBD), calculated by using a city's average hourly wage to determine the amount of time a citizen needs to work to be able to buy a single ticket. The cost of a bus trip is used in cities where there are no rail systems.

Licensed taxis
Number of officially licensed taxis in each city divided by the total population and then multiplied by 1,000.

Major construction activity
Major construction activity is composed of three equally weighted measures: the number of planned and under construction buildings in the Emporis database; the number of properties sold and recorded by Real Capital Analytics' database; and construction employment from Oxford Economics. The Emporis database is the count of planned and under construction buildings categorized as a high rise, skyscraper, low rise, hall, or stadium; the number of properties sold is based on the number of properties valued at more than $10 million, recorded between December 2015 and May 2016; and construction employment is taken as a percentage of total employment.

Housing
Measure of availability, diversity, cost, and quality of housing, household appliances, and furniture, as well as household maintenance and repair. This measure is based on the Mercer Quality of Living 2015 survey. Tied cities were differentiated by looking at the annual percentage change in house prices.

Traffic congestion
Measure of traffic congestion and congestion policies for each city scored on the level of congestion, as well as the modernity, reliability, and efficiency of public transport. Assessment based on the Mercer Quality of Living 2015 survey. Tied cities were differentiated using the ease of commute variable.

Ease of commute
PwC employees in each of the firm's offices in the cities were instructed: "On a scale from 1 to 10, where 1 is difficult and 10 is easy, please rate your commute to work." Data provided by the PwC employee survey conducted for the We, the urban people study.

Health, Safety and security

Hospitals and health employment
Combination of scores for: the ratio of all hospitals within each city accessible to international visitors to every 100,000 members of the total population; and the ratio of employment in the health sector per 100,000 of the population (as provided by Oxford Economics).

Health system performance*
Measurement of a country's health system performance made by comparing healthy life expectancy with healthcare expenditures per capita in that country, adjusted for average years of education (number of years of education is strongly associated with the health of populations in both developed and developing countries). PwC global healthcare team adapted methodology from the 2001 report, "Comparative efficiency of national health systems: cross-national econometric analysis."

End-of-life care*
Ranking of countries according to their provision of end-of-life care. The Quality of Death Index by the Economist Intelligence Unit assesses the availability, affordability, and quality of palliative care for adults in 80 countries around the world. The index scores countries across 20 indicators grouped in five categories: palliative and healthcare environment, human resources, affordability of care, quality of care, and community engagement. These indicators are grouped into qualitative and quantitative categories and are normalized to form an overall index score.

Crime
Weighted combination of the Mercer Quality of Living 2015 survey crime score (50%); intentional homicide rate per 100,000 of the city population (30%); and the Numbeo Crime Index, which is an estimation of the overall crime level in each city based on how safe citizens feel (20%).

Security and disease risk
An analysis of the potential effects of crises on economic output in each city, calculated by measuring the percentage of GDP at risk from a series of individual health and security threats between 2015 and 2025. The nine threats measured were cyber attack, market crash, nuclear accident, oil price shock, sovereign default, terrorism, power outage, human pandemic, and plant pandemic. Data are taken from the Lloyd's City Risk Index 2015–2025.

Sustainability and natural environment

Natural disaster exposure
A measure of a city's exposure to natural disaster risk, calculated by PwC's actuarial and forensics practice using data from Swiss Re's CatNet GDP Loss Index and the People Risk Index. This variable measures the economic and people effect of river and coastal floods, earthquakes, windstorms, and tsunamis. The economic effect is measured by lost GDP output in the immediate aftermath of an event relative to the country's GDP. The people effect is both the potential for fatalities and casualties, as well as people who need to be evacuated and are unable to access their home or workplace (in the immediate aftermath of an event) as a proportion of the population of the city. The indices are derived from Swiss Re's Mind the risk study (http://www.swissre.com/rethinking/climate_and_natural_disaster_risk/Mind_the_risk.html), results of which are available at CatNet (http://www.swissre.com/clients/client_tools/about_catnet.html).

Natural disaster preparedness*
This measure takes into account each city's disaster preparedness. Using a method developed by PwC's actuarial and forensics practice, each city receives a score based on its preparedness. This measure considers whether the city has put in place early warning systems, made efforts to reduce the underlying risk factors, regularly conducts training drills, and implements strategies to increase public awareness. Fifty percent of the score is taken at a country level from the UNISDR's web platform, PreventionWeb, which has collated national progress reports on the implementation of the UN's 10-year plan to make the world safer from natural hazards, the Hyogo Framework for Action. Each city's average performance in the variables of public transport systems, health system performance, and operational risk climate are also factored into the disaster preparedness measure to make up the remaining 50%.

Thermal comfort
A thermal comfort score was created for each city by calculating the average deviation from optimal room temperature (72 degrees Fahrenheit). January, April, July, and October heat indices were calculated for each city using an online tool that integrates average high temperature and corresponding relative evening humidity during each month. A final thermal comfort score was derived by first taking the difference between a city's heat index for each month and optimal room temperature and then averaging the absolute values of these differences.

Recycled waste
Percentage of municipal solid waste diverted from landfill. This includes, but is not limited to, recycling and captures other methods such as waste-to-energy.

Air pollution
Combination of measures of particulate matter 10 micrometers (PM10) outdoor air pollution levels from the World Health Organization (WHO) and the Numbeo Pollution Index of overall pollution in each city. The WHO's Public Health and Environment database provides annual mean concentrations of PM10 in diameters or less, reflecting the degree to which urban populations are exposed to this fine matter. The Numbeo Pollution Index is generated via survey-based data.

Public park space
Proportion of a city's land area designated as public recreational and green spaces to the total land area. Excludes undeveloped rugged terrain or wilderness that is either not easily accessible or not conducive to use as public open space.

Water-related business risk
Water risks in a city related to quality, quantity, and regulatory risk. Quality risks are defined as the exposure to changes in water quality that may impact industrial production systems, resulting in the need for further investment or an increase in the operational costs of water treatment. Risks related to quantity are defined as the exposure to changes in water quantity (e.g., droughts or floods) that may impact a company's direct operations, supply chains, and/or logistics. Regulatory risk refers to the unpredictability of regulations within the business environment. These risks arise when an unexpected change in water-related law or regulation increases a business's operating costs, reduces the attractiveness of an investment, or changes its competitive landscape. Data produced by the World Resources Institute with Aqueduct.

Demographics and livability

Cultural vibrancy
Cultural experience from the A.T. Kearney Global Cities Index is measured by the number of diverse attractions in a city, including the number of major sporting events a city hosts; the number of museums, performing arts venues, and culinary establishments; the number of international travelers; and the number of sister city relationships.

Quality of living
Score based on more than 30 factors across five categories: socio-political stability, healthcare, culture and natural environment, education and infrastructure. Each city receives

a rating of either acceptable, tolerable, uncomfortable, undesirable, or intolerable for each variable. For qualitative indicators, ratings are awarded based on the Economist Intelligence Unit analysts' and city contributors' judgments. For quantitative indicators, ratings are calculated based on cities' relative performances on a number of external data points. Data sourced from the Economist Intelligence Unit's livability ranking (2015).

Working age population
Proportion of a city's population aged 15–64 to the total population of the city.

City brand
The Guardian Cities global brand survey measures two aspects of a city's brand: its "assets"—attractions, climate, infrastructure (particularly transport), safety, and economic prosperity—and its "buzz," a combination of social media (Facebook likes and Twitter sentiment analysis) and media mentions. The assets and buzz elements were both given a score out of 10; the numbers were then added to produce a total score.

YouthfulCities
A global database that measures, compares, and ranks 55 cities across 20 urban attributes using a total of 101 indicators. The indicators consist of primary and secondary data that Urban Decoders (a globally dispersed team of young urban researchers) collect locally and submit using collaborative, cloud-based research workbooks. The YouthfulCities Index is an ambitious collaborative effort to analyze the largest cities around the world from a unique youth perspective to rank them as best suited for young people aged 15–29. It looks at how youth live, work, and play in their urban setting in order to examine how cities are serving their youth. It asks how youth can be better integrated and engaged in their cities.

III. Economy

Economic Clout

Number of Global 500 headquarters
Number of Global 500 headquarters located in each city, as per the Fortune Global 500 list.

Employment growth
2015–2017 annual growth rate of employment in a city. Data provided by Oxford Economics.

Financial and business services employment
The number of jobs in financial and business services activity as a share of total employment in the city. Financial services includes banking and finance, insurance and pension funding, and activities auxiliary to financial intermediation. Business services includes a mix of activities across the following subsectors: real estate and renting activities; information technology and computer related; research and development; architectural, engineering, and other technical activities; legal, accounting, bookkeeping, and auditing activities; tax and consultancy; advertising; professional scientific and technical services; and business services where not elsewhere classified. Data provided by Oxford Economics.

Attracting FDI
Combined variable ranking the number of greenfield (new job-creating) projects plus the total US$ value of greenfield capital investment activities in a city that are funded by foreign direct investment (FDI). Data cover the period from January 2006 through December 2015 provided by fDi Intelligence.

Productivity
Productivity is calculated by dividing GDP in 2016 US$ by employment in the city. Data provided by Oxford Economics.

Rate of real GDP growth
2015–2017 GDP annual growth rate in real terms expressed in 2016 US$. Data provided by Oxford Economics.

Ease of doing business

Ease of starting a business**
Assessment of the bureaucratic and legal hurdles an entrepreneur must overcome to incorporate and register a new firm. Accounts for the number of procedures required to register a firm; the amount of time in days required to register a firm; the cost (as a percentage of per capita income) of official fees and fees for legally mandated legal or professional services; and the minimum amount of capital (as a percentage of per capita income) that an entrepreneur must deposit in a bank or with a notary before registration and up to three months following incorporation. Assessment scores gathered from Doing Business 2015 report, the World Bank Group. U.S. cities were differentiated from each other using the United States Small Business Friendliness Survey by Thumbtack.com in partnership with Kauffman Foundation.

Resolving insolvency**
This topic identifies weaknesses in existing bankruptcy law and the main procedural and administrative bottlenecks in the bankruptcy process. Assessment scores gathered from Doing Business 2016, the World Bank Group.

Ease of entry: Number of countries with visa waiver*
Number of nationalities able to enter the country for a tourist or business visit without a visa. Excludes those nationalities for whom only those with biometric, diplomatic, or official passports may enter without a visa.

Number of foreign embassies and consulates
Number of countries that are represented by an embassy, consulate, high commission, deputy high commission, or representative office in each city. Figures sourced from EmbassyPages.com.

Level of shareholder protection**
Measurement of the strength of minority shareholder protection against misuse of corporate assets by directors for their personal gain. The strength of the Investor Protection Index is the average of indices that measure transparency of transactions, liability for self-dealing, and shareholders' ability to sue officers and directors for misconduct. Assessment scores gathered from Doing Business 2016, the World Bank Group.

Operational risk climate*
Quantitative assessment of the risks to business profitability in each of the countries. Assessment accounts for present conditions and expectations for the coming two years. The operational risk model considers 10 separate risk criteria: security, political stability, government effectiveness, legal and regulatory environment, macroeconomic risks, foreign trade and payment issues, labor markets, financial risks, tax policy, and standard of local infrastructure. The model uses 66 variables, of which about one-third are quantitative. Data produced by the Economist Intelligence Unit's Risk Briefing.

Workforce management risk
Ranking based on staffing risk in each city associated with recruitment, employment, restructuring, retirement, and retrenchment. Risk was assessed based on 30 factors grouped into five indicator areas: demographic risks associated with labor supply, the economy, and the society; risks related to governmental policies that help or hinder the management of people; education risk factors associated with finding qualified professionals in a given city; talent development risk factors related to the quality and availability of recruiting and training

resources; and risks associated with employment practices. A lower score indicates a lower degree of overall staffing risk. Rank scores sourced from the 2013 People Risk Index produced by Aon Consulting.

Tax efficiency
Combination of the number of tax payments and the time required to comply by businesses during their second year of operation. The tax payments element reflects the total number of taxes and contributions paid, the method of payment, the frequency of payment, the frequency of filing, and the number of agencies involved for the case-study company. Time to comply measures the time taken to prepare, file, and pay three major types of taxes (corporate income taxes, value-added taxes, and labor taxes). Data provided by PwC UK from Paying Taxes 2016; taxes are accurate for the year ended 31 December 2014. The Paying Taxes 2016 report can be found at http://www.pwc.com/gx/en/paying-taxes/.

Cost

Corporate total tax rate
The corporate total tax rate measures the amount of taxes and mandatory contributions payable by the businesses in the second year of operation, expressed as a share of commercial profits. The corporate total tax rate is designed to provide a comprehensive measure of the cost of all the taxes a business bears. Data provided by PwC UK from Paying Taxes 2016; taxes are accurate for the year ended 31 December 2014. Some cities that were not included in the Paying Taxes 2016 study were calculated separately by our PwC local office using the through-the-cycle methodology. The Paying Taxes 2016 report can be found at http://www.pwc.com/gx/en/paying-taxes/.

Personal tax
The personal tax data reflect the average employee effective tax rate across manager, assistant, and support staff levels in each city economy. The employee effective tax rates were generated by PwC UK using data supplied for Paying Taxes 2016. Taxes are accurate for year ended 31 December 2014. The Paying Taxes 2016 report can be found at http://www.pwc.com/gx/en/paying-taxes/.

Cost of business occupancy
Annual gross rent divided by square feet of Class A office space. Gross rent includes lease rates, property taxes, and maintenance and management costs. Data produced by CBRE Global Office Rents in US$.

Cost of living
A relative measure of the price of consumer goods by location, including groceries, restaurants, transportation, and utilities (New-York price level is 100%). The Consumer Price Index measure does not include accommodation expenses such as rent or mortgage. Figures provided by Numbeo.

iPhone index
Working hours required to buy an iPhone 4S 16GB. Data sourced from UBS Prices and Earnings 2015.

Purchasing power
Domestic purchasing power is measured by an index of net hourly wages (where New York = 100), excluding rent prices. Net hourly wages are divided by the cost of the entire basket of goods and services, excluding rent. The basket of goods relates to 122 goods and services. Data sourced from UBS Prices and Earnings 2015.

Affordability of rent
A measure of the affordability of rental accommodation in a city, calculated by offsetting the monthly rental cost of a 120m² apartment against a city's average wages. Rental prices were sourced from the Global Property Guide. Where the cost of a 120m² apartment was not available, the closest equivalent was used.

* Country-level data

Moscow

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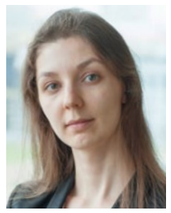

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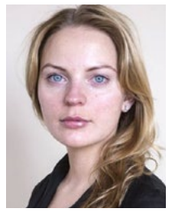

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