

| Beijing | Istanbul | Jakarta | Mexico City | Moscow | Mumbai | São Paulo |



# ***From Moscow to São Paulo***

Emerging 7 Cities Report 2014

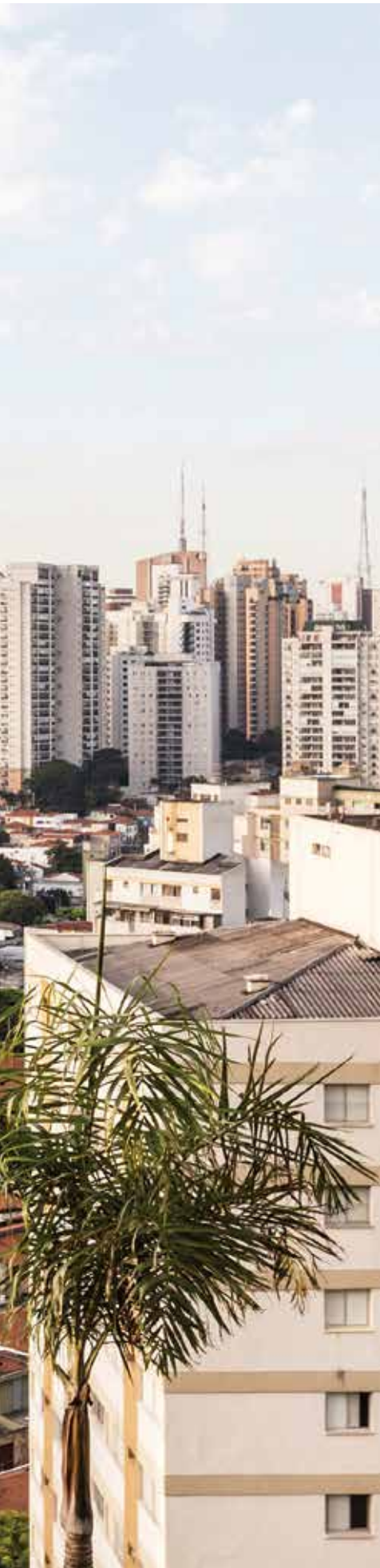
*A Cities of Opportunity* special edition







São Paulo



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# *Introduction*





Dear friends,

**From Moscow to São Paulo** is the second edition of a report that compares the Emerging 7 Cities of Opportunity (E7), our term for seven major emerging global cities that possess some of the world's most dynamic urban economies. The global interest in the first edition in 2013 has prompted us to continue our research into the trends driving the E7 cities' growth as well as the policies that have helped them to succeed.

Similar to last year, this report has been prepared for the 2014 Moscow Urban Forum, which will feature a separate discussion on the role of international benchmarking in urban planning and development. We hope that this comprehensive study of urban life will stimulate further thought and enable a better understanding of the strategies and approaches that cities should employ to improve their competitive standing now, and ensure healthy growth into the future.

This report is addressed to a wide audience. That begins with municipal and political leaders who shape the development of their cities. But our audience also includes the global business community and urban residents alike — who more than anyone else experience every day the benefits and problems of life in today's major urban centres. In both developed and developing cities, it is increasingly understood that a concerted effort by government, business, and the community is required to ensure balanced development and sustained prosperity.

Our approach to **From Moscow to São Paulo** applies the same methodology as in our **Cities of Opportunity 6** report; cities were compared according to carefully selected, balanced and interrelated indicators. At the same time, our approach is based on the assumption that it is not only quantitative data that represents a city's level of social and economic development. Frequently, how a major city is perceived by its own residents and visitors, as expressed in numerous surveys, speaks more eloquently than mere numbers about the essential trends and challenges of modern urban life. Although the 10 comprehensive indicators are the same as in the first edition, we have changed or replaced some of the 59 variables that constitute them in order to sharpen our vision of urban life.

This year, we have also focused on one critical issue in urban development: the rewards of holding major international mega-events in developing cities. We hope you enjoy the study.

Best regards,

David Gray  
Managing Partner  
PwC Russia

# Demographics and More — A Snapshot of Life in the E7 Cities

As with last year's report, this document examines seven cities in the leading E7 emerging economies. Why were these cities specifically chosen for benchmarking purposes? What are their commonalities? How do they resemble each other, or not, in factors such as demographics, overall wealth and development? This section sums up statistical data that characterises the main similarities and differences among these seven cities in the E7 emerging economies.

First of all, it is important to note the special role of the E7. At present, China, India, Russia, Indonesia, Mexico, Brazil and Turkey together account for approximately 45% of the world's population. Although the E7 countries may currently lag behind Western Europe and North America in terms of social and economic development, their role in the global economy is destined to expand in the decades immediately ahead. As early as 2050, the aggregate GDP of these countries is projected to significantly exceed the aggregate GDP of the G7 countries. Moreover according to a joint PwC-Oxford Economics forecast,

the annual GDP growth rates of the E7 countries between 2013 and 2025 will range from 3% to 6%, which is higher than the projected 2.3% GDP growth expected for the OECD countries in 2010-2020. This economic development will result in rising living standards and growing consumer demand, as well as improved quality of life for the population at large, which, in turn, will facilitate the E7 cities' further development and heightened importance as hubs of the fast-growing world of the future.

Moscow, Beijing, Mexico City, São Paulo, Jakarta, Istanbul and Mumbai – each of these cities is a key strategic hub that serves as its country's national financial and commercial capital. These cities are also home to their countries' largest national universities. They are magnets for daily migration from other regions and neighbouring countries, attracting labour migrants in search of employment opportunities. For example, as home to around 8.5% of Russia's total population, Moscow generates more than 18% of aggregate Russian GDP. Istanbul, which is also a major industrial centre, generates

## A Snapshot of Life in the E7 Cities

	City land area, km <sup>2</sup>	Current city population, thousandth	Average annual growth rate 2013-2025, %	Dependency, %	Population density, people per km <sup>2</sup>
<b>Beijing</b>	1 276	17 837	1.4	22	13 979
<b>Mexico City</b>	1 485	8 851	0.2	37	5 960
<b>Moscow</b>	2 511	12 108	0.1	40	4 822
<b>Mumbai</b>	603	12 478	0.4	61	20 694
<b>Istanbul</b>	5 196	13 256	0.7	55	2 666
<b>Jakarta</b>	664	10 188	0.7	53	15 343
<b>São Paulo</b>	1 521	11 254	0.8	53	7 399





Beijing

about 23% of Turkey's GDP. About 7.2% of Mexico's population lives in Mexico City, which accounts for about 15% of the country's GDP. As home to offices of the world's leading transnational corporations, the E7 cities' central business districts (CBDs) play a critical role in promoting ties between such companies and their clients and business partners in all corners of the world. This underscores the fact that each of the cities studied in this report not only plays a key role

on a regional scale, but also constitutes an integral part of the global economy.

Throughout the 20th century, each of the E7 cities experienced dynamic population growth. The main reason for such growth was heavy immigration by residents of outlying rural areas, who were attracted by employment opportunities in newly developing industrial enterprises. At present, each of the E7 cities is the largest population centre in its country. According to PwC projections, over

the next 11 years, their populations will continue to grow, with Beijing and São Paulo expected to post the highest growth rates (1.5% and 0.8%, respectively). In turn, the most stable growth figures are projected for Moscow and Mexico City (0.1% and 0.2%, respectively).

One of the most notable demographic challenges today is the high percentage of the non-working segment of the population (older and younger than working age) within the overall

GDP per capita, USD '000, 2013 prices	Employment, %	Employment in manufacturing, %	Income inequality, Gini index by country	Crime index	City share of national population, %	City share of national GDP, %
14.0	25.0	14.0	46.90	38.1	1.3	2.5
21.0	9.0	12.0	51.05	62.32	7.2	14.9
32.0	18.0	9.0	45.10	53.55	8.4	18.1
4.6	8.0	25.0	36.80	47.6	1.0	3.1
14.0	9.0	25.0	45.00	46.01	18.5	22.9
13.0	7.0	15.0	39.41	52.17	4.1	14.5
17.0	17.0	19.0	56.43	74.46	5.6	8.4

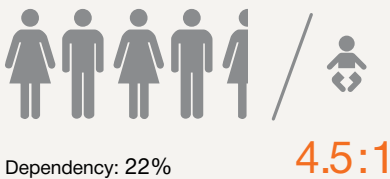
*The challenge of aging populations is relevant for these cities even today. However, over the next decade, it will become even more acute, requiring municipal authorities to pay special attention to the creation of living environments suitable for elderly persons.*

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*Beijing enjoys the most favourable balance between the working-age and non-working-age segments of its population. In Beijing, one dependent is supported by about 4.5 working individuals; Moscow shows a similar balance, where this ratio is 1:2.5.*

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Beijing



Moscow



population, which places a greater burden on a relatively small number of working-age individuals. How to provide for an aging population in Europe is now a hotly debated issue in light of the growing burden on government budgets. At the same time, public policies aimed at fostering employment and healthy economies also remain a priority for many cities over five years since the height of the Great Recession.

In our report, this problem is reflected in the demographic load factor, which is calculated as the percentage of the total number of elderly people aged over 66 and young people under 20 against the economically active working-age population. With respect to the E7 cities under review, the highest demographic load factor was recorded for Mumbai (61%), where one dependent is supported by about 1.6 working-age individuals. This high demographic imbalance is largely driven by the significant percentage of the population aged 0 to 19. A similar situation can be seen in Istanbul, Jakarta and São Paulo. As they approach working age, the younger generation of these cities may become a significant advantage – if the challenges of providing quality higher education and job opportunities can be met. If not, high levels of youth unemployment can result in social conflict and disruption.

Currently, Beijing enjoys the most favourable balance between the working-age and non-working-age segments of its population. In Beijing, one dependent is supported by about 4.5 working individuals; Moscow shows a similar balance, where this ratio is 1:2.5. The challenge of aging

populations is relevant for these cities even today. However, over the next decade, it will become even more acute, requiring municipal authorities to pay special attention to the creation of living environments suitable for elderly persons. These cities may also face shrinking of their working-age populations.

The cities examined in this report also differ significantly in terms of population density. The most densely populated E7 city is Mumbai, where on average about 29,900 persons are concentrated per square km. However, excluding those city districts where real estate development is restricted, Mumbai's population density rises to about 50,000 persons per square km, in some instances reaching 100,000 inhabitants per square km, the kind of figure seen in Manhattan. Meanwhile, a substantial part of the city's population lives in low-rise buildings, which frequently lack fundamental infrastructure. The least densely populated E7 cities are Istanbul, Moscow and Mexico City. The potential benefits of a compact urban structure include energy conservation and more efficient provision of infrastructure and services, thereby bringing financial benefits to such cities. But, an overcrowded urban environment is unlikely to match the desires of most city dwellers, which invariably leads to ever-expanding urban sprawl.

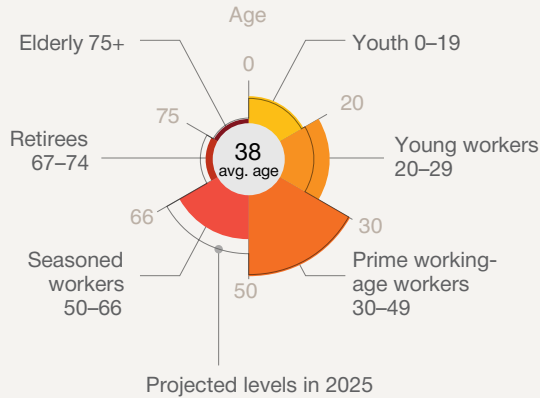
In terms of GDP per capita, Moscow and Mexico City record the highest levels of wealth. The lowest figure was recorded for Mumbai, which in 2013 posted GDP per capita of USD 4,600, or nearly seven times lower than in Moscow.



*In terms of GDP per capita, Moscow and Mexico City record the highest levels of wealth.*

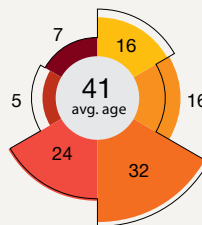
One of the distinctive features of each of the emerging cities examined in this report is a high level of social disparity, which not only manifests itself in income disparities between rich and poor residents, but also in opportunities to gain access to key social institutions. Differences in household income are most pronounced in the Latin American cities, São Paulo and Mexico City, while the lowest Gini index values are characteristic of Mumbai and Jakarta. Thus, the most egalitarian distribution of household income is recorded in those cities with the lowest GDP per capita figures. São Paulo and Mexico City also have the highest crime rates among all the E7 cities, while Beijing is considered the safest among the cities under review.

The colored segments below represent each age group's percentage of a city's overall population: Shown on the right are people under age 50; on the left, over age 50. The gray arc circumscribing each segment of the schematic depicts the projection of the respective age group's percentage in 2025.

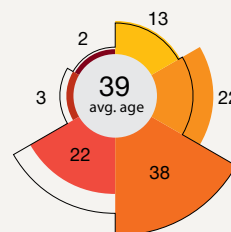


### Population percentage by age group

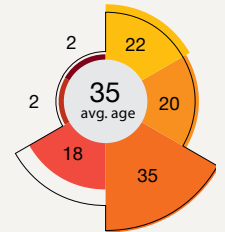
Moscow



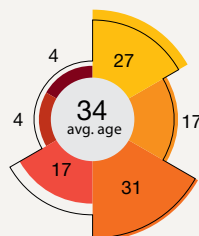
Beijing



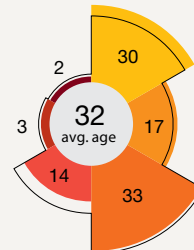
Mexico City



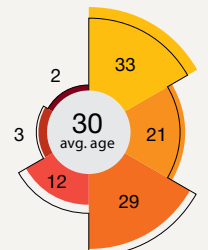
São Paulo



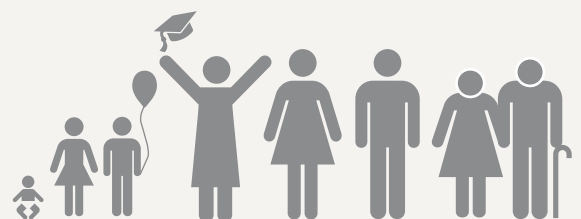
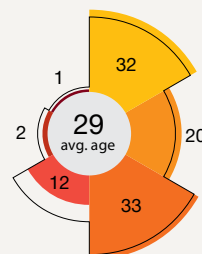
Istanbul



Mumbai



Jakarta



Sources: Local data sources, Worldpopulationstatistics.com, Oxford Economics, Euromonitor, Numbeo.com

# Approach

*Our method for assigning points to cities was developed so that, on the one hand, it was clear and transparent for readers and, on the other hand, it allowed for performing a high-quality comparative analysis of the cities according to the selected categories.*

Similar to the research for PwC's *Cities of Opportunity* report, in From Moscow to São Paulo we have maintained a rigorous fundamental approach while continuously seeking to refine and improve our mix of variables and methods for comparing them.

Each variable meets the following requirements: relevance, comparability within the sample group, general availability, timeliness, resistance to local distortions, and ability to accurately reflect the city's achievements. Because our analysis relies on publicly available data supported by comprehensive research, we use three basic sources of information:

- international organizations, such as the World Bank and the World Health Organization;
- national and municipal statistics offices;
- commercial information agencies

Data collection was performed in August-October 2014, and in most cases the data used in the research covers either 2013 or 2014.

This year, as an additional data source we used a survey of PwC employees covering all 30 cities represented in our global *Cities of Opportunity 6* report, including the Emerging 7 Cities of Opportunity. About 15,000 PwC employees gave their views on what they see as vital for their cities, which problems are most critical to solve in their cities, which of the 30 cities they would like to move to if they had the chance, and how they commute to work every day. We consulted our own

staff about issues of urban life because they represent a broad cross-section of educated, mobile professionals worldwide (including engineers, technical specialists, and qualified professional service providers) on whom the further development of their cities depends. We took into account that PwC is one of the world's most urbanised and globalised business enterprises, operating in cities of strategic importance to fully meet the needs of our clients worldwide. Two variables, Ease of Commute and Relocation Attractiveness, were calculated based on the responses of PwC employees.

We compared the E7 cities according to 10 categories and 59 variables, assigning points and ranking the cities depending on the results they demonstrated. To minimise the probability of a city showing better results merely due to its size, we normalised the variables by area and population, where possible. In some cases, we used data on an E7 city's home country as approximate variable values, but first ensured that the data reflected the situation in the given city as closely as possible.

Our method for assigning points to cities was developed so that, on the one hand, it was clear and transparent for readers and, on the other hand, it allowed for performing a high-quality comparative analysis of the cities according to the selected categories. So as to ensure transparency and avoid using an overcomplicated weighting system for the 59 variables, each variable was given the same weight.



Istanbul

Based on the data for each particular variable, the E7 cities' results were ranked from best to worst. Then, they were assigned points, from 7 (best result) to 1 (worst result). If the results were the same, the cities were given the same number of points. After all of the 59 variables were ranked and calculated, they were distributed into their respective indicators (for example, Economic Clout or Demographics and Livability). Then, the variable points were added up within each indicator to obtain the total score. As a result, tables for each of the 10 indicators were generated, which reflect the relative results of the E7 cities. The general table is the result of summarising the values of all 59 variables.

This year's report organises the 10 comprehensive indicators into three categories that seek to reflect the modern, fully-rounded aspects of city life and healthy development. The Tools for a Changing World

category includes the evaluation of such areas as intellectual capital, innovation and implementation of advanced technologies. This category also includes the evaluation of how a city can use its existing assets to establish global links and enhance its attractiveness for the global community. The indicators in the Quality of Life category characterise a city's livability, as well as the level of convenience and sustainability of urban life. Finally, the Economics category evaluates the cities' ability to finance their own development and expand their influence beyond their home countries.

The study's results provide ample opportunity for further discussion and more in-depth analysis by such stakeholders as businesspeople, researchers, municipal authorities and average citizens.

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*This year's report organises the 10 comprehensive indicators into three categories that seek to reflect the modern, fully-rounded aspects of city life and healthy development:*

- *Tools for a Changing World*
  - *Quality of Life*
  - *Economics*
-



# Highlights: How the E7 Cities of Opportunity Rank

Despite methodological refinements in specific indicators and variables, each of the E7 cities maintained the same relative ranking as in last year's final rating. This year, Beijing repeated its prior year's performance by scoring highly in all 10 comprehensive indicators; Moscow came in at second place while Mexico City ranked third.


Nevertheless, a comparison of the 2013 report against this year's edition, as regards specific indicators, clearly demonstrates the dynamic pace of growth in the largest E7 cities. This is reflected not only in the numbers but also in the changing perceptions of the cities among residents, visitors and the world community.

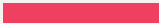

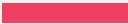







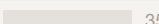

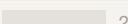


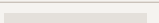

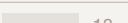


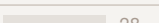

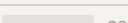




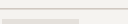







The results of the first and second editions of From Moscow to São Paulo show two trends are clearly visible. On the one hand, this year the gap between Beijing and Moscow, holding first and second place respectively, shrunk considerably. Moscow managed to move closer to the top spot, shortening the gap from 14 down to 9 points. On the other hand, the

other E7 cities fell further behind the Chinese and Russian capitals, which can be seen in the increased point spread between second and third place as well as first and last place. Indeed, of all the rated cities, Beijing and Moscow showed consistently high results in the majority of indicators.

For example, Beijing came out top in two categories – Tools for a Changing World and Quality of Life – taking first place in five of the seven indicators applicable here. Given its developed economy (finishing first in the Economic Clout indicator), China's capital city is not only one of the drivers of today's global economy, but also appears positioned to strengthen its place on the global stage, and is increasingly becoming a competitor with the developed economies' major urban centres. Against the background of an aging and shrinking working population in China, government authorities at the national and municipal level are increasing their emphasis on the availability and quality of healthcare and education,

## Summary table

 Highest rank in each variable

Rating position	Intellectual capital and innovation	Technology readiness	Transportation and infrastructure	Health, safety and security	Sustainability and the natural environment
1 Beijing	 43	 21	 35	 26	 20
2 Moscow	 42	 22	 30	 19	 25
3 Mexico City	 35	 16	 28	 26	 24
4 Istanbul	 39	 17	 18	 21	 20
5 São Paulo	 28	 14	 23	 19	 20
6 Mumbai	 20	 14	 18	 17	 18
7 Jakarta	 19	 10	 19	 14	 16



Moscow

as well as developing Beijing’s physical infrastructure and creating a comfortable and attractive urban environment. As a result of increased prosperity among city residents and the rising cost of doing business in the city, Beijing is gradually losing one of its main competitive advantages – a low cost of doing business. This is illustrated by the fact that Beijing placed last (after São Paulo) in the Cost indicator.

This year, Moscow reinforced its second-place ranking, having shortened its gap behind the leader and extended its lead over third place. By total score, the city demonstrated its best result in the Economics category and second best in the Tools for a Changing World and Quality of Life categories. Moscow differs from other E7 cities in the high percentage of its residents with higher education, as well as in its readiness to create and

*Moscow managed to move closer to the top spot, shortening the gap from 14 down to 9 points*

Economic clout	Ease of doing business	Cost	Demographics and Livability	City gateway	Score
30	35	15	34	42	<b>301</b>
27	34	22	34	37	<b>292</b>
20	41	22	25	25	<b>262</b>
15	36	23	28	38	<b>255</b>
17	35	18	24	24	<b>222</b>
18	26	20	10	15	<b>176</b>
16	21	20	14	18	<b>167</b>



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*Moscow differs from other E7 cities in the high percentage of its residents with higher education, as well as in its readiness to create and implement innovation, and the high quality and availability of information and communications technologies (ICT) infrastructure.*

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implement innovation, and the high quality and availability of information and communications technologies (ICT) infrastructure.

For example, this year Moscow leads in the Technology Readiness indicator, and is in a virtual tie with Beijing in the Intellectual Capital and Innovation indicator. Despite the severity of Russia's climate, Moscow for the second time in a row has shown the best results for the Sustainability and the Natural Environment and Demographics and Livability indicators. The availability of public parks and green zones is not only higher compared with peers among the E7 cities, but is comparable to such "green" centres as Stockholm and Paris.

Compared with last year, Moscow has also improved its rankings under the Transportation and Infrastructure, Health, Safety and Security, and Cost indicators, thus enabling the city to come closer to Beijing. The "weak zones" for the Russian capital remain a high level of operational risk and law enforcement issues.

Mexico City ranked second in the Economics and third in the Quality of Life categories, while winning the Ease of Doing Business indicator by a wide margin and sharing first place with Beijing in the Health, Safety and Security indicator. The city's openness to business, relatively low costs and relatively favourable political





environment during 2013 and early 2014 have converged to create a strong opportunity to bolster the city's role in the global economy. To increase its competitive advantages, Mexico City still has room to improve human capital and stimulate the development and implementation of innovations, as well as issues of transport infrastructure and balanced use of space.

Istanbul takes fourth place in the most recent From Moscow to São Paulo rating, three points behind Mexico City. This year, Istanbul was able to show strong results in most indicators. Its No. 1 ranking in the Cost indicator proves that a city with a relatively high standard of living can be competitive as regards the cost of doing business. Compared to the previous year, Istanbul has strengthened its ranking as regards the business climate and enhanced international appeal, thus moving up in the Ease of Doing Business and City Gateway indicators. Moreover, of these seven cities, Istanbul was named as the most attractive city for foreign employees. Indeed, not many cities can boast of such a unique combination of cultural and historical heritage and dynamic modern urban life. Istanbul, however, scored seventh in the Economic Clout and sixth in the Transportation and Infrastructure indicators.

This year, São Paulo performed in the middle of the group in the Ease of Doing Business and Sustainability and the Natural Environment indicators, while also improving its ranking in the Transportation and Infrastructure, Health, Safety and Security, and Cost indicators. Still, the city is relatively expensive for both everyday living and doing business. Brazil's largest urban centre still has great room to tap into its huge potential and essential role



Istanbul

in the Brazilian economy as a way of strengthening its positions on the global economic, political and cultural stages. The city could also benefit from improving internal security and legal compliance, enhancing intellectual property protections, developing ICT infrastructure and boosting the penetration rate of advanced technology.

Mumbai and Jakarta show similarities in their respective rankings for the From Moscow to São Paulo indicators and variables. Although both cities rank at the lower end of the rating, they have scored successes in such fundamental areas as intellectual property protection and upholding shareholders' rights. In both cases, a relatively high security level is seen as compared to most other E7 cities. Both cities enjoy the advantage of a relatively low cost of living and rather low cost of business occupancy for office space. Jakarta was also ranked best in terms of the Total Corporate Tax Rate variable.

# Tools for a Changing World

*We have grouped three indicators – Intellectual Capital and Innovation, Technology Readiness, and City Gateway – together in one section because the combination of scientific knowledge, education, technology and openness to the outside world defines a city of opportunity today and as we move into the future. Intellectual capital contributes to the development of a competitive and knowledge-based economy, while technology is the key factor in achieving versatile living for society at large. A city's merits in these areas also influence its attractiveness in the eyes of the outside world. The same three cities are ranked in the top three according to each of the indicators highlighted in this section – Beijing, Moscow and Istanbul. Currently, they are the most dynamic cities in terms of creating the right conditions for increasing intellectual and technological capital, and the most attractive cultural and economic centres among all the E7 cities.*



Beijing

## Intellectual Capital and Innovation

People and knowledge are critical intellectual assets for any city. The development of a city's overall “intellectual brand” depends on how well it contributes to generating, protecting, reproducing and disseminating knowledge. Therefore, the importance of this indicator for both developed and developing cities can hardly be overestimated. For the latter, intellectual resources play an even greater role. A city's ability to offer educational opportunities of the highest quality, as well as to create the conditions for effective knowledge sharing, protect intellectual

property, and help talented young people get on the radar screens of leading companies, will boost its odds of winning investment and talent in competition against its peers.

In this study, the Intellectual Capital and Innovation indicator underwent some methodological changes compared to the previous edition, thus ensuring more accurate city rankings in this category. The number of variables we used this year to measure a city's intellectual development has been reduced from nine to eight. We decided to drop the Classroom Size





variable, as the correlation between the number of students in a classroom and their academic achievement has proved to be a topic of considerable dispute. The publication in December 2013 of the test results for the Programme for International Student Assessment (PISA) demonstrated that 15-year-old students in Shanghai held the highest scores, even though the average classroom size in the city can hardly be described as small.

Another change concerns our approach to measuring how a city's universities perform in terms of

research capabilities. In the previous From Moscow to São Paulo study, scores were assigned based on the number of faculty articles published, total citations of published work, and the quantity of highly cited research papers. Such rankings favoured large universities and institutions that focus on the hard sciences. Therefore, in this edition of the study, we have replaced the Research Performance of Top Universities variable from the 2013 study with a new variable: World University Rankings. We used the widely recognised World University Rankings by Times Higher Education,

which provides a comprehensive, all-inclusive assessment of world-class universities.

The top performers in the Intellectual Capital and Innovation indicator demonstrated nearly neck-and-neck results, with the leader just four points ahead of the third-ranked city. Beijing came in first with the highest scores in three out of eight variables: Math/ Science Skills Attainment, Innovation Cities Index, and World University Rankings. Moscow ranked second overall, ahead of its peers in two out of the eight variables: Literacy



and Enrolment and Percentage of Population with Higher Education. It also had the second-highest score in three variables: Libraries with Public Access, Math/Science Skills Attainment, and Innovation Cities Index. Istanbul ranked third overall with the highest score in the Entrepreneurial Environment variable.

The Libraries with Public Access variable measures the number of libraries within each city that are open to the public per 100,000 inhabitants. Mexico City retains the top ranking among the E7 cities in this variable, and ranks as a top five city for this variable in PwC's global Cities of Opportunity 6 study, which was published in May 2014 and features rankings of 30 cities around the world. Due to the intensive use of information technologies, combined with the growing demands and expectations of local populations, libraries are eager to enhance their functionality. In the most advanced cities, libraries are now transforming from traditional book-lending facilities into cutting-edge cultural spaces – venues for meetings, leisure and work. This suggests that the traditional usage of libraries will gradually transform and evolve toward providing new services, especially in the context of the opportunities offered

by the Internet. However, given that only one-third of the global population has Internet access, traditional libraries will not disappear completely because, for an extremely large part of the world's population, libraries remain one of the few facilities where people can get the information they need.



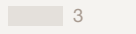
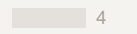
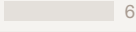
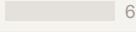
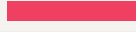
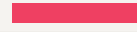

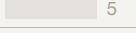
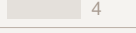
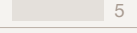


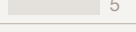

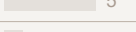

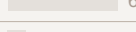

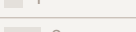
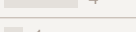

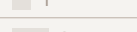



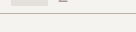
The Math/Science Skills Attainment variable is based on country-level data with PISA test results serving as the primary source of information. PISA tests are conducted by the Organization for Economic Co-operation and Development (OECD) every three years among 15-year-old students throughout the world. These tests assess students' ability to practically apply the academic knowledge acquired in school. Interestingly, seven Asian countries top the rating of those countries with the highest PISA test results. This is possibly due to the fact that these countries focus on practical knowledge. As in last year's study, Beijing came in first among the E7 cities for Math/Science Skills Attainment. Moscow and Istanbul improved their rankings in this variable, moving from third place to second place and from fourth place to third place, respectively, against their performance last year.

The Literacy and Enrolment variable is also based on country-level data. It consists of several metrics, such as the average period of school education and the percentage of people who enrol in secondary and tertiary educational systems. Although the top three performers overall are not represented by Asian countries, this fact by no means diminishes the latter's efforts to meet rising demand for education in light of limited resources and a growing population. Access to education remains a key issue that must be addressed by the governments of the emerging cities and countries.

The Top-3 performers in our new E7 variable, World University Rankings, include Beijing, Istanbul and Moscow. Interestingly, 10 Chinese universities are listed in the World University Rankings 2013-2014 by Times Higher Education, three of which are located in Beijing. Three of the five Turkish universities listed in the rating are located in Istanbul. Meanwhile, Moscow and São Paulo are represented in the rating by one university each. An individual university's ranking is derived from a number of parameters, including its contribution to innovation and international cooperation. However, the most substantial weight is assigned to teaching and research

## Intellectual capital and innovation

 Highest rank in each variable

Rating position	Libraries with public access	Math/Science skills attainment <sup>1</sup>	Literacy and enrolment <sup>1</sup>	Percent of population with higher education
1 Beijing	 3	 7	 3	 4
2 Moscow	 6	 6	 7	 7
3 Istanbul	 4	 5	 4	 5
4 Mexico City	 7	 3	 5	 6
5 São Paulo	 5	 2	 6	 3
6 Mumbai	 1	 4	 1	 1
7 Jakarta	 2	 1	 2	 2

<sup>1</sup> Country-level data

activities, as well as citations of academic papers. Universities in both Beijing and Istanbul received high scores for these metrics. At the same time, however, Moscow lags behind its foreign peers, especially in citations.

In order to measure a city's potential as an innovation-oriented economy, we referred to the Innovation Cities Index produced by the 2Thinknow Innovation Cities™ programme. The index is derived from scores assigned for a city's cultural assets and infrastructure, as well as its overall innovation-fostering environment. Beijing ranks first for this variable in the E7 cities rating, followed by Moscow. Meanwhile, Mumbai moved up two places, while Mexico dropped two spots from its previous ranking.

Protection of intellectual property (IP) is a critical factor that investors consider when entering any market. Ultimately, both a city and country's international reputation depends on how well government authorities address the issue of protecting intellectual property. In ranking the E7 cities for the Intellectual Property Protection variable, we referred to the Global Competitiveness Report 2014-2015 by the World Economic Forum. Scores were assigned to the E7 cities



Istanbul

based on executives' opinions on how well intellectual property is protected in their countries. Although it is not usually associated with best practices in IP protection, Jakarta ranks first in our rating, outperforming Beijing. Meanwhile, Istanbul improved its performance, climbing two places in the rating to rank fourth, while São Paulo showed poorer results, dropping to second-to-last place. As was the case last year, Moscow finished last.

Finally, the Entrepreneurial Environment variable, in which Istanbul has ranked first for two years in a row, proves that this city has the potential to become a leader in offering attractive business opportunities. The widespread use of information technologies in everyday life and a strong local entrepreneurial spirit have been instrumental in transforming Istanbul into a leading centre for start-ups.

World university rankings	Innovation Cities Index	Intellectual property protection <sup>1</sup>	Entrepreneurial environment <sup>1</sup>	Score
7	7	6	6	<b>43</b>
5	6	1	4	<b>42</b>
6	4	4	7	<b>39</b>
3	2	3	6	<b>35</b>
4	3	2	3	<b>28</b>
2	5	5	1	<b>20</b>
2	1	7	2	<b>19</b>

## Technology Readiness

Development of information technologies provides a foundation for innovation and an engine for a city's economic growth. To become technologically mature, a city must address the following three critical issues: improving the quality of its physical infrastructure, encouraging the introduction of technological solutions into daily life, and boosting the digital literacy of both the public and business. The Technology Readiness indicator measures a given E7 city's existing conditions for developing new technologies.

While the number of variables in this indicator remains unchanged, we have revised certain data sources for two of the variables. To measure Broadband Quality, we are now using data from Internet metrics provider Ookla, instead of last year's data source, the Broadband Quality Study, which is no longer being published. To refine the Software Development and Multi-media Design variable, we have added data

from the World Bank to data provided by fDi Intelligence.

The E7 cities' performance in terms of Technology Readiness is remarkable in that there is no absolute leader in the sample, as each of the cities performs quite well in at least one variable. For instance, the first- and third-place cities are just one point ahead of their second- and fourth-place peers, respectively. Moscow overtook Beijing to finish first this year, with Istanbul and Mexico City following the two leader cities. Mumbai and São Paulo are tied for the fifth spot while Jakarta ranks seventh.


The development of information technologies, and the Internet in particular, creates major opportunities for introducing educational innovations that contribute to improving the quality of education. The Internet Access in Schools variable is based on country-level data and the findings of CEO surveys conducted

by the World Economic Forum (WEF)<sup>1</sup>. Although China maintains its leadership in this variable among the emerging economies under review, Russia has jumped ahead in the WEF Global Competitiveness ranking, moving from No. 70 in the 2012-2013 report up to No. 41 in the 2014-2015 report. This, in turn, has helped Moscow to improve its position year on year as it moved up two places to overtake Istanbul and Jakarta in this year's From Moscow to São Paulo study. Indonesia and Turkey have also put in better performances and moved up eight and ten places, respectively, in the Global Competitiveness ranking.

Given the use of new sources of information, Mumbai's second-place ranking in terms of Broadband Quality can be seen as quite an achievement. However, Mumbai will have to make a concerted effort to improve technology penetration among its population, as well as upgrade channels for dissemination of technology.

<sup>1</sup> World Economic Forum, Global Competitiveness Report 2014-2015.

### Technology readiness

 Highest rank in each variable

Rating position	City	Internet access in schools <sup>1</sup>	Broadband quality	Digital economy score <sup>1</sup>	Software development and multi-media design	Score
1	Moscow	6	7	2	7	22
2	Beijing	7	5	4	5	21
3	Istanbul	4	4	5	4	17
4	Mexico City	2	3	7	4	16
5	Mumbai	3	6	3	2	14
5	São Paulo	1	1	6	6	14
7	Jakarta	5	2	1	2	10

<sup>1</sup> Country-level data





Mexico City

The Digital Economy Score variable measures a country's readiness to effectively implement and use information and communications technologies to gain economic and social benefits. It considers several parameters, including the maturity of ICT infrastructure, digital literacy, and the ability of business and the broader community to use these technologies. Given that this variable is based on country-wide data, it can be reasonably assumed that the cities themselves will show stronger results. Nevertheless, the leadership of Latin American cities in our ranking for this variable comes as no surprise. For example, the Mexican government has undertaken a number of initiatives to spread information technologies into all sectors of the economy, as well as strengthen the country's position in this area on the global arena. Launched in 2004, the Mexican government-funded programme PROSOFT aims at promoting IT services exports, attracting investment, providing support for training a highly skilled workforce, and developing the country's IT legal framework.

Another initiative was the adoption of the Mexico IT programme, which aims at raising investor awareness of the Mexican IT industry's capabilities. Intensive joint activities on the part of the government and the private sector have contributed to Mexico's current status as a global leader in IT services exports.

Brazil's example is equally noteworthy. The Brazilian authorities have placed a strong emphasis on developing ideal conditions for doing IT-related business in the country and on increasing IT penetration across community and governmental activities. Therefore, it is not surprising that São Paulo ranks second in software and multi-media development. However, these cities will have to make efforts to ensure that their existing IT development environments are naturally conducive to enhancing productivity, expanding opportunities for e-commerce and transforming the lives of consumers.

## City Gateway

The City Gateway indicator is designed to evaluate the strength of a city's ties with the rest of the world. The results for this indicator are highly connected to, and balance with, the Demographics and Livability indicator, which adds perspective on culture and quality of life within a city.

This year, we excluded the Aircraft Movements variable from our analysis, as the data received for this indicator was similar to data on the volume of incoming and outgoing passenger flows. Due to this fact, those cities that showed more moderate results under these variables were “punished” twice, while those cities with better results received high grades twice. Two new variables that we have added to this year's research are On-Time Flight Arrivals and Top 100 Airports. The first variable evaluates the on-schedule flight arrival record of the given city's major airline. The second variable compares city airports according to a number of parameters, including airport cleanliness and security, speed of baggage claim and passport control, and convenience of location based on the feedback from more than 12 million air travellers, resulting in


an airport rating that serves as the data sources for our variable.

















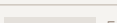

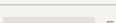

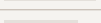


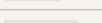

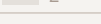


Beijing retained its top ranking in the City Gateway indicator, reinforcing its position as one of Asia's largest trade, logistics, business and cultural hubs. Among E7 cities, Beijing leads by number of hotel rooms in the city; volume of the incoming and outgoing passenger flows; and convenience, cost and speed of travel from the airport to the city centre. In addition, Beijing Shoudu Airport ranks among the top 10 best international airports in the Top 100 Airports rating by Skytrax<sup>2</sup>. To provide additional incentives for inbound tourism, the Chinese government has introduced a 72-hour visa-free regime for transit passengers from 45 countries, which has been in effect since 1 January 2013. However, one of the significant factors restraining the inflow of foreign tourists is the still high level of air pollution in the city. It's likely that this, together with a slowdown in China's economic growth and the strong yuan, was one of the factors leading to the decrease in the number of foreign tourists visiting Beijing in 2013.

Istanbul rose in the general rating for the City Gateway indicator to rank second after Beijing. Turkey's largest city, known as the “capital of three empires” with its rich historical and cultural heritage, is becoming an increasingly attractive destination for tourists, as demonstrated by the figures for inflow of foreign tourists to the city. In the City Gateway indicator, Istanbul surpassed not only its E7 peers but also most of the 30 cities in PwC's global Cities of Opportunities 6 research study, including such recognised tourism centres as Madrid, Milan and Berlin. Investment in developing Turkey's tourism industry has laid the groundwork for resolving social and economic issues, which is why the government is continuously working on creating opportunities to fully realise the sector's potential. One of the areas that has been most actively developed in the country is business tourism. Thanks to the joint efforts of the Turkish government and industry organisations, it has been possible to achieve an increase in investment in the construction of major convention and exhibition centres. Already today, Istanbul is among the 10 most

<sup>2</sup> Skytrax The World's Top 100 Airports in 2014, [http://www.worldairportawards.com/awards\\_2014/worlds\\_top\\_100Airports.htm](http://www.worldairportawards.com/awards_2014/worlds_top_100Airports.htm)

### City gateway

 Highest rank in each variable

Rating position	Hotel rooms	International tourists	Number of international association meetings	Incoming/outgoing passenger flows
1 Beijing	 7	 5	 6	 7
2 Istanbul	 2	 7	 7	 5
3 Moscow	 6	 6	 3	 6
4 Mexico City	 3	 4	 4	 1
5 São Paulo	 5	 1	 5	 3
6 Jakarta	 4	 2	 2	 4
7 Mumbai	 1	 3	 1	 2



popular cities in the world for holding conferences and business events<sup>3</sup>, and there is reason to believe that the city on the Golden Horn fully intends to strengthen its position in this respect.





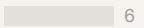

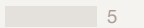
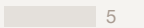
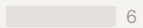



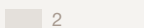


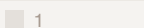

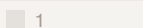


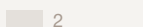
Moscow ranked third in the City Gateway indicator, lagging behind Istanbul by only one point in a virtual tie. The Russian capital demonstrated relatively even results for all variables included in the indicator. In four of them, it ranked second, and in two variables it ranked third. In this year's research, Moscow went up one step in the inflow of foreign tourists and came in second in punctuality of flight arrivals by its largest air carrier, Aeroflot, which in 2014 was recognised as the best airline in Eastern Europe<sup>4</sup>.

Mexico City ranked fourth after Moscow. For a long time, the city has paid considerable attention to developing business tourism in particular; however, the municipal authorities are currently working on fostering Mexico City's image not just as a city to do business in, but as a cosmopolitan city with a rich cultural life as well. Mexico City is among the world's leaders by number

of museums and is well-known for its cuisine, which only strengthens the city's potential for developing its tourism industry. In the E7 cities rating under the City Gateway indicator, Mexico City ranks fourth by Number of International Tourists, Number of International Association Meetings, and On-Time Flight Arrivals. Among E7 cities, Mexico's capital city stands out for the convenience of travelling from the airport to the downtown area. Thanks to Mexico City's subway system, which connects downtown to the airport, the trip takes no more than 20 minutes at minimal cost.

São Paulo, ranking fifth, demonstrated very good results in three variables (Hotel Rooms, Number of International Association Meetings, and On-Time Flight Arrivals), but at the same time, in the other four variables the city shows much more moderate results, which prevented it from ranking higher in the rating. Jakarta and Mumbai still must make efforts to develop the necessary infrastructure, expand economic and cultural connections with the rest of the world, and increase their attractiveness abroad.

<sup>3</sup> According to the International Congress and Convention Association <http://www.icca-world.com/npps/story.cfm?nppage=3537>  
<sup>4</sup> World Airline Awards, category "Best Airline in Eastern Europe", 2014.

Airport to CBD access	Top 100 airport	On-time flight arrivals	Score
 7	 7	 3	<b>42</b>
 4	 6	 7	<b>38</b>
 5	 5	 6	<b>37</b>
 6	 3	 4	<b>25</b>
 2	 3	 5	<b>24</b>
 1	 4	 1	<b>18</b>
 3	 3	 2	<b>15</b>



# Quality of Life

*This category groups together four indicators for evaluating the essential assets and quality of urban life – Health, Safety and Security; Transportation and Infrastructure; Sustainability and the Natural Environment; and Demographics and Livability. Beijing topped the rating in all but one indicator, while Mexico City and Moscow were among the best in three indicators, and Istanbul in two indicators.*



São Paulo

## Transportation and Infrastructure

Well-developed transport infrastructure and the availability of high-quality housing are part and parcel of comfortable urban living. The level of development in these areas has a direct influence on almost every aspect of life in the city. In fact, the lack of safe and sound housing conditions can limit a person's ability to invest in education and healthcare, while also stunting the satisfaction of cultural and spiritual needs, professional advancement and the realization of one's personal potential. Taking low-quality municipal transport systems as an example, this limits residents' mobility and results in a

significant increase in the costs of doing business. This is precisely why ensuring that the development of “physical infrastructure” matches the city's growth is a top priority for urban planning policy both in developed and emerging cities.

This year, we have slightly modified the way we measure the Cost of Public Transport which now measures the fare for travelling on public transport from the most distant point of the city limits to the central business district (CBD), rather than measuring the fare for getting from the farthest point on one end of the city limits to the farthest point on the other end, as we did last



year. In our opinion, this updated approach offers a fairer measurement of the daily travel costs for most city residents. The other change we have made is the replacement of the Major Construction Activity variable by the Volume of Property Transactions variable.

This year, the results for the Transportation and Infrastructure indicator, when analysed and compared to last year's report, illustrate a certain reordering in our rankings. While the leader, Beijing, showing the most stable results across all variables, remained the same, two cities have demonstrated significant

improvement this year. Moscow finished second (as opposed to third in last year's study) in the Transportation and Infrastructure indicator. São Paulo ranks third for the Volume of Property Transactions variable which helped the city move up to fourth place from sixth in the Transportation and Infrastructure indicator. As with last year, none of our cities demonstrated consistently high scores across all variables.

This year, Moscow has clearly taken the lead to finish first in the variables reflecting Mass Transit Coverage and the efficiency, reliability and safety of Public Transport Systems. Russia's

capital city has one of the longest subway networks in the world and its tram routes are of considerable length. Furthermore, a substantial part of Moscow comprises government-protected nature conservation areas and parks, the area of which has been subtracted from the city's total land area to indicate developable land when measuring the Mass Transit Coverage variable, thus enhancing its significance. Mumbai, which has extensive urban rail links and is the most compact location among all of the E7 cities, ranks second in this indicator. Moscow's ability to remain in the top ranks for Public Transport Systems



reflects the efficiency, reliability and connectivity of the city's entire public transportation network, as well as the diverse modes of transport available.

The Cost of the Public Transport variable reflects the absolute cost of travelling by public transport in US dollars. Jakarta finished first for this variable but lagged behind the other six cities for other indicator variables measuring public transport availability and efficiency, and Mass Transit Coverage. Indeed, the least expensive transportation systems often happen to be least mature and efficient. Emerging cities must tackle the challenge of raising sufficient funding to develop convenient, reliable public transport services. Especially impressive in this regard is the experience of Beijing, which has been continuously expanding its Mass Transit Coverage while keeping costs relatively low.

Mexico City maintains the top position for total number of Licensed Taxis. An affordable taxi fleet complements the city's public transportation system, which is partially the result of a policy of deregulation in the 1990s. A substantial share of passenger flow is served by private cab companies using low- to medium-capacity vehicles. Moscow has made the most impressive advance by far in the Licensed Taxis variable. The city's targeted policies

have helped to significantly simplify the application process for taxi permits. Taxi operators can access subsidies to receive compensation for certain costs related to vehicle-leasing payments. Furthermore, the city has been setting up special taxicab stands and dedicated lanes restricted to buses, which can also be used by taxis. The city has also been actively promoting social taxi projects in order to support people with limited mobility. All of these steps have led to an almost five-fold increase in the number of Licensed Taxis in the city in the past five years.

For the Volume of Property Transactions variable Beijing finished first by far, followed by Moscow. Other cities showed more modest results.

The Housing variable is defined as the measure of availability, diversity and quality of housing, and household maintenance and repair services, as well as the availability of quality furniture and household appliances, according to the Mercer Quality of Living report. The best scores went to Beijing and São Paulo. All components for this variable are based on an assessment of perceptions among a city's foreign residents. The top-ranking cities in this variable received high scores for each component, with Beijing ranking higher with respect to quality of household maintenance and repair.

## Transportation and infrastructure

 Highest rank in each variable

Rating position	Public transport systems	Mass transit coverage	Cost of public transport	Licensed taxis	Volume of property transactions	Housing	Score
1 Beijing	5	5	6	5	7	7	35
2 Moscow	7	7	2	6	6	2	30
3 Mexico City	3	4	5	7	4	5	28
4 São Paulo	4	3	1	4	5	6	23
5 Jakarta	1	1	7	2	3	5	19
6 Istanbul	6	2	3	1	1	5	18
6 Mumbai	2	6	4	3	2	1	18





Jakarta

## Health, Safety and Security

High levels of healthcare and safety provision are basic components in urban quality of life. A healthy, educated, and prosperous populace is obviously a critical resource for and driver of any city's development. Meanwhile, it is worth noting that a person's health is not only about the lack of any physical ailments, but also about his/her psychological state of mind, which in turn is directly influenced by numerous social, economic, environmental and genetic factors. This highlights the close link among the variables that make up the overall Health, Safety and Security indicator.

This year, as compared to the first edition of *From Moscow to São Paulo*, we have adjusted how we measure two component variables of this indicator. In the Hospitals and the Health Employment variable, we have included the level of health sector employment in this variable's measurement as well as the number of hospitals with access for international visitors per 100,000 inhabitants. In our view, this provides us with a more objective statistical confirmation of the

maturity of a city's healthcare system, and also offsets variances between the cities due to differences in the way medical institutions operate.

The Crime variable has also undergone a substantial adjustment in the way it is measured. In the last report, the crime rating from Mercer's Quality of Living report was used in isolation. This year, however, we have added subjective perceptions (feelings) of security and safety based on survey data and homicide rates per 100,000 inhabitants. Thus, the Crime variable reflects the level of security in a city both according to the perception of city residents and statistical data on crimes of varying severity.

The changes in this measurement have largely impacted the changes in the final ranking for this indicator, with Moscow and São Paulo improving their positions while Mumbai was pushed to the bottom. As with last year, Beijing, Mexico City and Istanbul held the top spots.

For the Hospitals and Health Employment variable, Mexico City finished first for the second year in

a row while also ranking in the top three for the other two health-specific variables, thus indicating the maturity of the city's healthcare system. These results are not at all surprising given that Mexico is a global leader in medical and health tourism. A high level of healthcare services at relatively low cost, as compared to its northern neighbour, has spurred many US tourists to visit Mexico specifically to receive treatment. This, in turn, gives further impetus to developing the healthcare system. Given India's historical ties to Great Britain as well as the extensive use of English in the country, it is understandable that Mumbai is doing quite well as regards the accessibility of hospitals to international visitors. However, Mumbai finishes behind almost all of the other cities when it comes to Hospitals and Health Employment, whereas São Paulo and Moscow rank at the top. The employment factor is what best explains the respective performances of Moscow, São Paulo and Istanbul and the lower-ranking results for Mumbai and Beijing in regards to the Hospitals and Health Employment variable.

The Health System Performance variable in this case is measured as the ratio of healthy life expectancy to healthcare expenditures. This variable is calculated for a country as a whole rather than for an individual city. Beijing, Istanbul and Mexico City performed best in this regard. Indeed, the Chinese population, among all E7 countries, has the highest life expectancy while healthcare expenditures per capita in China are the lowest relative to other countries. Moscow and Mumbai finished at the bottom as these are the largest hubs in the countries with the lowest life expectancies among the E7 countries<sup>5</sup>.

Istanbul ranks first for the End of Life Care variable, while also doing quite well in terms of Health System Performance. Moscow and Mexico City finished second and third in End of Life Care variable. As End of Life Care is measured on the basis of multiple components that factor in both qualitative and quantitative characteristics; the leading countries of the E7 can rightfully be proud of their achievements in this important sphere.

Although the Crime variable is now measured differently, Beijing is still the safest city among the E7. The lowest overall crime score from Mercer was recorded for the Chinese capital. Beijing also received a high score for

residents' and visitors' sense of security. However, the frequency of homicide is still quite high. Mumbai and Jakarta managed to reach the top three for this variable. Although the overall crime level in these cities is still rather high, the premeditated homicide rate is much lower when compared with the other cities studied. Mexico City and Moscow slipped slightly from their rankings in last year's report owing to changes in the measurement approach rather than fundamental shifts in these cities' data. Moscow still has a relatively high crime rate. Furthermore, Mexico City and São Paulo, with their relatively high levels of social stratification, remain the least safe of the E7 cities.

The last variable making up the overall Health, Security and Safety indicator is Political Environment, which reflects perceptions of internal political stability, law enforcement, limitations on personal freedom, and media censorship. The best-performing cities here were Mexico City, São Paulo and Mumbai. The Latin American cities, although demonstrating relatively high scores across all ranking criteria, should focus more on law enforcement, whereas Mumbai needs to pay more attention to internal stability. The primary areas of concern for Moscow and Jakarta include internal stability and law enforcement.

<sup>5</sup> Based on World Health Organization data.

## Health, safety and security

 Highest rank in each variable

Rating position	Hospitals and health employment	Health system performance <sup>1</sup>	End of life care <sup>1</sup>	Crime	Political environment	Score
1 Beijing	4	7	4	7	4	26
1 Mexico City	7	5	5	2	7	26
3 Istanbul	2	6	7	3	3	21
4 Moscow	6	2	6	4	1	19
4 São Paulo	6	4	2	1	6	19
6 Mumbai	3	1	1	6	6	17
7 Jakarta	1	3	3	5	2	14

<sup>1</sup> Country-level data





Moscow

## Sustainability and the Natural Environment

A clean natural environment and effective natural resource management are essential to gauging a city's overall quality of life and measuring its competitive advantages. Recognizing the need to regulate adverse impacts on the environment, enhance the efficiency of resource utilization and create favourable conditions for community life, cities may undertake a number of actions that frequently require large-scale investment. While they may strive to spur economic growth and meet the growing needs of urban communities, many cities fail to pay adequate attention to these issues. Nonetheless, as modern society becomes more demanding with respect to environmental sustainability, clean, green and comfortable cities than succeed in implementing environmentally friendly models will enjoy greater success.

In the current edition of PwC's From Moscow to São Paulo study, the Sustainability and the Natural Environment indicator is composed of the same variables that were used in the first edition. However, some methodological changes were made to the calculations of three variables.

We think these changes have resulted in a more objective environmental assessment in terms of its quality and actions undertaken for improvement. For example, we define Recycled Waste as the total waste diverted from municipal landfills. When calculating the Air Pollution variable, we have included an air pollution index based on more current data from surveys as well as from the World Health Organization's database. The Thermal Comfort variable also underwent some changes. It is calculated based on maximum temperatures and evening humidity for four months of the year, while in the previous edition, heat indices were calculated based on average temperatures and average morning humidity for January and July. As a result, the cities' rankings for Sustainability and the Natural Environment have changed dramatically. For instance, Mexico City, Beijing and Istanbul have improved their rankings, while São Paulo, Mumbai and Jakarta have dropped down to the bottom spots. While Moscow is still a leader, outperforming its peers in two variables, the total scores indicate a narrowing of its lead over other cities.

The Natural Disaster Risk variable assesses the likelihood of natural disasters occurring in or near an E7 city, including such potential hazards as hurricanes, drought, earthquakes, floods, landslides and volcanic eruptions. According to this measure, Moscow, Beijing, Istanbul and São Paulo are the safest cities. The most comfortable climatic conditions are found in Mexico City, São Paulo and Istanbul. Although municipal authorities cannot possibly influence the climate or the probability of natural disasters, safe and comfortable living conditions are of no small importance to people when they decide on a potential place of residence. Those cities where the risk of natural disaster is high must pay careful attention to developing and improving response systems that enable authorities to minimise potential damage.

Mexico City has significantly improved its performance with respect to Recycled Waste, moving up to second from fourth place, outpacing both Moscow and Jakarta. Mexico City's municipal authorities are implementing a large-scale project to increase the volume of solid waste processing and



recycling. In 2010, the biggest solid waste landfill in the Mexican capital was shut down. A few years before this closure, the city launched a programme to separate organic and inorganic waste for subsequent recycling. The organic portion of waste is used to produce fertilisers and generate biogas. Another factor in the significant reduction in the volume of waste going to landfills was the city's agreement with one of the world's largest building materials and cement producers on using the inorganic portion of solid waste as fuel for kilns. As a result of these goal-oriented actions, only about 50% of all waste produced by the city goes to local landfills. Mumbai ranked first in solid waste processing and recycling for two years in a row. Interestingly, the city's informal sector has made a significant contribution to this process. In India, low-income communities have long been engaged in collecting, separating and selling waste to processing facilities.

Major changes in the cities' ranking for Air Pollution were made this year. Istanbul significantly improved its ranking, whereas Moscow lost its lead and ranks among the three cities where residents suffer the worst air pollution. Motor vehicles and industrial enterprises are the main sources of

air pollution, with climatic conditions and characteristics of the city and its suburban landscape also having a significant impact on air quality. Over the past few years, air quality has significantly deteriorated in Beijing, not only as a result of an increase in the emission of air pollutants, but also due to abnormal climatic conditions. In addition, the city recorded an all-time high for relative humidity and an all-time low for wind speed<sup>6</sup>. Istanbul, a leader in this year's ranking, is now implementing several initiatives to improve air quality, including modernization of heating systems and moving them to more environmentally friendly fuels, monitoring and controlling emissions from various pollution sources, upgrading its public vehicle fleet, and raising awareness of the adverse impact motor transport has on air quality.

As was the case last year, Moscow, Beijing and Jakarta are top performers in the Public Park Space variable. The majority of the cities under review place great emphasis on developing high-quality recreational areas. For example, dozens of new parks have been built over the past few years in Moscow while large-scale programmes are also under way in São Paulo and Jakarta.

<sup>6</sup> The New York Times, 2014.

## Sustainability and the natural environment

■ Highest rank in each variable

Rating position	Natural disaster risk	Thermal comfort	Recycled waste	Air pollution	Public park space	Score
1 Moscow	7	3	5	3	7	25
2 Mexico City	2	7	6	5	4	24
3 Beijing	6	4	3	1	6	20
3 Istanbul	5	5	2	7	1	20
3 São Paulo	5	6	1	6	2	20
6 Mumbai	3	3	7	2	3	18
7 Jakarta	2	1	4	4	5	16



Mumbai

## Demographics and Livability

Today, the E7 cities are the world's largest metropolitan areas surpassing most of the developed countries' urban centres in terms of population. While population growth in developed countries has been, to a greater or lesser degree, in line with the pace of urban infrastructure development and modernization, developing cities have experienced rapid growth over the past few decades and are facing multiple challenges. In addition, these cities must compete for highly skilled talent and investment both with other urban centres within their own countries and other global cities. In terms of comfort, convenience and attractiveness, large metropolitan areas in developing countries still have significant room for catching up with most developed world cities, where a recent history of prosperity and stability has fostered a strong level of livability.

When calculating the Demographics and Liveability indicator for this year, we added two new variables based on a survey of 15,000 PwC employees. We asked them to measure the ease of travelling between their homes and workplaces. The survey results were

used to calculate the Ease of Commute variable. As part of the survey, PwC staff were asked to specify three cities on the list of 30 Cities of Opportunity (except for the one they live in) where they would prefer to work. The data were used to calculate the Relocation Attractiveness variable.

The addition of new variables has slightly changed the E7 cities' rankings in this indicator. For instance, Istanbul received the highest score for Relocation Attractiveness and changed positions with São Paulo, moving from fifth to third place overall. Jakarta also improved its performance against Mumbai. As was the case last year, Moscow and Beijing remain the best performers. Moscow received the highest scores in three variables but performed slightly less well in Relocation Attractiveness. Beijing demonstrated poorer performance for Cultural Vibrancy.

The Cultural Vibrancy variable is composed of several components and includes residents' subjective perception of the essential elements of cultural life and how a city is able to reflect and shape the spirit of the

times, i.e. the zeitgeist. The Latin American cities in the E7 hold leading positions in this variable. São Paulo's top spot comes as no surprise given the large number of festivals and cultural events held in the city, as well as its many museums and diverse nightlife. Istanbul has slightly improved its ranking this year. Over the past few years, the city has sought to change its image from a major industrial centre to a financial and cultural hub by developing culture as a key instrument for boosting its attractiveness. In 2010, Istanbul was the European Capital of Culture. The effort to prepare the city for this event included large-scale restoration of cultural heritage sites and renovation of historic urban neighbourhoods. Private investors compete to fund the development of cultural facilities and events in Istanbul. Thus, both the business community and city residents support the cultural development initiatives largely put forward by both the national government and municipal authorities, which, no doubt, has strengthened Istanbul's role as a major cultural centre and tourist destination in Europe.

Compared with last year's results, there are no changes in the cities' rankings for the composite variable that analyses Quality of Living. The top three performers here, Moscow, Beijing and São Paulo, can offer residents more favourable living conditions as compared to their peers. The Chinese capital holds the lead in the Working Age Population variable. Indeed, residents aged from 15 to 64 years old account for almost 90% of the city's total population.

The leaders in the Traffic Congestion and the Ease of Commute variables are ranked as follows. In both variables, Moscow finishes first, Beijing comes in second, and Istanbul third. Last year, all cities in the ranking (except for the two Latin American cities) demonstrated the same performance in Traffic Congestion. Each city under review has long experienced problems with traffic congestion and each of them is implementing policies to improve the situation. The fact that Mexico City and São Paulo are lagging behind their peers is understandable.

These two cities have the highest rates of auto use. For instance, in Mexico City, at the end of the 1990s the number of cars on city streets increased at a rate several times higher than that of its population growth. The rapid growth of auto use was driven not only by an increase in household income but largely by the success of Mexico's domestic auto industry. The predominance of low-capacity vehicles in providing urban transport services, including over 150,000 taxicabs, has also contributed to traffic congestion in Mexico City.

It is not surprising that Istanbul is ranked as the top city for Relocation Attractiveness. Nowhere else in the world are the cultures and traditions of East and West so closely intertwined as in the city on the Golden Horn. As the fastest-growing urban economy, Beijing comes in second for this variable. In addition, PwC employees perceive Mumbai and Jakarta as the least attractive relocation destinations among the E7 cities.

## Demographics and livability

 Highest rank in each variable

Rating position	Cultural vibrancy	Quality of living*	Working age population	Traffic congestion	Ease of commute <sup>1</sup>	Relocation attractiveness <sup>1</sup>	Score
1 Beijing	3	6	7	6	6	6	34
1 Moscow	5	7	5	7	7	3	34
3 Istanbul	5	3	3	5	5	7	28
4 Mexico City	6	4	6	1	4	4	25
5 São Paulo	7	5	2	2	3	5	24
6 Jakarta	2	1	4	4	2	1	14
7 Mumbai	1	2	1	3	1	2	10

\*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 EIU analysts' and in-city contributors' judgements. For quantitative indicators, ratings are calculated based on cities' relative performances on a number of external data points. Data produced by the EIU Liveability ranking.

<sup>1</sup> Data based on the 2013 PwC Employee Survey



# Economics

*This section is designed to assess cities from a financial point of view, specifically their ability to ensure sustainable economic growth, provide attractive conditions for businesses, and promote their credibility as financial centres far beyond their own borders. Just as in the previous year's study, Mexico City surpassed its competitors in the Ease of Doing Business indicator and took second and third place, respectively, in the Cost and Economic Clout indicators. Mexico's capital city has once again confirmed that it is not one of the developing world's biggest centres of finance and commerce by chance, and underscored its serious intention of becoming a worthy competitor to the developed cities in the international arena.*



Beijing

## Economic Clout

This indicator measures not only the maturity level of a city's economy but also the extent of its presence in the global economic system, how attractive it is for international investors and the extent of its economic influence on the global economy. A developed economy is a fundamental element of any city's prosperity. Furthermore, a successful economic policy is largely instrumental in increasing people's prosperity and ensuring successful social and economic transformations, as well as urban development. In a highly competitive environment, global urban centres can attract profitable investments and people with the best skills by offering the most favourable conditions for doing business along with the best working and living conditions.

The changes this year in our calculation methodology for Economic Clout were minimal. The Attracting FDI variable essentially combines two variables measuring direct foreign investment, i.e. the number of greenfield projects and the total value of capital investments made. We also changed the Rate of Real GDP Growth variable's calculation to measure average growth

rates for three years instead of annual data. Other variables and calculation techniques remain unchanged.


As in the first edition of From Moscow to São Paulo, Beijing and Moscow performed exceptionally well, ranking far ahead of the other five cities in total scores across all variables. China's capital city not only demonstrates its economic clout among the E7 cities, but also ranks second overall in this indicator among the 30 cities in our Cities of Opportunity 6 global study, lagging only behind London. In the Cities of Opportunity 6 ranking, Moscow placed in the top half for Economic Clout, ranking at No. 11.




































The significant lead held by the two top performers over their peers is due to their consistently strong results in most of the variables. Beijing finishes first in four out of five variables but lags significantly behind in Productivity. At the same time, Moscow comes in first in this variable and second in Number of Global 500 Headquarters, Financial and Business Services Employment, and Attracting FDI. However, Moscow lags behind most of its peers in regards

to Rate of Real GDP Growth. The ranking of the other five cities has changed. Mexico City has significantly improved its position, whereas Mumbai, São Paulo and Istanbul have all dropped in the rating as compared to last year. None of the five remaining cities ranks No. 1 in any variable. As was the case last year, these cities perform relatively well in certain variables but lag behind their peers in other areas.

This year, the most substantial changes have been in the Number of Global 500 Headquarters variable. No other city in the E7 can come close to matching Beijing in this variable. According to the total number of companies listed in Fortune magazine's 2014 Global 500 rating, China is behind only the United States at the country level. Moreover, the majority of new entrants to the 2014 rating are Chinese companies. The rate of Global 500 headquarters' presence in the other E7 cities is comparable, which explains the changes in the rankings this year. Mexico City and Jakarta have improved their rankings, whereas São Paulo scored fewer points.

### Economic clout

 Highest rank in each variable

Rating position	Number of Global 500 headquarters	Financial and business services employment	Attracting FDI	Productivity	Rate of real GDP growth	Score
1 Beijing	 7	 7	 7	 2	 7	30
2 Moscow	 6	 6	 6	 7	 2	27
3 Mexico City	 5	 4	 2	 6	 3	20
4 Mumbai	 5	 3	 4	 1	 5	18
5 São Paulo	 2	 5	 5	 4	 1	17
6 Jakarta	 3	 2	 2	 3	 6	16
7 Istanbul	 2	 1	 3	 5	 4	15





Mexico City

Beijing, Moscow and São Paulo were the top performers in Financial and Business Services Employment<sup>7</sup>. Interestingly, Beijing is the only city among the E7 where the number of jobs in business and financial services is higher than in any other sector. The number of jobs in business services is expected to steadily increase in the city over the next decade. The six other cities have high levels of employment in the wholesale-retail sector. Furthermore, Istanbul and Mumbai continue to be dominated by manufacturing while Moscow and São Paulo have high levels of employment in public services<sup>8,9</sup>.

Beijing and Moscow are the most attractive cities for foreign investors. These two cities also perform exceptionally well against most of the cities in the global Cities of Opportunities 6 report. China's economic growth and policies for attracting FDI and the country's accession to the World Trade Organization have all contributed to

the rapid inflow of foreign investment. While in the 1990s foreign investors tended to focus on export-oriented industries, as well as the oil and real estate sectors, these days a substantial amount of FDI goes into China's services sector. Another major area of foreign investment are the knowledge-intensive industries.

Moscow managed to overtake Mexico City and finish first in the Productivity variable this year. The five other cities' rankings remain unchanged. However, in terms of Productivity, each of the cities under review significantly lags behind developed urban centres where productivity continues to grow steadily despite resource constraints. Nonetheless, enhancing productivity is a top priority for municipal economic development programmes. Furthermore, national governments and major cities are carrying out activities to develop transport infrastructure while also encouraging development and innovation, as well as promoting advanced technologies.

The changes in the cities' rankings in the Rate of Real GDP Growth variable this year are minor. Mexico City overtook Moscow as Russia's capital city dropped to second-to-last place. As was the case last year, Beijing finished first, well ahead of the other six cities. GDP growth rates for the E7 cities are considerably higher than those of the developed cities presented in our global report.

Thus, the results of our ranking confirm that the developing cities serve as hubs for the emerging economies. They are aggressively integrating into the global economy and their influence reaches far beyond the borders of their home countries. In future, these cities will need to focus on enhancing productivity and improving the business environment in order further increase their competitiveness on global markets.

<sup>7</sup> Business services include: real estate and rental activities; IT and computer-related activities; research and development; architectural and engineering services; legal, accounting, and bookkeeping services; advertising; and professional, scientific, and technical services.

<sup>8</sup> From *Moscow to São Paulo*, 2013 edition

<sup>9</sup> Public services include: public administration; education; and healthcare.



## Ease of Doing Business

This indicator characterises the E7 cities in terms of conditions for initiating and developing business. The considerable number of variables within this indicator allows, on the one hand, taking into consideration and evaluating various aspects of the business environment, while on the other hand increasing the chances of each city to demonstrate their strengths and track weaknesses compared to competitors. Those opportunities that a city provides to business directly impact its economic potential. Indeed, as illustrated by last year's global Cities of Opportunity report, the cities showing the best results in the Ease of Doing Business indicator also turn out to be the more effective in terms of Economic Clout. In the case of the E7 cities, this interrelation is not so straightforward, however. Nevertheless, Mexico City and Beijing, which rank first and third, respectively, in the Ease of Doing Business indicator, also rank among the top three in the Economic Clout indicator.

The composition of the variables in this indicator and the method of their calculation have not changed much compared to last year. Shifts in rankings in certain variables demonstrate the visible progress made

by some cities in fostering a favourable business climate. Istanbul, which took fourth place last year, rose this year to second place, while Beijing shares third place with São Paulo. Like last year, Mexico City has a considerable lead in the Ease of Doing Business indicator. Even so, if just a year ago this city showed the best results in five variables, in the current report it leads only in Ease of Starting a Business and Resolving Insolvency, yielding to competitors in three other variables (Employee Regulations, Level of Shareholder Protection, and Operational Risk Climate).

The Ease of Starting a Business variable assesses the complexity and cost of administrative procedures that an entrepreneur must complete when incorporating and registering a new company. This year, Moscow left Istanbul behind, ranking second in this variable. To a great extent, in Moscow this change was due to the cancellation of the previous requirement for obtaining a notarised bank signature card before opening a corporate bank account<sup>10</sup>. In Turkey, by contrast, the rules for minimum charter capital amount required for starting the company registration process were tightened<sup>11</sup>.

In the Resolving Insolvency variable, all cities retained the same positions as last year. The three cities (countries) showing the best results in terms of efficient bankruptcy regulations and procedures were Mexico City, Moscow and Beijing. The most noticeable changes took place in how the cities ranked in the Employee Regulations variable, which evaluates the regulatory framework from the point of view of the simplicity of hiring and terminating staff, as well as the rigidity of working hours. Moscow, São Paulo and Istanbul, which showed the worst result last year, this year have taken the first three places. In contrast, Beijing lost its position, falling from third place to next-to-last.

In terms of protecting the rights of minority shareholders, Istanbul materially improved its position against last year, sharing first place with Mumbai in Level of Shareholder Protection; meanwhile, Jakarta and Mexico City fell to third and fourth place, respectively. The increased focus on protecting investors' rights in Turkey is largely due to the enactment of the new Turkish commercial code, which requires restitution of profits by corporate officers who are found liable for transaction-related damages

10, 11 Doing business, the World Bank Group, 2014

### Ease of doing business

■ Highest rank in each variable

Rating position	Ease of starting a business <sup>2</sup>	Resolving insolvency <sup>2</sup>	Employee regulations <sup>2</sup>	Ease of entry: Number of countries with visa waiver <sup>1</sup>
1 Mexico City	7	7	4	5
2 Beijing	5	3	6	6
3 Istanbul	3	5	2	2
3 São Paulo	4	2	6	7
5 Moscow	6	6	7	4
6 Mumbai	1	4	3	2
7 Jakarta	2	1	1	3

1 Country-level data

2 Based on a country's most populous city

to another company. The new code also allows shareholders to commission independent audits to identify potential conflicts of interest.

The Operational Risk Climate variable is for evaluating, via qualitative and quantitative indicators, the main factors affecting the profitability of a business in a given country. Compared to last year's global Risk Briefing rating by the Economist Intelligence Unit (EIU), data from which was used to calculate variable values, China managed to surpass Mexico by one position. Turkey was also able to rise by one position and score the same amount of points as Brazil. Russia was the only country to lose several positions according to the global EIU rating, which explains Moscow's last-place showing in the E7 rating for this variable. To a large degree, this was driven by increased macroeconomic and financial risks, as well as foreign trade risk.

In terms of staff management risks, Beijing showed the best results, having moved far ahead of both São Paulo and Mumbai. This result is not surprising given that the absolute majority of Beijing residents are of working age, and that China is actively pursuing



Mexico City

policies aimed at boosting the quality of its labour resources.

The most accessible cities for foreign nationals in terms of simplicity of border crossing are São Paulo, Istanbul and Mexico City. In contrast, a visa is required to enter China and India for citizens of most countries around the world, which explains Beijing and Mumbai's lagging positions in the Ease of Entry: Number of Countries with Visa Waiver variable. Beijing and Moscow boast the largest numbers under the Foreign Embassies or Consulates variable.

Our analysis of the E7 cities' results according to the eight variables that come under the Ease of Doing Business indicator, and their comparison with last year's data, allows us to conclude that each of the countries in the E7

group, and their main urban centres, are taking measures to simplify administrative procedures (reduce "red tape") and improve the business climate. Such efforts are reflected in the cities' respective rankings in international ratings. This year, based on the different components ranked in this indicator, Istanbul, which ranked second, is separated from Moscow, ranking third from the bottom, by only two points. Moreover, the possibility that Istanbul, Beijing, São Paulo and Moscow could soon break ahead of Mexico City, the leader for two years in a row, does not seem to be unrealistic. We would like to hope that improvement of the business climate will have an impact on the investment attractiveness of these developing cities, thus enabling them to boost their economic clout.

Foreign embassies or consulates	Level of shareholder protection <sup>2</sup>	Operational risk climate <sup>1</sup>	Workforce management risk	Score
4	4	6	4	41
3	7	5	1	36
7	2	7	7	35
2	3	5	6	35
6	1	1	3	34
1	7	3	5	26
5	5	2	2	21

## Cost

The composition of the Cost indicator's variables affirms our intention to reflect the costs of doing business in a given city. But when determining the variables, we assumed that competitive cities should not only be attractive in terms of expense, but also that the income level of corporate employees in these cities should be sufficient to satisfy a wide range of needs and provide for an adequate standard of living. In other words, a city that is inexpensive for doing business is not necessarily more attractive if the quality of its labour resources is low and the city suffers from social inequality or unrest.

This year, the Cost indicator also underwent some changes compared to last year's report. The total number of variables was reduced – there are now five instead of six – and some modifications were made in the method for calculating most of them. Only two variables have not changed – Total Corporate Tax Rate and Cost of Business Occupancy – as they reflect


companies' main expenditures and directly affect the investment priorities of businesses. The Cost of Rent and Cost of Internet variables from last year's study have been replaced by a single variable called Cost of Living. To reflect the cost of urban living more accurately, the Cost indicator has been supplemented with a Purchasing Power variable. Instead of the iPod Index, this year we have used the iPhone Index.

Given the substantial changes in this indicator, shifts in the E7 cities' rankings were expected. Moscow rose to second place, which it shares with Mexico City this year; São Paulo improved its position a little; and Mumbai and Beijing turned out to be less cost-effective than last year. It is interesting to note that last year's two leaders – Mexico City and Istanbul – were able to hold their positions. As in last year's rating, Turkey's main city showed stable results in the majority of variables without leading in any of them. This once again proves that a more competitive city will often be

one that can offer an optimal balance between price and quality.

The Total Corporate Tax Rate variable assesses the total amount of taxes, as well as mandatory charges and contributions, paid by legal entities in the second year of operations expressed as a percentage of commercial profits. The relevant research was performed by PwC specialists together with the World Bank. Within the framework of this project, they also took into account deductions paid by employers to non-state organizations, for instance employees' private pension funds or insurance funds. To evaluate the amount of charges, a single profile of a company operating in the largest business centre of the given country was used. Jakarta demonstrated the best result in this variable, with Istanbul taking second place, and Moscow third. The maximum amount of taxes and charges was recorded in São Paulo.

### Cost

 Highest rank in each variable

Rating position	Total corporate tax rate	Cost of business occupancy	Cost of living	iPhone index	Purchasing power	Score
1 Istanbul	6	4	3	5	5	23
2 Mexico City	4	7	5	3	3	22
2 Moscow	5	2	2	6	7	22
4 Jakarta	7	5	6	1	1	20
4 Mumbai	3	6	7	2	2	20
6 São Paulo	1	3	1	7	6	18
7 Beijing	2	1	4	4	4	15





Istanbul

Some changes took place in the distribution of the cities under the Cost of Business Occupancy variable. The smallest values for this variable were recorded in Mexico City and Mumbai. Thus, in Mumbai, which improved its position compared to last year while Jakarta and Istanbul moved down, there was a significant reduction in the values of the gross rental rate at the beginning of 2014: there was a decrease in demand for real estate with a concurrent increase in supply. The most expensive cities in terms of Cost of Business Occupancy are, as last year, Moscow and Beijing.

The Cost of Living variable compares prices for basic goods and services in different cities without taking into account the income level of local residents. Thus, the best result in this variable will show the city with the lowest prices. The leading cities in this variable are Mumbai, Jakarta and Mexico City, while the highest prices are typical of Moscow and São Paulo. However, the latter two cities showed the best results in terms of purchasing power, taking the top ranking for the Purchasing Power and iPhone Index

variables. The populations of Mumbai and Jakarta have the least purchasing power. Thus, Jakarta residents on average must save three times longer compared to São Paulo residents to be able to buy an iPhone.

Taken as a whole, in spite of the relatively low cost of living in terms of Purchasing Power, E7 cities significantly lag behind the majority of developed cities. Moreover, based on the volume of taxes paid, charges and business occupancy costs, developing cities, contrary to expectations, can also be less competitive in comparison to developed ones, which is particularly vividly illustrated by the examples of São Paulo and Beijing.

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# *Mega-Events as a Catalyst for the Social and Economic Development of Emerging Cities*

International mega-events attract tens of thousands of tourists as well as a multi-million-person mass media audience. However, the sheer scale of such an event raises a fundamental question for the host country or city: Will it derive enough benefit from the event to cover the related expense? The enormous amount of public investment required, which could often be spent on meeting more pressing social and economic needs, is often the main argument put forward by opponents of international mega-events. For example, the 1976 Summer Olympic Games in Montreal represented one of the most expensive lessons learned in the history of the Olympic Movement, as the building and operating costs of Olympic venues exceeded initial estimates by more than four times, leaving a 30-year debt repayment period once the Games were over.

Nevertheless, the success of the Los Angeles and Barcelona Games has shown the entire world that the Olympic Games may contribute to greatly increased attractiveness for the host city among tourists, thus promoting economic development. Sydney was the first city to aim at increased tourism as a result of its Olympic Games in 2000. In the past decade, the agenda of facilitators of international events involves more essential tasks for improving the quality of life in the local community. Major sports or cultural events are now perceived as a catalyst for the social and economic development of the host territory, which allows for achieving a multiplier effect in various spheres

of life. For example, “revitalisation without displacement” was one of the main themes in Vancouver’s successful bid for the 2010 Winter Games. This implied that the conditions of life for the poor would not change for the worse as a result of gentrification and development of the economies of certain urban areas<sup>12</sup>. A major goal of the London Olympic Games in 2012 was to give a new lease on life to one of southeast England’s poorest urban communities, thus contributing to the sustainable growth and further prosperity of Great Britain’s capital city. Another notable example is provided by Liverpool, which was once one of the United Kingdom’s largest transport and industrial centres. The city’s status as the 2008 European Capital of Culture and a number of other major events hosted by the city have helped to significantly improve the image of downtown Liverpool, making it possible to carry out a series of major investment projects.

Developing countries are also now increasingly considering the idea of hosting major international mega-events. In addition to updating their “physical infrastructure”, events on such a scale present a unique opportunity to draw the world’s attention to the host country, showcasing its openness and readiness to take on the most complex tasks. The 2008 Olympic Games in Beijing and the 2014 Winter Games in Sochi provide ample proof of this.

So what is behind the fact that more and more developing countries are seeking to host major world-class

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12 N. Edelson (2011), Inclusivity as an Olympic Event at the 2010 Vancouver Winter Games, *Urban Geography*, 32, pp 804-822





São Paulo

sporting, cultural or exhibition events? As the OECD pointed out in a recent report, major international events have unique characteristics that distinguish them from most other activities:

- Their attendant deadlines mandate discipline and commitment.
- They offer rare opportunities for positioning in the spotlight of intense media attention.
- They necessitate collaboration between various levels of government.
- They require the public and private sectors to cooperate.
- They mobilise national pride toward a common goal.
- They celebrate human achievement<sup>13</sup>.

However, as practice shows, not every city has sufficient resources to stage a major international mega-event, and even winning the bid does not guarantee that the host city will be able to obtain the expected benefits.

Our experience has shown that the success of a major international event, which will have a long-term effect on the host territory's social and economic development, depends on meeting three basic requirements.

First, the aspiring host city or region should assess the extent to which the scale of the proposed event and investment corresponds to the real capabilities of its local economy. One recent example of an unjustified risk has been the construction of a light rail transport network in Cuiabá, the smallest of the Brazilian cities hosting the 2014 FIFA World Cup. Carrying out just this one project required nearly half of the total projected budget for preparing the city for the Championships. Ultimately, the route that was supposed to connect the city to the international airport was never commissioned. A similar situation occurred with a planned new airport terminal for which, by May 2014, only three-quarters of all scheduled work had been completed, according to Fitch Ratings. Moreover, many experts questioned the necessity of a newly

constructed stadium in a city whose local football club had not been ranked in Brazil's top national championship division for years<sup>14</sup>.

Another example of how a major sports event can negatively impact the host city's reputation was provided by the 2010 Commonwealth Games in Delhi, which were memorable for the organisers' failure to complete construction on time and the low quality of the venues and infrastructure.

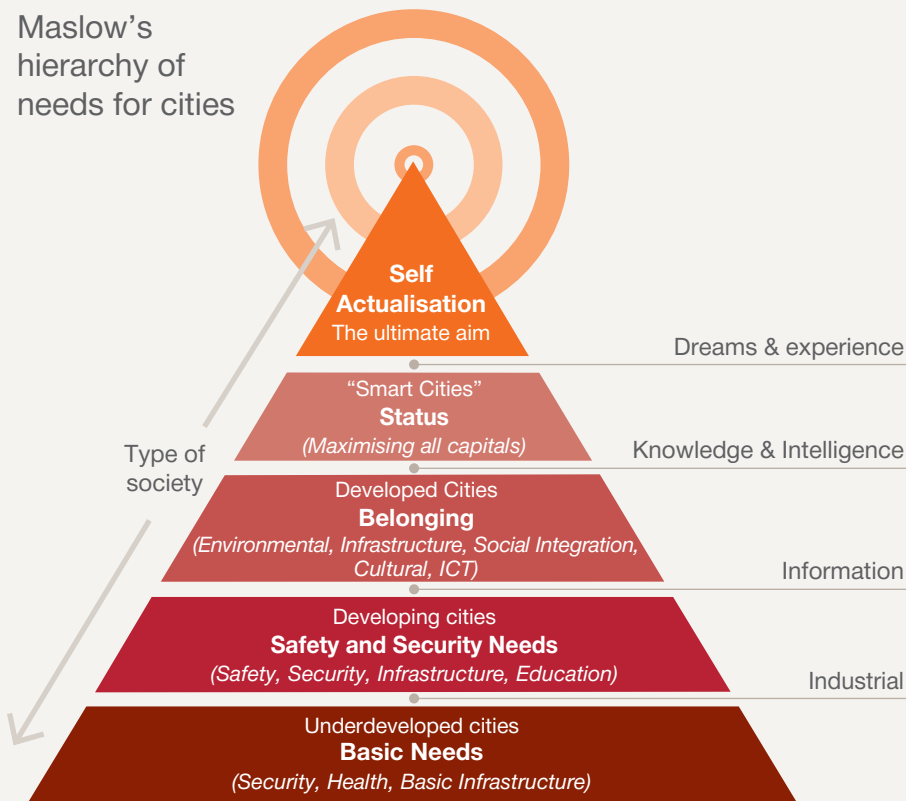
Another ingredient for the success of an international mega-event is coordination of the event preparation programme with the host's long-term strategy and social and economic development priorities. The needs of a host city, like those of a person, can vary significantly at different stages of development. In order to better illustrate the process, we have adapted Maslow's hierarchy of needs to the development stages of a city. For instance, in the early stages, the city must ensure the basic needs of its residents in a safe environment, as well as provide access to healthcare and

<sup>13</sup> Organization for Economic Cooperation and Development, Local Development Benefits from Staging Global Events: Achieving the Local Development Legacy from 2012, 2010.

<sup>14</sup> ABC, 2014.



## Maslow's hierarchy of needs for cities



basic infrastructure, i.e. clean water and sewage. Generally, it is precisely these tasks that become priorities at the initial stages of development. The residents of progressive cities have higher requirements for quality of life, and, therefore, the priorities for developed cities typically include such tasks as introducing advanced technologies, improving the environment and the resource efficiency of municipal services, involving citizens in the governance process at the local level, and preventing social exclusion of certain segments of society. "Smart cities" endeavour to maximise the convenience and efficiency of all the basic components of urban life. The highest level of the pyramid represents centres that set basic quality-of-life trends and standards. Such cities always seek to provide something new to their inhabitants and are ready to share their experience with other cities around the world.

Source: PwC, Changing world, new relationships, 2013

## How does a city or region decide which event to host?<sup>15</sup>

Overall readiness		Venue/s		Intellectual capital	
<ul style="list-style-type: none"> <li>• What are the city's or region's top 3 to 5 objectives in hosting this event?</li> <li>• What are the top 3 to 5 main advantages this particular city or region has to offer as a host city, region, or country?</li> <li>• Why is now a good time to embark on this initiative?</li> <li>• What metrics will city or regional officials use to measure success?</li> </ul>		<ul style="list-style-type: none"> <li>• Does the city or region possess the venues and facilities required to host a sports event of scale, be it the Olympics, the Commonwealth Games or the Universiade?</li> <li>• If not, would city and state (and in some cases national government) officials be willing to invest in such an undertaking?</li> <li>• How best could financing be handled?</li> <li>• What role would public-private partnerships play in this undertaking?</li> <li>• How likely would the business community be to support this initiative? What incentives would they need to get on board?</li> <li>• How likely would the local and regional communities be to support such an initiative? What kind of public opinion effort would it take to get them on board?</li> </ul>		<ul style="list-style-type: none"> <li>• Does the city or region possess the intellectual capital to plan, finance, build for, and host an event of this scale?</li> <li>• Has the city or region attempted to host an event of this scale before?</li> <li>• If that bid was successful, what can be duplicated from that effort?</li> <li>• If not, what lessons can that attempt offer?</li> <li>• What kind of external advisors would the city or region need to call upon to plan, finance, build, and host an event of this scale?</li> </ul>	

The best results from staging international mega-events may be achieved where their preparation contributes to the host city's priority tasks at its current stage of development.

Only about 5% of the total budget for the 2014 World Cup was used to build sporting venues, whereas nearly 53% was spent on developing transport infrastructure, including the construction and renovation of airport systems. In Brazil, the local population's growing purchasing power has led to increased demand for civil aviation services that, in turn, have required significant expansion of terminal capacity and construction of new airports in those regions of the country that had not previously enjoyed regular air transport links.

Due to the preparations for major international events, Rio de Janeiro

underwent some serious changes in various areas, ranging from security to transport services and restoration of the city's environment. According to Eduardo Paes, the Mayor of Rio de Janeiro, "In about five years, the city will implement investment intended for almost 40 years." He sees the Olympic Games and the FIFA World Cup as representing "an excellent opportunity to achieve fundamental changes that the city has been thirsting for". Investments made in Rio de Janeiro have been aimed in particular at revitalising the favelas, Brazil's storied slums, as well as establishing a high-speed bus system and restoring Rio's port area. The municipal authorities hope that these changes will make a significant contribution to improving the lives of poor and disadvantaged citizens: "What is most important for me", says Mayor Paes, "is to leave a higher standard of living as the legacy for Rio"<sup>16</sup>.

The 2014 Olympic Games in Sochi were intended to upgrade not only the economy of Sochi itself, but to boost the development of the surrounding Krasnodar Region as a whole through large-scale development of engineering and transport infrastructure, and inculcating and enhancing a culture of hospitality. Before its selection as host city, Sochi's underdeveloped infrastructure and low-quality services had caused the seaside resort to gradually lose its competitiveness compared to other, comparably priced resort destinations in Turkey and Egypt. The city had specialised predominantly in summer beach tourism, serving a target market of lower- and middle-income Russian visitors. With the Games came large-scale construction of modern hotel resorts and a brand-new image for the city, which contributed to a gradual increase in the proportion of event-related and business tourism, while

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16 PwC, It's how you play the game, 2014

## Legacy



- What type of legacy is the city or region seeking from this event?
- If raising the national or international profile of the city or region is the objective, how will this event achieve that objective?
- What kind of long-term development goals is the city or region seeking to accomplish with this event?
- How best can the city or region plan ahead to ensure that the facilities and supporting infrastructure can be used beyond the event?
- What modifications will have to be made to the stadiums, housing facilities, and other infrastructure to ensure that they can successfully evolve from event-based to long-term use?
- What sports legacy is the city or region seeking to deliver to the community from this event?
- What intellectual capital legacy can the city or region leverage for future events from having planned, financed, built infrastructure for, and hosted this event?
- What metrics will the city or region use to measure the success of its legacy?

## Supporting infrastructure



- Does the city or region possess the supporting infrastructure – transportation, temporary housing, utilities, sanitation, telecommunications – required to host an event of the scale under consideration?
- If not, would city and state (and in some cases national government) officials be willing to invest in making the required improvements?
- How closely would these improvements reflect the city's or region's long-term development plans?
- How best could the event serve as a catalyst for accelerating the city or region's long-term plan that's already in place?
- How likely would the business community be to support the construction of supporting infrastructure?
- What role would public-private partnerships play in this undertaking?
- How likely would the local and regional communities be to support such infrastructure improvements? What kind of public opinion effort would it take to get them on board?

the modern alpine infrastructure at neighbouring Krasnaya Polyana will enable full achievement of the area's potential to become a popular ski resort. Moreover, Russia obtained new sports training facilities that meet all modern requirements. The development of event-related and business tourism should help the city to overcome one of the most basic challenges for the local economy – seasonality. The Games have also helped resolve electricity problems. The Sochi region, which had experienced power shortages for years, now enjoys additional power supplies, which can be used to develop the surrounding areas<sup>17</sup>.

Finally, the prospective mega-event host city should have a clear understanding of how it will use and benefit from the legacy of any international events it conducts. New facilities created and owned by the municipality or private companies can become a significant asset that can help spur further growth, or they can become a costly burden that take precious resources away from other pressing needs. In this regard, close cooperation between the public and private sectors for the effective use of a mega-event legacy is as critical after the event as it is during the preparations. For example, hotel owners are interested in high occupancy. At the same time, the city and public enterprises end up owning venues that can barely generate any income comparable to the cost of their upkeep and operation. In order to ensure effective use of the facilities left by a tangible mega-event legacy, the city and private

enterprises must coordinate their plans and work together, since the private sector's earnings depend on the public sector's efforts to ensure the city's attractiveness and popularity among visitors.

In this respect, of particular interest is the case of Istanbul, which was the 2010 European Capital of Culture, and attained a unique opportunity to draw attention to its rich heritage and fast-developing modern culture. One part of the preparations for Istanbul's turn as European Capital of Culture was the large-scale renovation of historic areas of the city and the restoration of historic buildings, which were used as sites for various Capital of Culture activities. For example, a number of music festivals and concerts were held at historic buildings that are normally closed to the general public. As well, the opening of several museums was timed to coincide with Istanbul's year as European Capital of Culture.

Cultural revival is another way of demonstrating Istanbul's new image as open to the world and ready for change. However, this process was not just the result of progressive public policy; it was largely initiated by the private sector. Today, commercial companies invest in the establishment of new exhibition sites and actively sponsor different events and activities; the geography of international cultural cooperation is expanding. As well, culture and arts are often used to promote a company's corporate image. The city is gradually overcoming the isolation and provincialism that were the hallmarks of its cultural life in the 1980s and 1990s<sup>18</sup>. Its status as the

2010 European Capital of Culture has brought an increase in the flow of tourists to Istanbul and drawn the attention of local residents and foreign visitors alike to Turkey's rich traditions and culture. What is even more important, this mega-event made it possible to create new jobs in the industries of culture, management and mass media; it is estimated that in 2010, the number of companies in the creative industry increased by 23% in comparison to 2009<sup>19</sup>.

Thus, given proper planning and efficient management, international mega-events can open up new opportunities for urban and regional development. Active support of such initiatives on the part of the general population and the business community is equally important. It is indeed difficult to overestimate the enormous value of such events' intangible legacy and the extensive infrastructure transformation that major sports, cultural and exhibition events can bring. However, to ensure the expected effect of the event, the host party should assess the risks involved and plan activities in line with the host territory's appropriate opportunities and needs at its current stage of development. Based on our experience of working with the organisers of some of the world's largest international mega-events, we have developed a conceptual model that can help cities and regions assess their capabilities and compare their long-term development objectives with the required criteria for winning the right to hold specific mega-events.

17 Rossiyskaya Gazeta, 2013

18 LSE, Istanbul. City of intersections, 2009

19 Bulent Ozan, Can Unver, Exploring the impact for Istanbul of being a European Capital of Culture, 2010



# Key to the Indicators and Variables

## Intellectual Capital and Innovation

### **Libraries with Public Access**

The 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 Programme 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 (Levels 5 and 6) on the math and science portions of the PISA test. Comparable examinations are used wherever possible to place cities not included in the OECD assessment.

### **Literacy and Enrolment\***

Measurement of a country's ability to generate, adopt and disseminate knowledge. The World Bank's Knowledge Index is derived by averaging a country's normalised performance scores on variables in three categories—education and human resources, the innovation system, and information and communications technology. The variables that compose education and human resources are the adult literacy rate, secondary education enrolment and tertiary education enrolment.

Adult Literacy Rate, UNESCO, 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 total population. 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 2013-2014 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 universities 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 is comprised of 445 cities selected from among 1,540 cities based on basic factors of health, wealth, population, and geography. The selected cities had data extracted from a city benchmarking data programme on 162 indicators. Each of the benchmarking data points were scored by analysts using the best available qualitative analysis and quantitative statistics. (Where data was unavailable, national or state estimates were used.) Data were then trend balanced against 21 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 final graded scores for the top 33% of Nexus and Hub (and selected Node cities of future interest) were ranked by analysts based on trends over a 2-5 year span. A Node ranking is considered globally competitive.

### **Intellectual Property Protection\***

The responses of leading business executives to the question in the World Economic Forum's Executive Opinion Survey 2014 that asks, "In your country, how strong is the protection of intellectual property, including anti-counterfeiting measures? [1 = extremely weak; 7 = extremely strong]". The survey covers a random sample of large and small companies in the agricultural, manufacturing, non-manufacturing, and service sectors.

### **Entrepreneurial Environment\***

Measurement of the entrepreneurial attitudes, activity and aspirations in a given country. The Global Entrepreneurship Index (GEINDEX) integrates 31 variables, including quantitative and qualitative measures and individual-level data.

## Technology Readiness

### **Internet Access in Schools\***

The responses of leading business executives to the question in the World Economic Forum's Executive Opinion Survey 2014 that asks, "In your country, how widespread is Internet access in schools? [1 = non-existent; 7 = extremely widespread]". The survey covers a random sample of large and small companies in the agriculture, manufacturing, non-manufacturing, and service sectors.

### **Broadband Quality**

Based on millions of recent test results from Pingtest.net, this global broadband index from Ookla compares and ranks consumer broadband connection quality around the globe. Quality is reported in R-Factor, an industry-standard measurement for connection quality — crucial for applications that require a steady connection such as VOIP and online gaming. The value is the mean R-Factor over the past 30 days. Only tests taken within 300 miles of the server are eligible for inclusion in the index.

### **Digital Economy Score\***

The Economist Intelligence Unit's Digital Economy Rankings 2010 – Beyond E-readiness report provides an assessment of the quality of a country's information and communications technology (ICT) infrastructure and the ability of its consumers, businesses and governments to use ICT to their benefit. When a country uses ICT to conduct more of its activities, the economy can become more transparent and efficient. This ranking allows governments to gauge the success of their technology initiatives against those of other countries. It also provides companies that wish to invest or trade internationally with an overview of the world's most promising business locations from an ICT perspective.

### **Software and Multi-Media Development Design**

Combination of scores for each city in fDi magazine's Best Cities for Software Development, Best Cities for Multi-Media Design Centres, and

the World Bank KEI Index. 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 design index is based on an assessment of 120 quality competitiveness indicators. These indicators include availability and track record in ICT, availability of specialised-skills professionals such as scientists and engineers, access to venture capital, R&D capabilities, software experts, quality of ICT infrastructure and specialisation in software development. The multi-media 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 specialisation and track record, information technology infrastructure, quality of life and skills availability. The World Bank KEI Index is noted as the simple average of normalised scores of three key variables: telephone, computer and Internet penetrations (per 1,000 people).

## City Gateway

### **Hotel Rooms**

Count of all hotel rooms within each city.

### **Number of International Tourists**

Annual international tourist arrivals for 100 cities collected by Euromonitor International. Euromonitor's figures include travellers 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 which take place on a regular basis and rotate between a minimum of three countries. Figures provided by the International Congress and Convention Association.

### **On-Time Flight Arrivals**

The average percentage of on-time arrivals over three months (August - October 2013) for the main hub airline at each city's airport. This data has

been used as a proxy for the CoO6 variable On-Time Flight Departures as this data is generally unavailable for the airports overall in the E7 cities.

### **Incoming/Outgoing Passenger Flows**

The total number of incoming and outgoing passengers, including originating, terminating, transfer and transit passengers in each of the major airports serving a city. Transfer and transit passengers are counted twice. Transit passengers are defined as air travellers coming from different parts 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 (CBD) and the

international terminal of its busiest airport in terms of international passenger traffic. Cities are categorised according to whether a direct rail link exists; and, if so, the number of transfers required; and, if not, whether there is a public express bus 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.

### **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. .

## Transportation and Infrastructure

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### **Public Transport Systems**

This variable reflects the efficiency, reliability and safety of public transport networks as defined and rated by the 2013 Mercer Quality of Living report. Cities also received additional points for each multi-modal transport system available to the public including: subway, bus/bus rapid transit, 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 Bus Rapid Transit (BRT) system received 0.05 points (in addition to the tenth of a point for a public bus system). Ferry systems were excluded so as to not penalise land-locked cities for their absence.

### **Mass Transit Coverage**

Ratio of kilometres of mass transit track to every 100 square kilometres 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 nature conservation areas from total land area.

### **Cost of Public Transport**

The fare for the longest mass transit commuter rail trip from the most distant point on the given city's city limits to its CBD. The fare for a bus trip is used in those cities with no urban commuter rail system.

### **Licensed Taxis**

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

### **Volume of property transactions**

Volume of all types of property transactions valued at 10 million USD or greater, reported as either 'in contract' or 'closed' in the past 6 months (June-November 2014).

Property types include: apartment, industrial, office, retail, hotel, seniors housing and care and development sites. Transactions represent the transfer of a controlling interest in a property or portfolio of properties. Transactions are assumed to be fee simple; leasehold and commercial condominium interests are noted, if known. Transactions include asset sales and entity-level transactions. Sales of partial interest transactions will receive credit and be valued at the pro-rated share. Data as provided by Real Capital Analytics (RCA).

### **Housing**

Measure of availability, diversity, cost and quality of housing, household appliances and furniture, as well as household maintenance and repairs. This measure is based on the Mercer Quality of Living report 2013.

## Health, Safety and Security

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### **Hospitals and Health Employment**

Combination of scores for: the ratio of all hospitals within each city accessible to international visitors for every 100,000 inhabitants; and the ratio of employment in the health sector per 100,000 inhabitants as per Oxford Economics data.

### **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 (years of education is strongly associated with the health of populations in both developed and developing countries). PwC Global Healthcare adapted the 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 EIU's Quality of Death Index scores countries across four categories: Basic End-of-Life Healthcare Environment; Availability of End-of-Life Care; Cost of End-of-Life Care; and Quality of End-of-Life Care. These indicator categories are composed of 27 variables, including quantitative, qualitative and "status" (whether or not something is the case) data. The indicator data are aggregated, normalised, and weighted to create the total index score.

### **Crime**

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

### **Political Environment**

Measure of a nation's relationship with foreign countries, internal stability, law enforcement, limitations on personal freedom, and media censorship. Data is from the 2013 Mercer Quality of Living report.



## Sustainability and the Natural Environment

### **Natural Disaster Risk**

Risk of natural disasters occurring in or near a city. Counted hazards include hurricanes, drought, earthquakes, floods, landslides and volcanic eruptions.

### **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 landfills.

### **Air Pollution**

A weighted combination of measures with PM10 outdoor air pollution levels (30%) from the World Health Organisation (WHO) and the Numbeo Pollution Index of overall pollution in each city (70%). The World Health Organisation's Public Health and Environment database provides annual mean concentrations of particulate matter 10 micrometres (PM10) in

diameters or less, which reflect the degree to which urban populations are exposed to this fine matter. A lower weight has been attributed to the WHO data as it is less current. The Numbeo Pollution Index is generated via survey-based data. Numbeo attributes the biggest weight to air pollution, then to water pollution/accessibility, as the two main pollution factors. A small weight is given to other pollution types.

### **Public Park Space**

Proportion of a city's land area designated as public recreational and green space to the total land area. This excludes rugged, undeveloped terrain or wilderness areas that are either not easily accessible or not conducive to use as open public space.

## Demographics and Livability

### **Cultural Vibrancy**

A weighted combination of city rankings based on: the quality and variety of restaurants, theatrical and musical performances, and cinemas within each city; which cities recently have defined the zeitgeist, or the spirit of the times; and the number of museums with an online presence within each city. The zeitgeist rankings take into account cultural, social and economic considerations.

### **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 EIU analysts' and in-city contributors' judgements. For quantitative indicators, ratings are calculated based on cities' relative performances on a number of external data points. Data produced by the EIU Liveability ranking.

### **Working Age Population**

Proportion of a city's population aged 15-64 to the total population of the city.

### **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 2013 Mercer Quality of Living report and the PwC Employee Survey.

### **Ease of Commute\*\***

PwC network employees working in each of the 30 cities studied were asked: "On a scale from 1 to 10, where 1 is difficult and 10 is easy, please rate your commute to work?" The average score provided by the PwC Employee Survey.

### **Relocation Attractiveness\*\***

PwC network employees working in each of the 30 cities studied were asked: "Out of the other 29 cities in the Cities of Opportunity study, what are the top three cities that you would most like to work in?" Data provided by the PwC Employee Survey.

## Economic Clout

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### **Number of Global 500 Headquarters**

Number of Global 500 headquarters located in each city.

### **Financial and Business Services Employment**

The number of jobs in financial and business services 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 sub-sectors: “real estate and rental activities”, “IT and computer-related activities”, “R&D”, “architectural, engineering and other

technical services”, “legal, accounting, bookkeeping and auditing services”, “tax and consultancy services”, “advertising” and “professional, scientific and technical services, and business services where not elsewhere classified”. Data sourced by Oxford Economics.

### **Attracting FDI**

Combined variable ranking the number of greenfield (new job-creating) projects, plus the total USD value of greenfield capital investment activities in a city that are funded by foreign direct investment (FDI). Data cover the period from January 2003 through December 2013 provided by fDi Intelligence.

### **Productivity**

Productivity is calculated by dividing the gross domestic product (GDP) in 2013 US dollars by employment in the city. Data provided by Oxford Economics

### **Rate of Real GDP Growth**

2012-2014 gross domestic product (GDP) percentage growth rate in real terms expressed in 2013 US dollars. Data provided by Oxford Economics.

## Cost

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### **Total Corporate Tax Rate**

The total tax rate measures the amount of taxes and mandatory contributions payable by a business in the second year of operation, expressed as a share of commercial profits. The Total Tax Rate variable is designed to provide a comprehensive measure of the cost of all taxes a business is liable for. Data provided by PwC UK from Paying Taxes 2014; taxes are accurate for the year ended 31 December 2012. Some cities which were not included in the Paying Taxes 2014 study were calculated separately by our PwC local office using the TTC methodology. The Paying Taxes 2014 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. Rent amounts expressed in USD.

### **Cost of Living**

A relative measure of the price of consumer goods by location, including groceries, restaurants, transportation and utilities. The CPI measure does not include accommodation expenses such as rent or mortgage. Figures provided by Numbeo.

### **iPhone Index**

Number of working hours required to buy an iPhone 4S 16GB. Data sourced from the 2012 UBS Prices and Earnings report.

### **Purchasing Power**

Domestic purchasing power is measured by an index of net hourly wages (where New York = 100) excluding rental costs. Net hourly wages divided by the cost of the entire basket of goods and services excluding rent. The basket of goods covers 122 goods and services. Data sourced from the 2012 UBS Prices and Earnings report.

## Ease of Doing Business

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### **Ease of Starting a Business\*\*\***

Assessment of the bureaucratic and legal hurdles (“red tape”) that 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 the 2014 Doing Business report by the World Bank.

### **Resolving insolvency\*\*\***

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 2014 report by the World Bank.

### **Employee Regulations\*\*\***

Sum of rank scores collected from the World Bank’s Doing Business study relating to the ratio of minimum wage to average value added per worker / notice period for redundancy dismissal (for a worker with 10 years of seniority, in salary weeks) / paid annual leave for a worker with 20 years of seniority (in working days). Assessment scores gathered from the 2014 Doing Business report by the World Bank Group.

### **Ease of Entry: Number of Countries with Visa Waiver\***

Number of countries whose nationals may enter the given country as a tourist or on business without a visa. Excludes those nationalities among which only holders of biometric, diplomatic or official passports enjoy visa-free entry.

### **Foreign Embassies and Consulates**

Number of countries that are represented by a consulate or embassy in each city. Figures sourced from GoAbroad.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 the 2014 Doing Business report by 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 next 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, labour 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 EIU’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 labour 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.

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\* Country-level data

\*\* Data based on the 2013 PwC Employee Survey

\*\*\* Data based on a country’s most populous city



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