



Innovative Moscow: strategic challenges and tactical responses

Evgeniy Kutsenko

Director of Russian Cluster Observatory

Institute for Statistical Studies and
Economics of Knowledge, Higher
School of Economics

HSE Global Cities Innovation Index

Unique database includes 120 indicators assessing different aspects of cities' innovation development



Technological Development

Fortune Global 500 | Innovation 1000
StartupBlink | Crunchbase
Web of Science | PatStat Global
QS | THE | ARWU



Creative Industries

Fashion United | FARFETCH | IMDb
Effie Awards | PRWeek | Provoke media
Steam | The Game Awards | GoCompare
Rotten Tomatoes | Mental Floss
If | ArtReview | Pritzker Prize
Artprice.com | Architizer A+ Awards



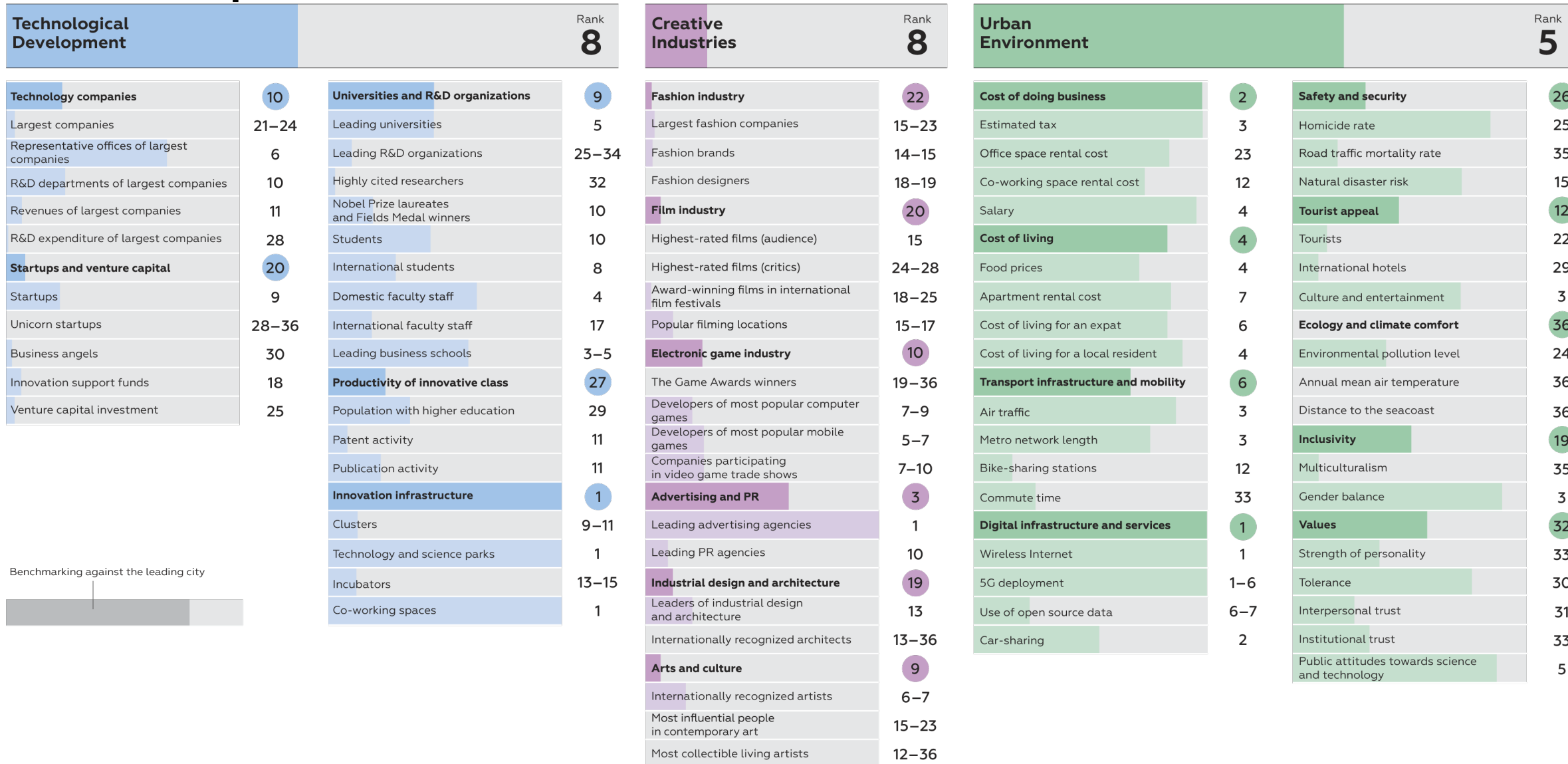
Urban Environment

Passport Euromonitor | TripAdvisor
OpenFlights | World Metro Database
Nomad List | Numbeo | STC Database
World Values Survey





Innovation profile of Moscow. Ranked 8th in HSE GCII



Benchmarking against the leading city





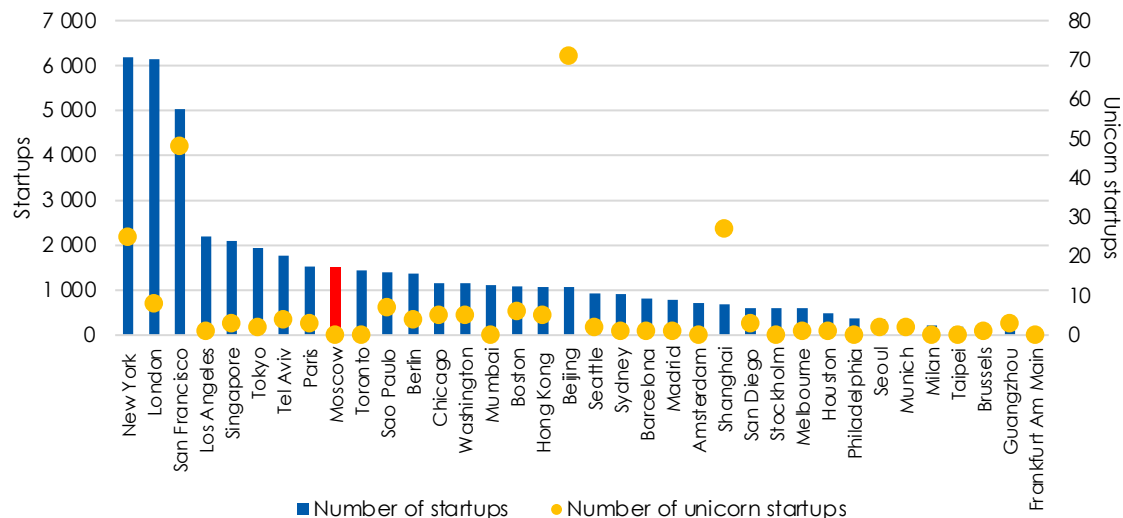
CHALLENGES OF TECHNOLOGICAL DEVELOPMENT

1. Moscow is one of the global leaders by the number of startups, but there aren't any unicorns among them

9 Moscow ranked by number of startups

28-36 Moscow ranked by number of unicorn startups

Number of startups and unicorn startups in global cities: 2020, units



Source: HSE GCII, based on Crunchbase data

Startups are more evenly distributed across cities in the Ranking than unicorns

Top-5 cities in the ranking by the number of startups account for 45% of all startups, while unicorns have this concentration reaching 74%

Crown without diamonds

Moscow is **ahead** of many cities by the number of startups (9th place)

At the same time, out of the top-10 cities in terms of the number of startups, there is **not a single unicorn** in Moscow and Toronto

'Escaped' unicorns

- **Revolut** – founder Nikolai Storonsky, graduated from Moscow Institute of Physics and Technology
- **Luxoft** – founder Dmitry Loshchinin, graduated from Moscow State University
- **Arrival** – founder Denis Sverdlov, former Deputy Minister of Telecom and Mass Communications of Russia



London



Zug



London

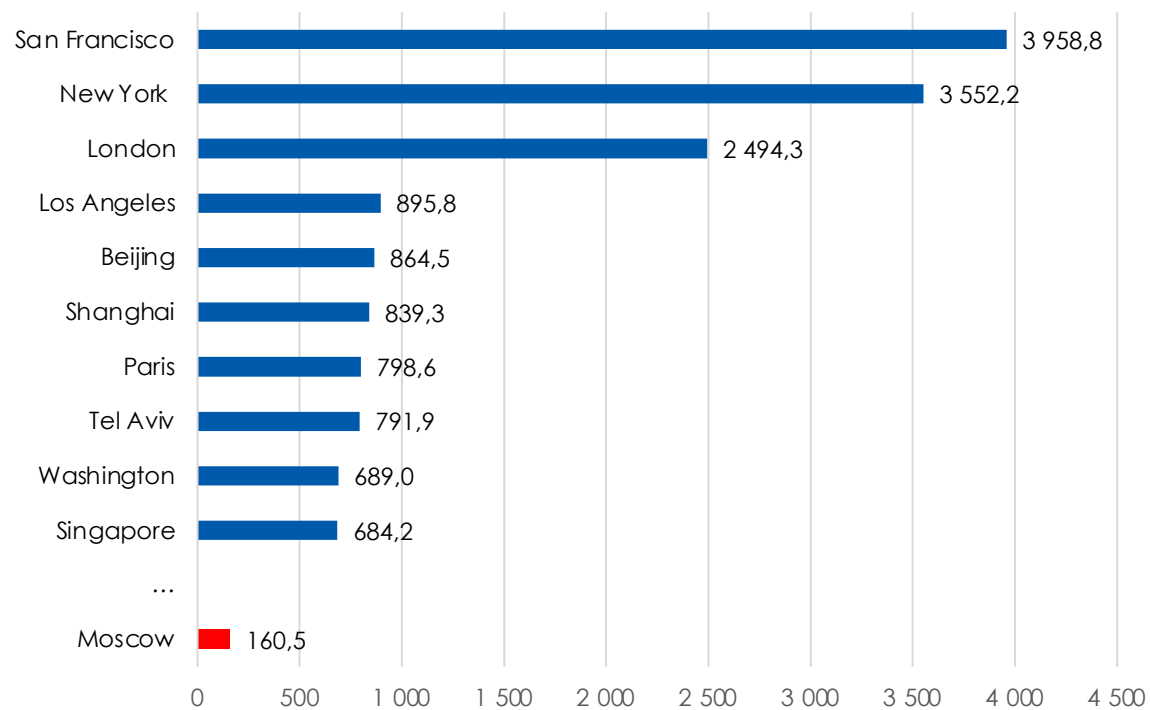


2. Demand of Moscow startups for venture investments exceeds supply

9

Moscow ranked by number of startups

Moscow and top-10 cities by volume of seed-stage venture deal with city organizations: 2015-2019, USD million



Source: HSE GCII, based on Crunchbase data

25

Moscow ranked by volume of venture capital investments

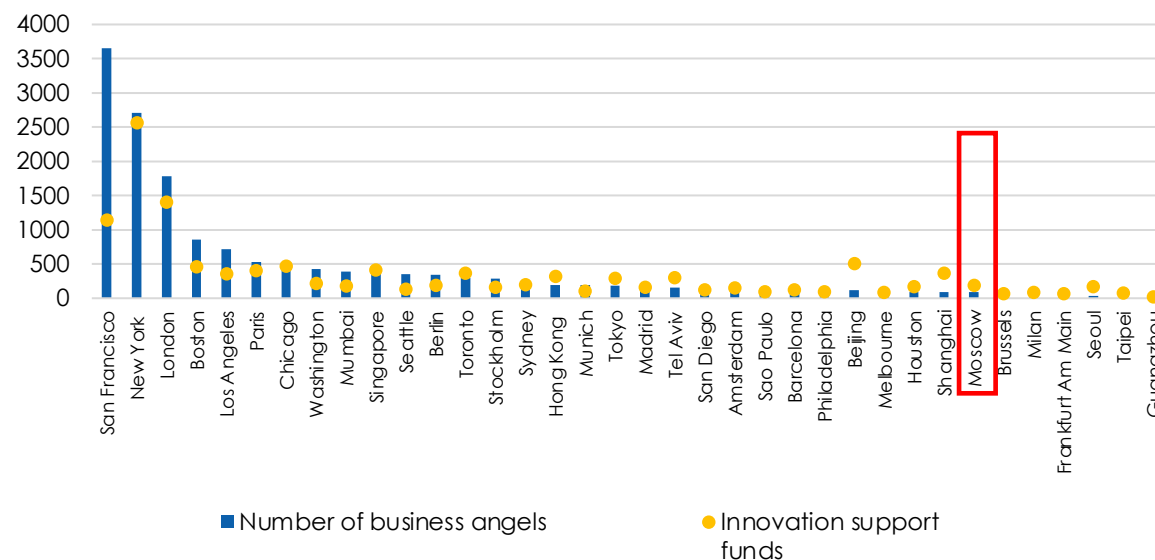
30

Moscow ranked by number of business angels

18

Moscow ranked by number of funds which support innovative activities

Number of business angels (people) and innovation support funds (units) in global cities: 2020



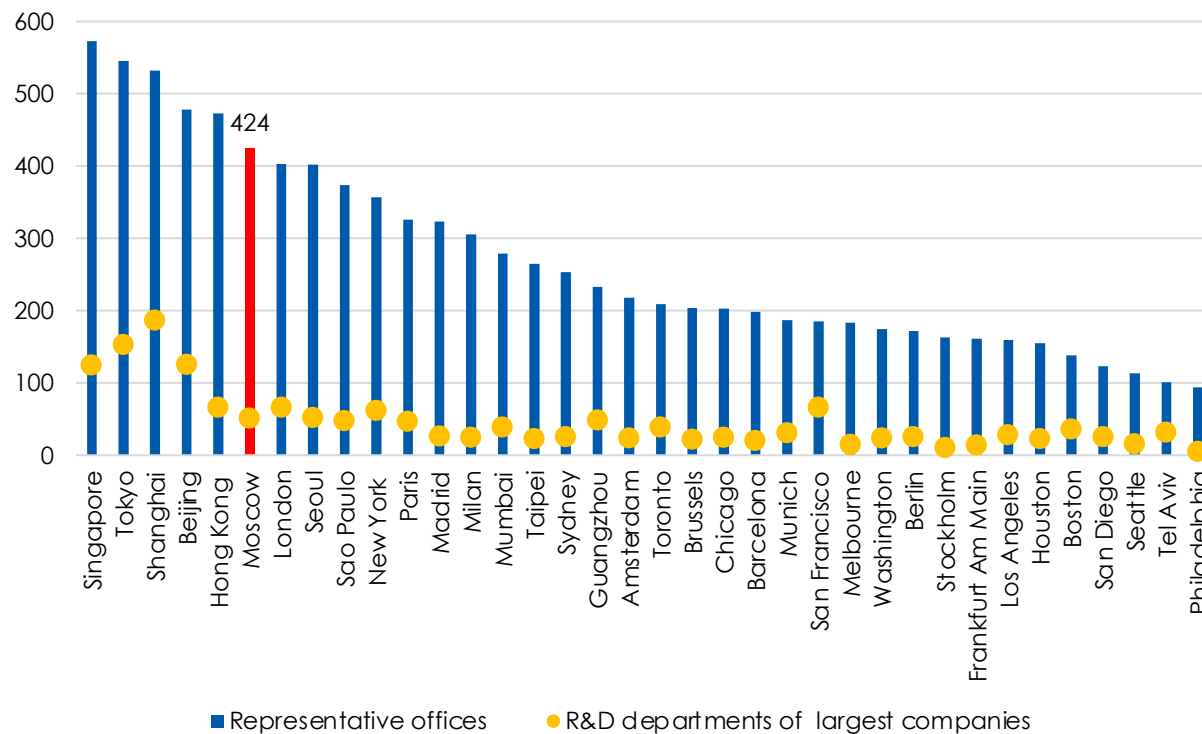


3. Representative offices of the largest companies are localized in Moscow, but only a small share of them is R&D departments

6

Moscow ranked by number of representative offices of largest companies

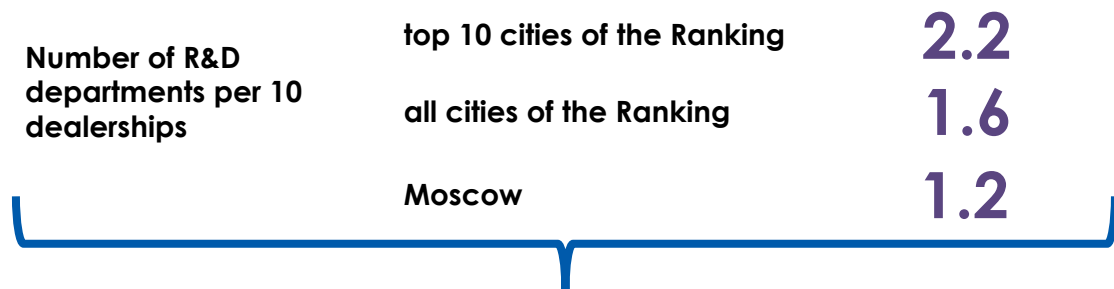
Number of representative offices and R&D departments of largest companies in global cities: 2020, units



Source: HSE GCII, based on Fortune Global 500 and Global Innovation1000 data

10

Moscow ranked by number of R&D departments of largest companies



Moscow has a potential to increase the number of R&D departments

	Moscow, 2019	Russia, 2019	Rank of Moscow in Russia, 2019
Business share in research and development funding, %	11.48	14.90	36
Proportion of STEM and fundamental medicine undergraduate students, %	32.18	34.95	46

Source: HSE, based on Rosstat data



Low participation of corporate sector in research and development and personnel shortage are constraining factors for the placement of R&D departments in Moscow

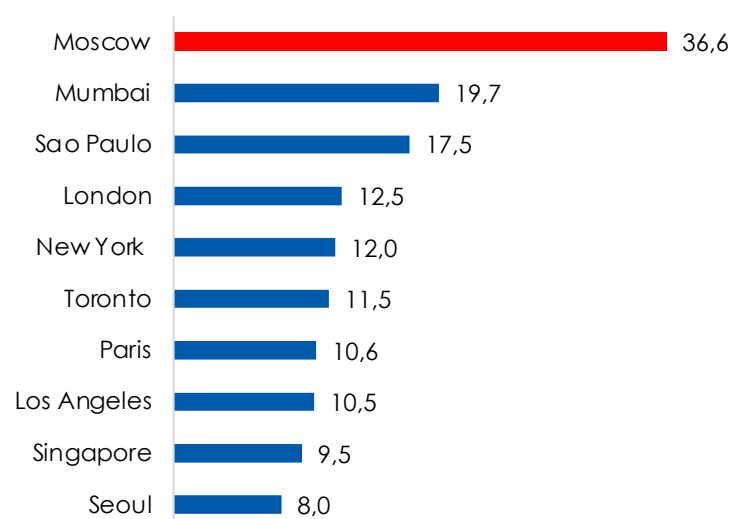


4. Moscow is actively promoting digital agenda, but in its patent profile digital technologies are hardly noticeable against traditional areas

1

Moscow ranked by the level of digital infrastructure and services' development

Top-10 global cities by number of Wi-Fi access points: 2020, thousand units



Source: HSE, based on WiFi Map data

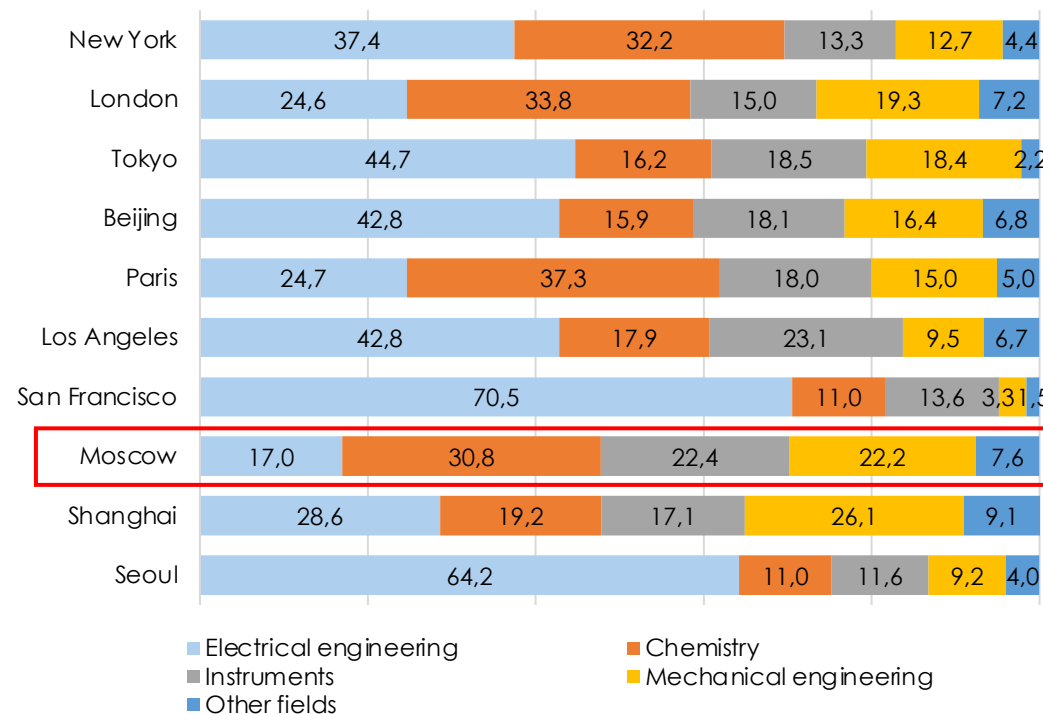
20516

number of Moscow innovation cluster members and partners

29

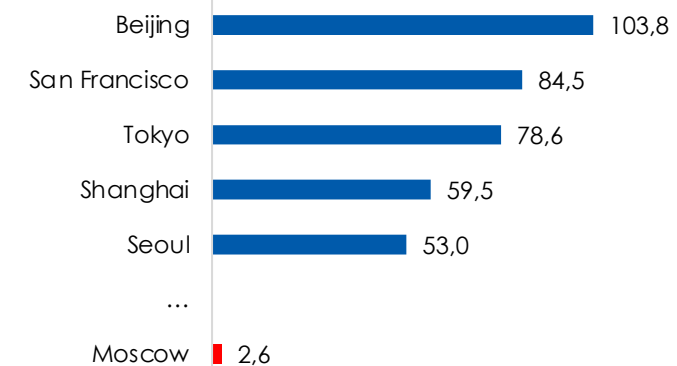
Moscow ranked by the share of ICT in a city patent profile

Thematic structure of patent applications in global cities: 2014–2016, %



Source: HSE GCII, based on PatStat Global data

Global cities ranking by number of patent applications in ICT: 2014-2016, thousand units



ICT is the key technological specialisation of the cities sampled.

In their patent profiles' structure the share of ICT fields varies from 24.6% (London) to 70.5% (San Francisco). 70% of ICT applications from all the surveyed cities refer to five centers - Beijing, San Francisco, Tokyo, Shanghai and Seoul. Their technological core is large corporations.

5. Moscow universities are known worldwide, but are not popular among foreign teachers and students yet

5

Moscow ranked by number of leading universities

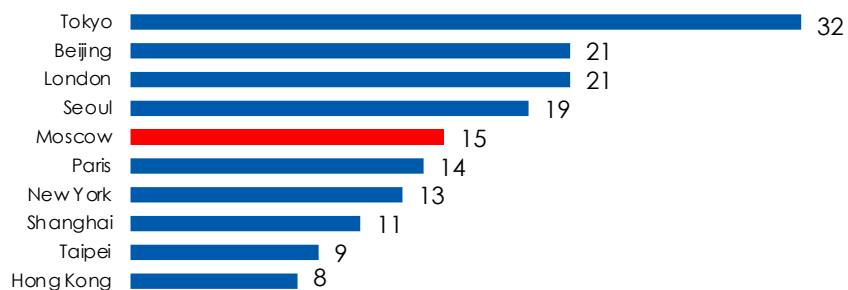
17

Moscow ranked by number of international faculty staff

32

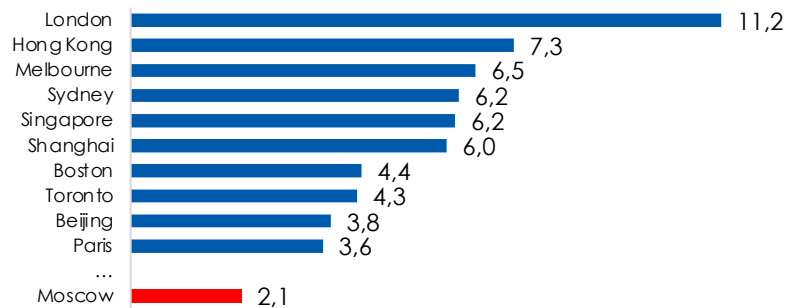
Moscow ranked by number of highly cited researchers

Top 10 global cities by number of higher education institutions included in QS, THE, ARWU rankings: 2019–2020, units



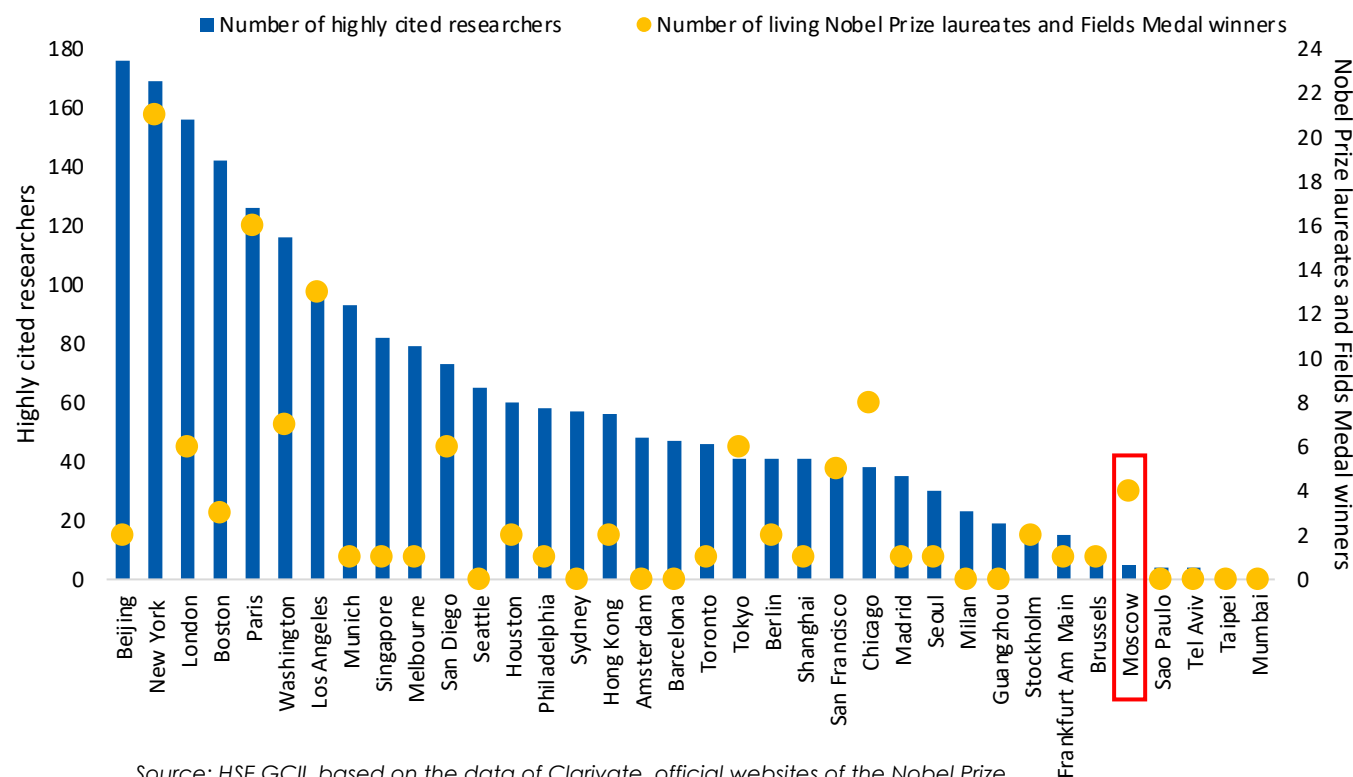
Source: HSE GCII, based on QS, THE, ARWU data

Moscow and top 10 global cities by number of international faculty staff at higher education institutions included in QS, THE or ARWU rankings: 2019–2020, thousand persons



Source: HSE GCII, based on QS, THE, ARWU data

Number of highly cited researchers (2018) and living Nobel Prize laureates and Fields Medal winners (2020) in global cities



Source: HSE GCII, based on the data of Clarivate, official websites of the Nobel Prize Award and International Mathematical Union

6. Natural areas dominate in the scientific profile of Moscow, while new fast-growing areas seem to be left behind

11 Moscow ranked by number of scientific publications

36

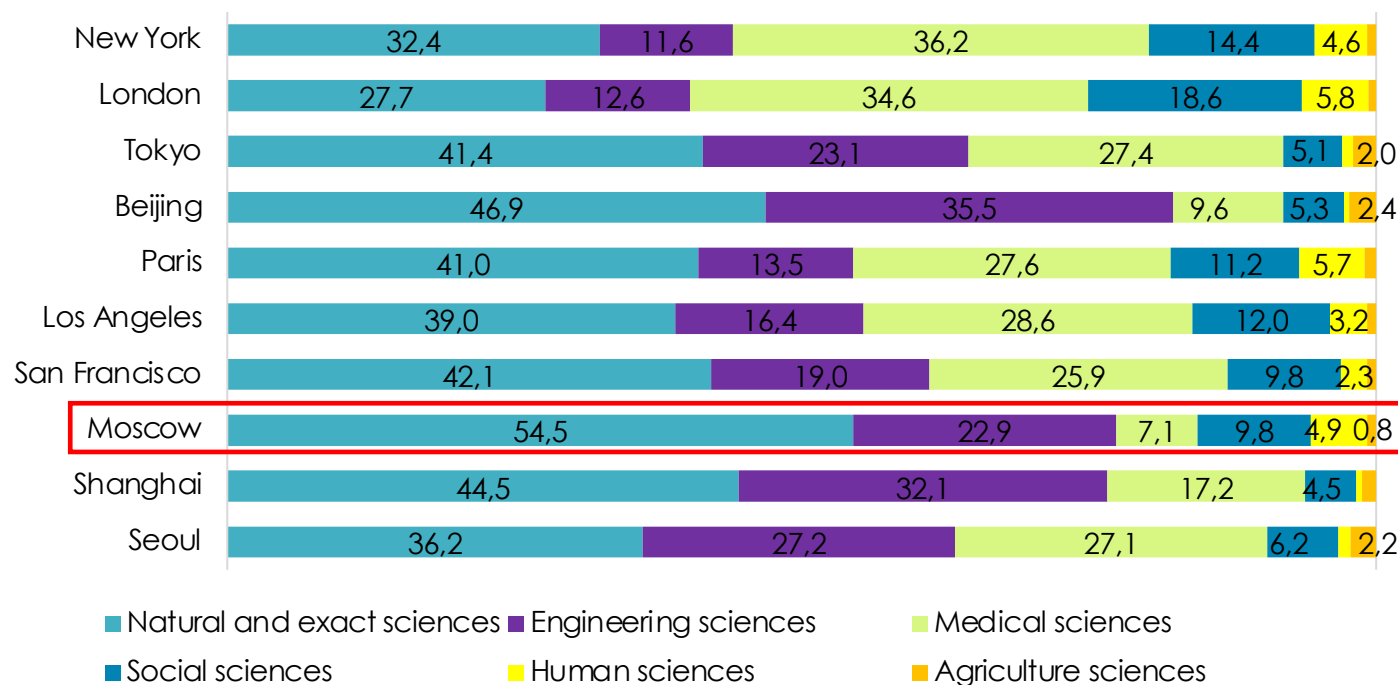
Moscow ranked by share of medical sciences publications in a scientific city profile

1 Moscow ranked by share of natural and exact sciences publications in a scientific city profile

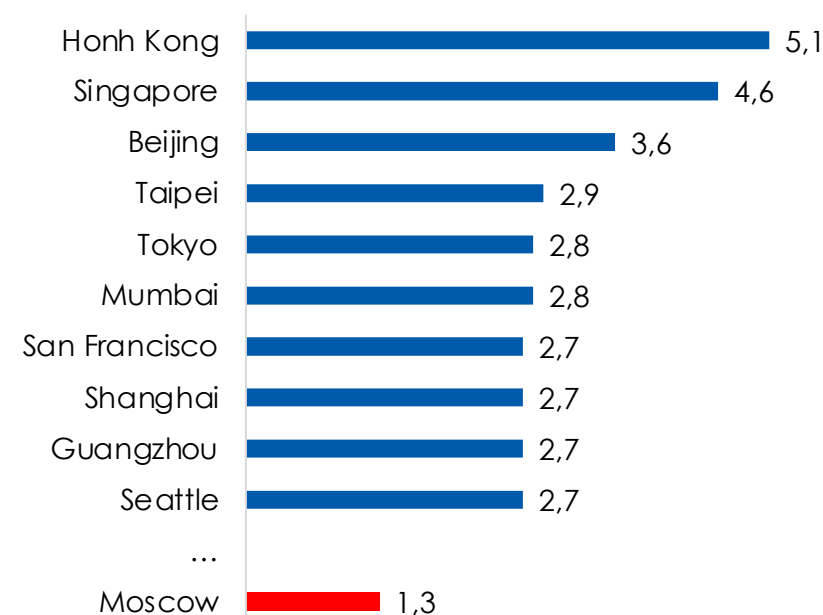
27

Moscow ranked by share of publications in the field of AI in a scientific city profile

Scientific profiles of top 10 global cities: 2014–2018, share of scientific areas in the total number of city's publications, %



Share of publications in the field of artificial intelligence in the total number of city's publications: 2014–2018, %



Source: HSE GCII, based on Web of Science data

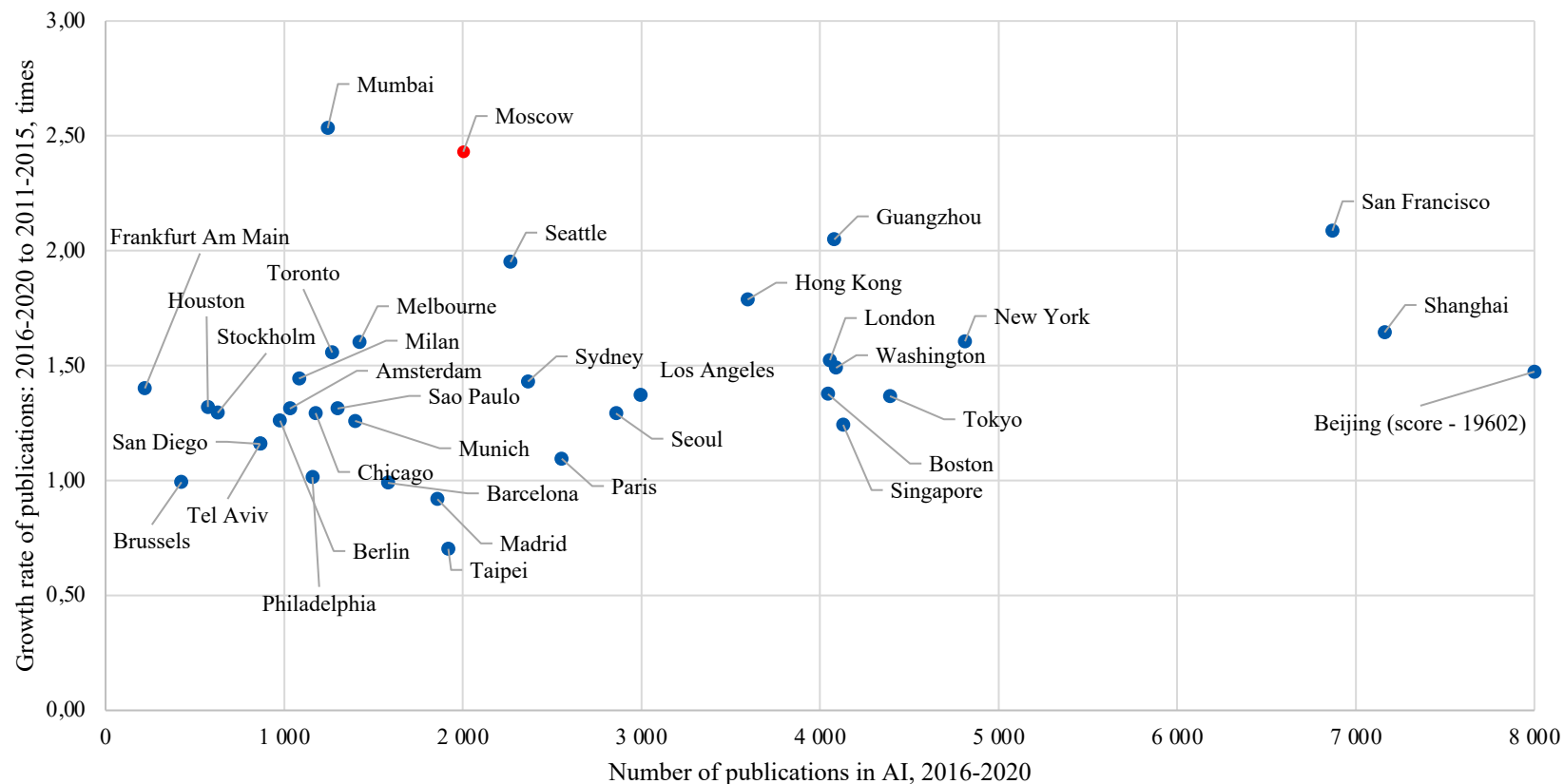
Source: HSE GCII, based on Web of Science data

Moscow shows one of the highest growth rates of the number of publications on artificial intelligence

2

Moscow ranked by growth rate of the number of publications in AI field

Publication activity of HSE GCII sampled cities in AI field



Source: HSE, based on Web of Science data

If the current growth rates are maintained, **by 2030 Moscow will become the 6th city in the world** by the number of publications on AI, behind only Beijing, San Francisco, Shanghai, Guangzhou and New York



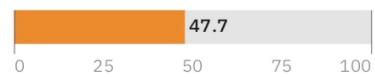
CHALLENGES OF CREATIVE INDUSTRIES DEVELOPMENT

Creative and intellectual services are the key economic specialisation of Moscow

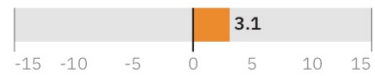
Industries of specialisation, ea.



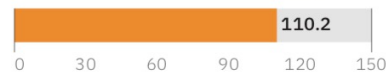
Employment, %



Increase in the number of employed, %



Wage, thousand rubles



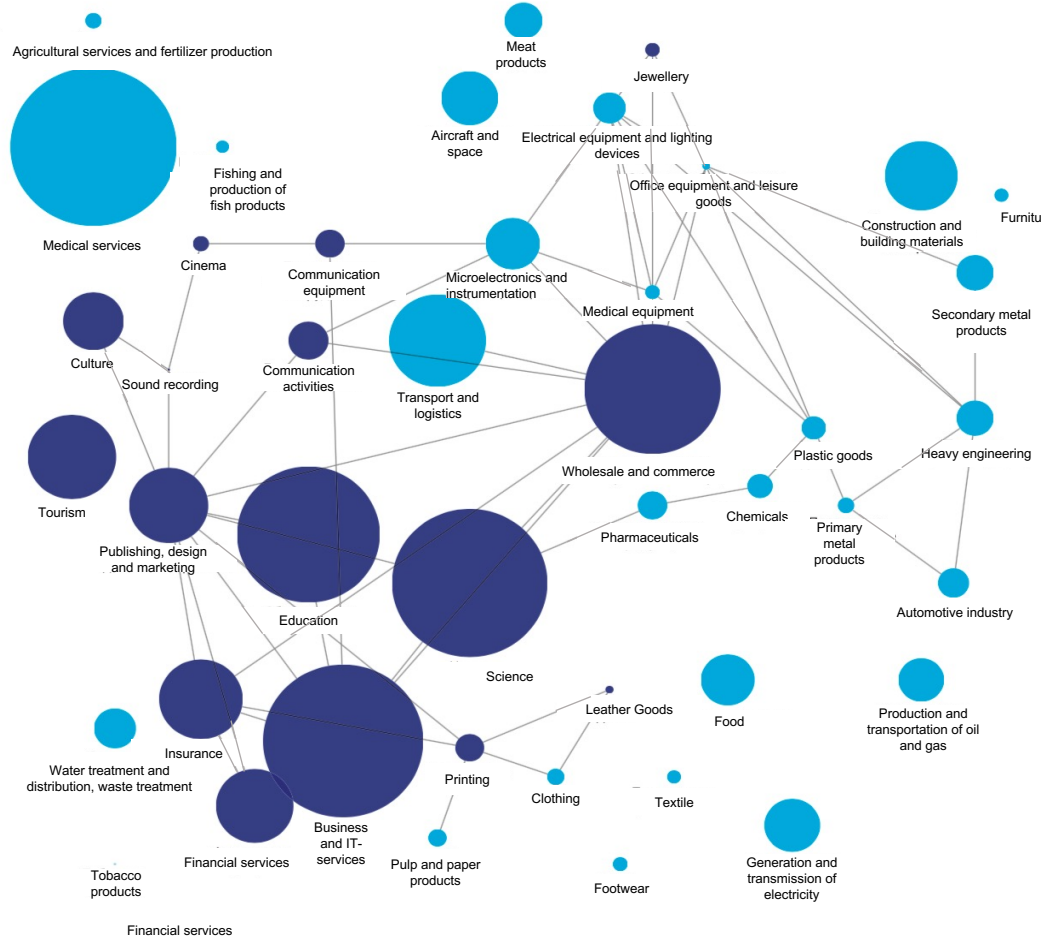
Industries of national and local significance

Industries of national significance

Industries of local significance

High level of connection between industries

No. of employees in the industry (small companies excluded), people
500 5000 50 000



Share in total employment in 2018

Industries	Moscow	Russia
Traded creative sector	2.78	2.09
Intelligent services	20.68	9.89

Source: HSE, based on Rosstat data. Statistical observation form No. P-4 'Information on the number and wages of employees.'



Creative industries and intellectual services are already forming the economic image of the capital

Source: Atlas of Economic Specialisation of Russian Regions.

7. Moscow is in the top 10 world cities by the development of creative sector, but lags behind the leaders in most indicators by 3-4 times

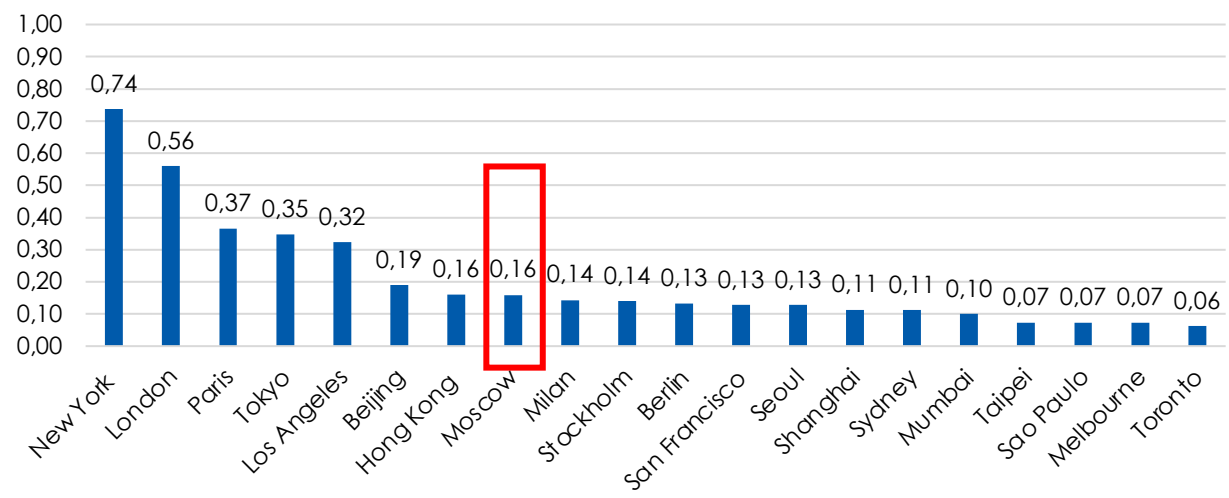
8

Moscow ranked by the level of creative industries' development

3-90 times

Moscow lags behind of New York as the leading city in 80% of creativity indicators

Top-20 cities in the rating according to the value of "Creative Industries" subindex

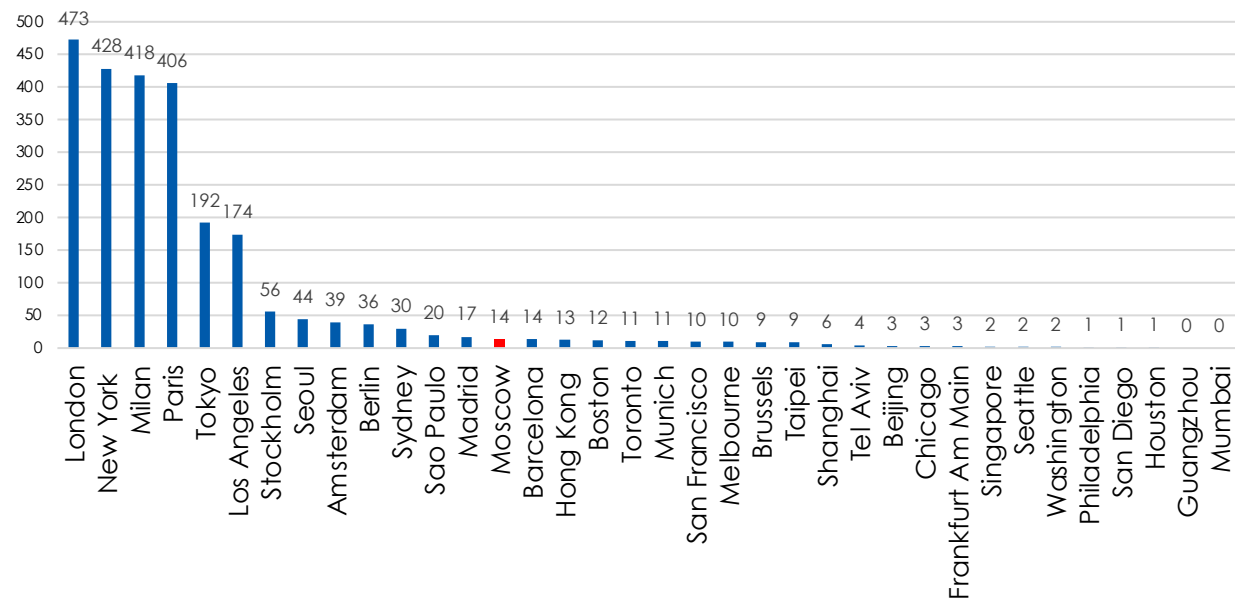


Source: HSE GCII

25 times

Is the gap between the average values of the sub-index for the top 5 cities and the five outsiders

Number of fashion brands represented on the website of the online retailer FARFETCH with headquarters in the city: 2019, units



Source: HSE GCII, based on FARFETCH data (as of 01.12.2019)

For the six leading cities (New York, London, Paris, Tokyo, Los Angeles, Beijing) in the creative industries sector there are:

- 90% of the most collectible artists
- 70% of the most influential people in contemporary art
- 80% of highly rated films

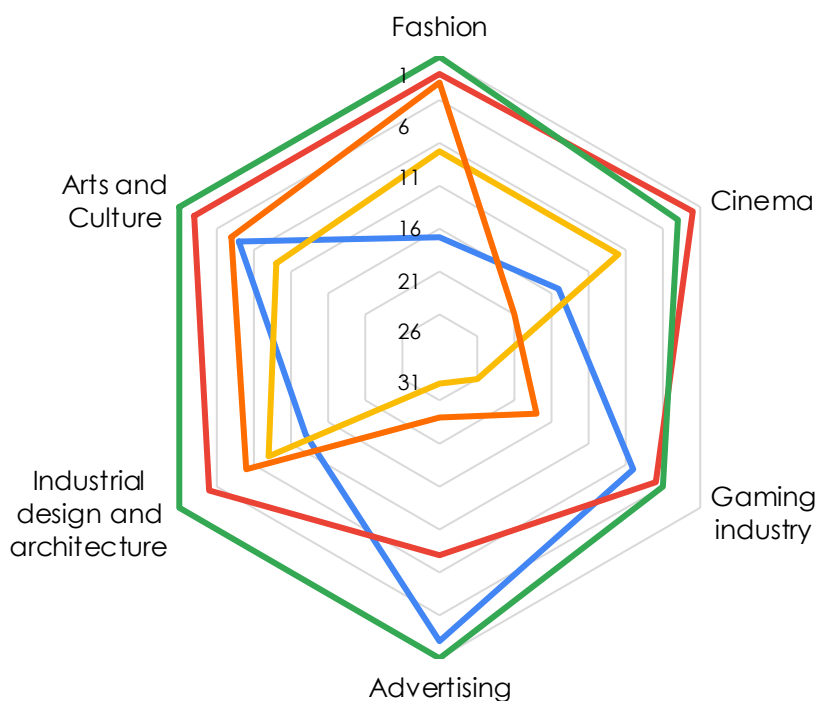
8. Moscow's creative sector has high potential, but still unevenly developed

- 10 Moscow ranked by the level of gaming industry development
- 3 Moscow ranked by the development of advertising and the PR industry

- 22 Moscow ranked by the development of fashion industry
- 20 Moscow ranked by the level of film industry development

The meaning of "Creative Industries" subindex sections

— Moscow — Paris — Amsterdam — New York — Milan



2 Possible Strategic Forks of Supporting Creative Industries :

Bet on the leaders

Landmark cities :
New York, London

Policy gaps

May be ineffective in case of wrongly chosen priorities

Equalizing policy

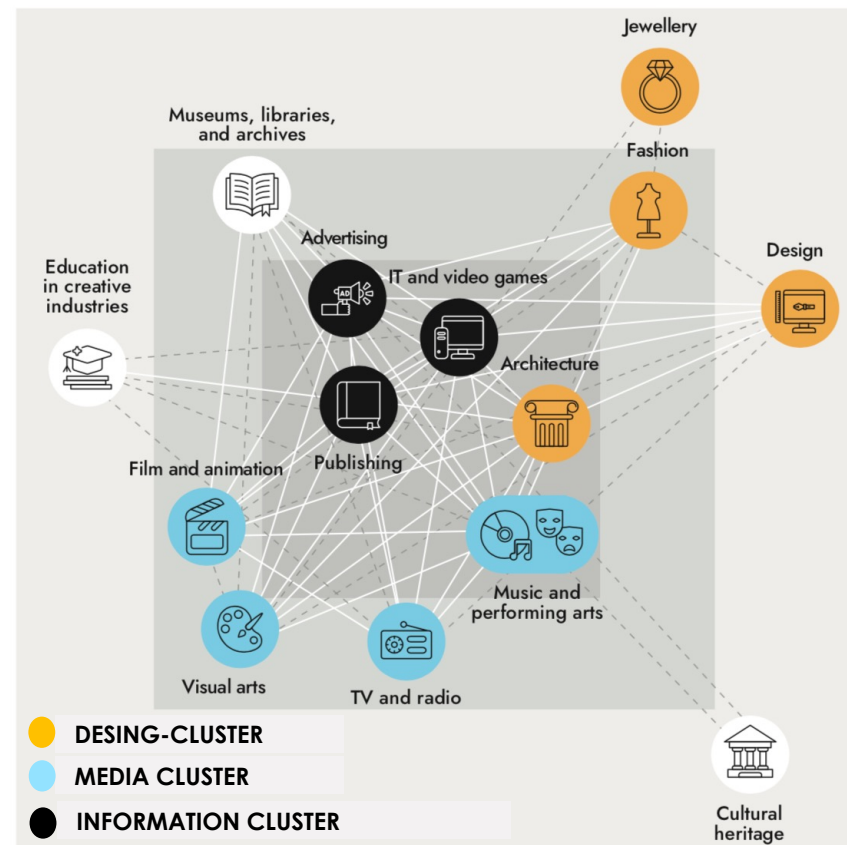
Landmark cities :
Tokyo, Los Angeles

Policy gaps

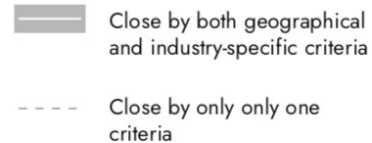
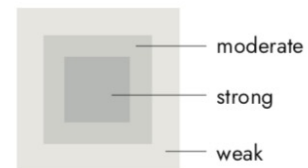
Fragmentation of scarce resources
Risks of unreasonable selection of priorities on the tactical level

Cluster approach to creative industries as an effective alternative to leadership support and leveling policies

Cross-sectoral clusters of creative industries in the Moscow economy

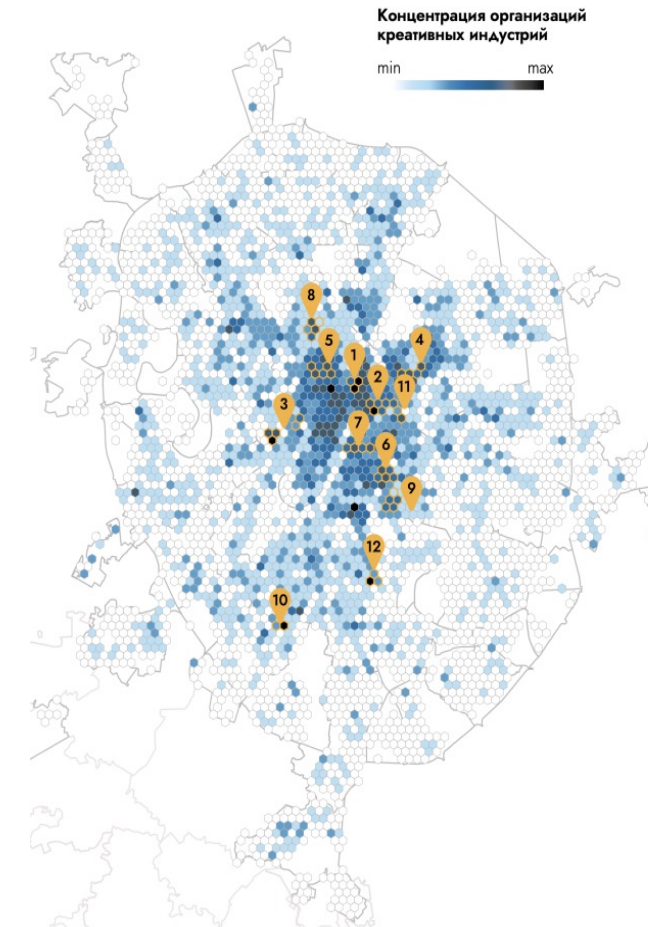


Influence on city's creative sector



Territorial clusters of creative organizations in Moscow

- 1 Tsvetnoy
- 2 Pokrovsky
- 3 Presnensky
- 4 Basmanny
- 5 Yamskoe pole
- 6 Derbenyovsky
- 7 Zamoskvorechy
- 8 Savyolovsky
- 9 Avtozavodsky
- 10 Butlerovsky
- 11 Syromyatnichesky
- 12 Nagatinsky



Source: Creative economy of Moscow in figures



CHALLENGES OF URBAN ENVIRONMENT

9. Moscow offers affordable cost of living and doing business, but still remains unsafe

2 Moscow ranked by the indicators on cost of doing business

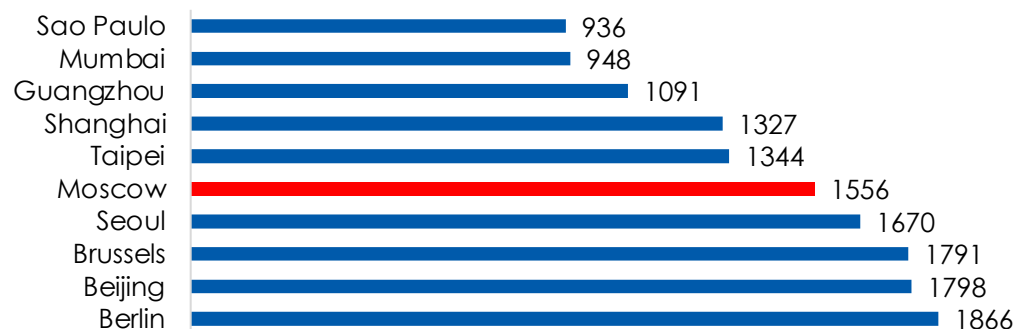
4 Moscow ranked by the indicators on cost of living

26 Moscow ranked by safety level

35 Moscow ranked by road traffic mortality rate

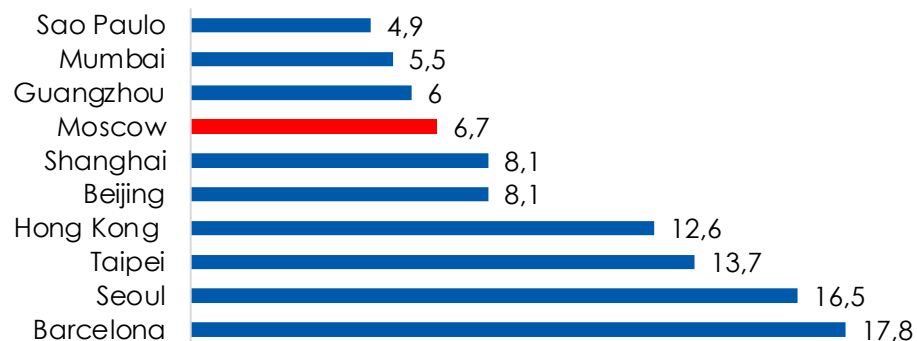
25 Moscow ranked by number of registered homicides

Top10 cities by cost of long-term residence for an expat: 2020, USD per month



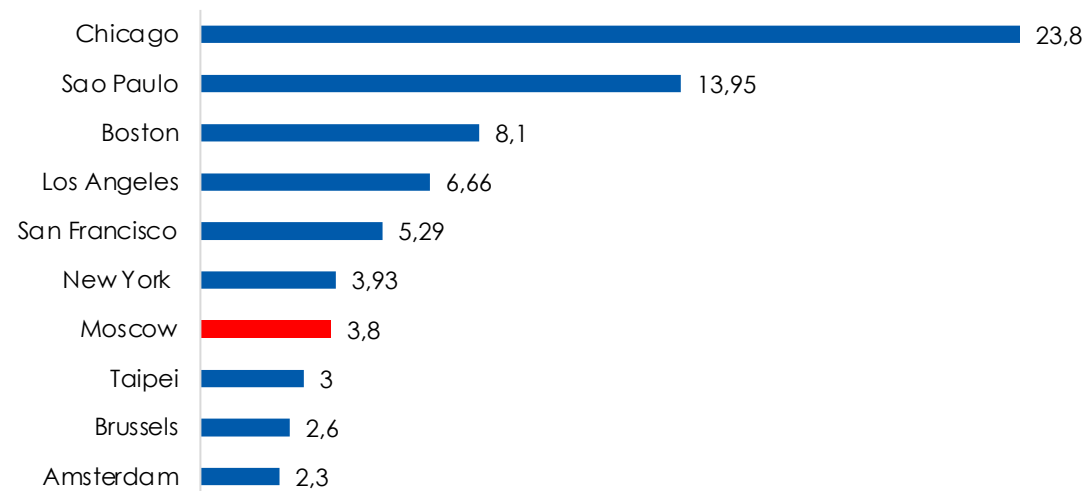
Source: Nomad List

Global cities with the lowest average employee salary: 2019, USD per hour



Source: Passport Euromonitor

Global cities with the highest number of registered homicides: 2018, per 100,000 population

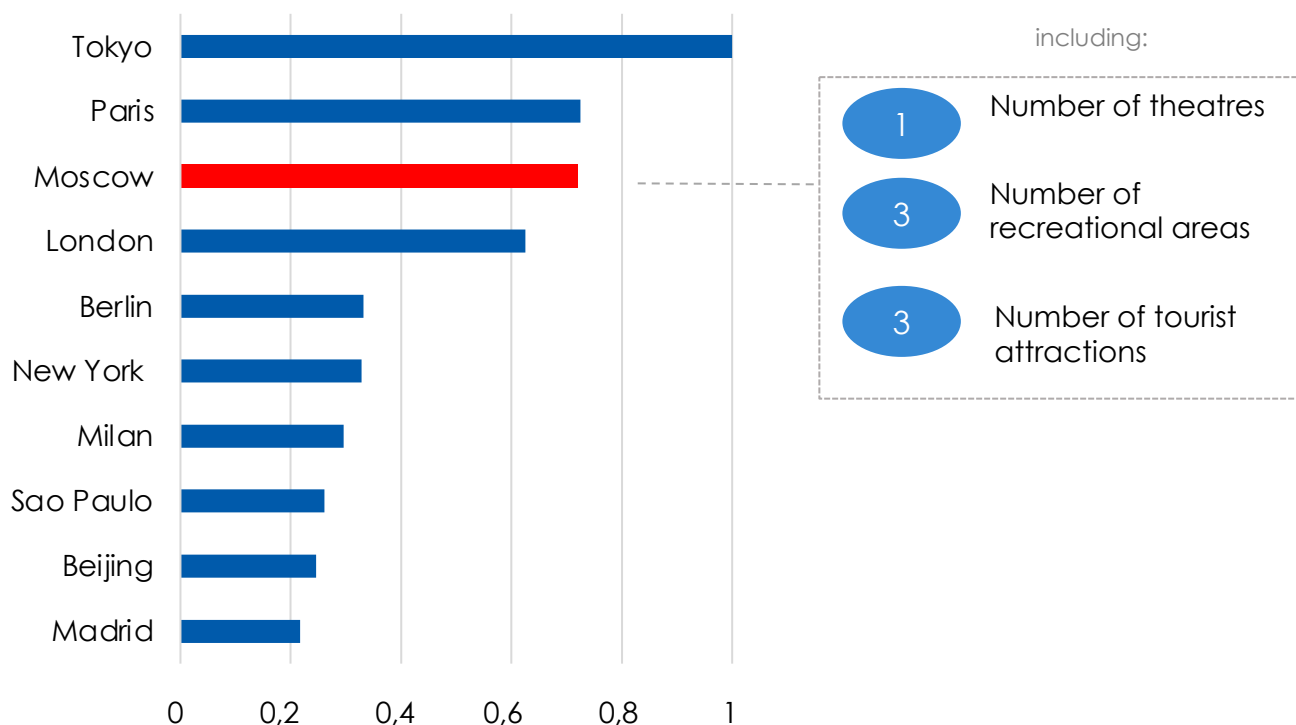


Source: STC Database

10. Local sightseeings attract tourists but urban environment is rather important for innovators

12 Moscow ranked by tourist appeal level

Top 10 cities by indicators on Culture and entertainment: 2020, index

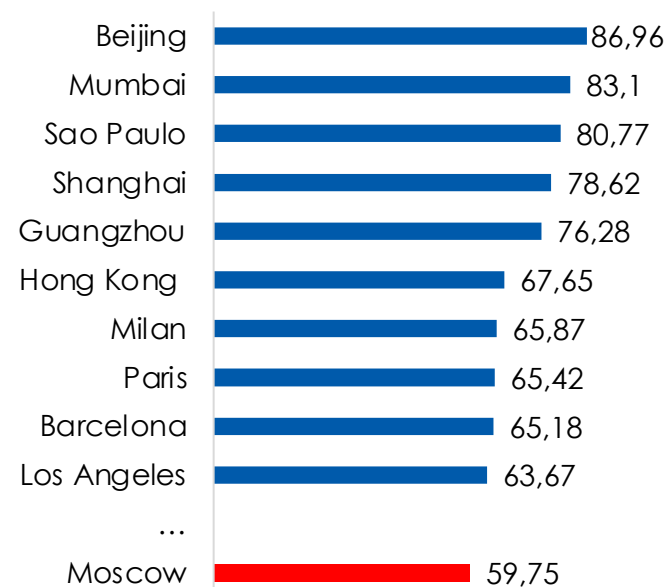


Source: HSE GCII, based on Tripadvisor data

36 Moscow ranked by the indicators on ecology and climate comfort

24 Moscow ranked by environmental pollution level

Top 10 cities with the highest City Pollution Index* and Moscow: 2019



*Pollution Index measures the level of air pollution, water pollution, quality and availability of drinking water, cleanness and tidiness, noise pollution, green and parks quality and other environmental factors. The biggest weight is given to air pollution.

Source: Numbeo

Moscow 2030: six steps towards global innovation leadership

<p>Factory of stars</p> <p>creating conditions for attracting and retaining the best representatives of technology business, advanced science and creative industries in Moscow</p>	<p>Intelligent avant-garde</p> <p>accelerating structural transformation of the city's technological and scientific profile towards life sciences, artificial intelligence, ICT</p>	<p>New growth points</p> <p>a bet on creative industries and knowledge-intensive business services as the drivers of urban economy development</p>
<p>Building bridges</p> <p>establishing pilot sites in Moscow in order to develop innovative formats of interaction between business, science and government, proposing new measures to support cooperation projects</p>	<p>Humanitarian mission</p> <p>a human-centered approach to the development of urban environment and infrastructure, which gives priority attention to safety and environmental issues</p>	<p>New international image</p> <p>promoting the capital's image as a friendly multicultural center open to innovators from all over the world</p>