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DEVELOPMENT OF URBAN AGGLOMERATIONS IN INNOVATION ECONOMICS: GLOBAL TRENDS AND THE RUSSIAN EXPERIENCE

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Keywords: urban agglomerations, region, innovations, innovation development, national innovative system, delimitation, rankings.

ABSTRACT

This paper examines the impact of agglomerative socio-economic systems on the scientific, technical and innovation-driven development of national economies. Of special importance are urban agglomerations which are growth poles fostering the spread of business activities from the center towards the periphery, thus creating the momentum for the expansion of innovation activities. Importantly, innovative asymmetry,present inside both individual States and macro-regions, creates barriers to progress and a shift to a new technological paradigm. The authors give a general description of agglomerations prevailing in international and Russian research and an overview of agglomeration effects in traditional and innovation economy. This approach constituted a starting-point for substantiating key factors affecting the intensification of innovation activities in agglomeration areas. Considerable attention is given to an analysis of changes in the main indicators representative of Russia's national and regional innovation development. The low innovation level of the Russian economy is due to a considerable slowdown of innovation growth at the regional level. Statistics show that trends in the indicators for innovative production point to innovative stagnation showing some signs of economic growth. The conducted study concludes that there is a need, first, to mitigate disproportions in the development of existing agglomerations in Russia and, second, to implement government organizational and institutional measures aimed at controlling urban agglomeration development as a basic condition for expanding a post-industrial economy.

Keywords:urban agglomerations, region, innovations, innovation development, national innovative system, delimitation, rankings.

JEL: H19, H69, H79, O38, R58

INTRODUCTION

Prosperity and advantages in global competition are based on the acceleration of innovation development, and the first one to introduce innovations is the winner. All developed countries give importance to this factor and use it to improve their international standing. According to the World International Property Organization (WIPO), the world now shows two technology trends. First, there is a growing number of inventions: more than half of inventions in the field of artificial intelligence have been patented since 2013. Second, the focus of recent inventions shows a shift from basic science to commercial use. In 2019, WIPO published a study entitled Technology Trends which investigates trends in technology development, mostly in artificial intelligence, in terms of functional areas, market actors using technologies, and the geographical scope of their application. The study is based on 340 000 patent applications and over one million of research papers published since the 1950s.1

A national innovation system (hereinafter called the NIS) is the institutional structure for the innovation-driven development of each technologically advanced country, which involves the complex interactions among market actors and paves the way for the promotion of innovation activities. The above is related to sharp differences between innovative and traditional production, given that, unlike the traditional industrial and commercial cycle, the innovation cycle is more extended in time and its stages – ranging from fundamental studies to commercial production – should not be interrupted. Otherwise, financial, material and human resources spent on an incomplete innovation cycle will not translate into an innovative product. This is what substantiates the complex organizational and managerial structure of an innovation system involving many participants.

The most widespread NIS formats are triple spiral and penta-spiral models, the most distinctive feature of which is a difference in participants. The former case examines the State-science-business triad. In the latter case, social organizations and international participants join this triad. A national innovation system entails creating infrastructure by means of technopolises, technology parks, business incubators and venture funds, among others, the totality of which ensures the delivery of scientific, technical and technological achievements into the producing sector.

Depending on the administrative and territorial set-up of countries, their innovation systems can be further divided into sub-systems that can be seen as the NIS' regional segments. Notably, interconnections that are created pro-actively "from below", i.e. without the direct participation of the State, emerge during the innovation development process along with formal relationships among market actors. Such processes occur in urban agglomerations which are the objective result of urbanization and circular migration (Nikitskaya, 2018).2

As a rule, agglomeration territories are centers of important scientific and technological capacity resulting in a collateral effect due to the growth and

[1] WIPO Technology Trends 2019. First published 2019. World Intellectual Property Organization 34, chemin des Colombettes, P.O. Box 18 CH-1211 Geneva 20, Switzerland. URL: https://www.wipo.int/tech_trends/en/

[2]Nikitskaya, E. F. Rol aglomeratsiy v razvitii regionalnogo segmenta natsionalnoy innovatsionnoy sistemy Rossii (The role of agglomerations in the development of the regional segment of Russia's national innovation system). Federalism. 2018;(2):46-63.

expansion of economic and innovation activities beyond their limits. The role of agglomerations in the world economy increases in response to the emergence of the so-called techno-nationalism characterized by the focus of all government decisions and strategies on the promotion of innovations at the national level only.3 As such, techno-nationalism slows the spread of innovations throughout the world and, consequently, global economic growth. Furthermore, many public decisions on innovation policy are directly aimed at blocking the international flow of technologies in specific areas.

Consequently, the action of techno-nationalism consolidates technological leaders' positions and creates obstacles to the innovation breakthrough of developing countries, which is confirmed by international rankings. The Global Innovation Index (GII), published by Cornell University (USA), the INSEAD Business School (France) and the World International Property Organization (WIPO) assesses the innovation performance of the world's countries. GII-2019 provides metrics about the innovative activities of 129 countries based on 80 benchmarks, including the number of international patent and trademark applications, investment in research and development, high-tech product exports, etc.4 Switzerland has been ranked first in GII-2019 for the ninth consecutive year. Sweden (2), the USA (3), the Netherlands (4) and the United Kingdom (5) are also ranked among the top five. Russia was ranked 46th in 2019. Among the strengths of Russia's economy are its human and scientific development (sub-index ranking: 23), business development (sub-index ranking: 35) and technology and knowledge-economy development representative of innovation activity outcomes (sub-index: 47).

To overcome destructive trends in the sphere of innovations, it is necessary to conduct a comprehensive study of the causes and consequences of time lags emerging during innovation activities, the resistance of businesses to technological innovations and the regulatory impact of national policy on the State's socio-economic standing. The Russian State is making efforts to introduce controlled agglomeration development. Importantly, today there is no single regulatory framework for implementing and developing agglomerations which would determine their composition, formation procedure, competences, interactions with other agglomerations and rules for financial flow distribution in the form of budget and private investments. At the same time, the enactment of the Spatial Development Strategy of the Russian Federation for the period up to 2025 established the preconditions and priorities of innovation growth through the development of large and largest urban agglomerations. Among the planned activities are the following: provision of the accelerated economic, scientific and technological development through government support for priority high-technology and knowledge-intensive industries; creative industry development; establishment of world-class educational centers; creation ofnational technology initiative centers, leading research and innovative infrastructure centers and so on.

2. RESEARCH METHODOLOGY

[3]Innovatsionnaya politika: globalnyi vzlyad (Innovation policy: A global view) // BUJET.RU. URL: http://bujet.ru/article/325916.php

[4] The Global Innovation Index 2019: Creating Healthy Lives—The Future of Medical Innovation Cornell University, INSEAD, and the World Intellectual Property Organization, 2019. URL: https://www.wipo.int/global_innovation_index/ru/2019/index.html

This research study is based on a combination of academic interdisciplinary and specialized economic approaches such as analysis, synthesis, scientific analogy and the inductive, deductive and systemic approaches. The target of the study are innovative processes taking place in territorial socio-economic systems. The scope of the study is the impact of agglomeration effects on the development of innovation activity nationwide and regionally. The study gives an analytical overview of the current agglomeration situation in Russia and the developed countries. The authors reviewed existing research on the topic and classified present-day Russian and international approaches aimed at detecting agglomerations and their effects. The Global Innovation Index published by INSEAD, the international business school, and other rankings by Mercer and PricewaterhouseCoopers (PsC) and Russia's Agency for Strategic Initiatives (ASI) were used for the purposes of comparison. Factographic analysis based on the analysis of facts recorded in research papers, national reports, expert assessments and analytical studies was used as a methodological tool. The authors took into methodological consideration the fact that, in contract to other countries, there are no official statistics in Russia on agglomerations' innovation activities.[5] This fact makes it difficult to monitor the Russian economy's innovation development. No insights into the sphere of innovations are provided by assessments or applied research conducted by academic groups or individual experts working in research institutions, including the Institute of Geography of the Russian Academy of Sciences, research institutes of territorial development and transport infrastructure and others. In this regard, the authors conducted, based on the data provided by Russia's Federal Service for State Statistics, an indirect evaluation of the innovation performance of regional urban agglomerations in conjunction with corresponding federal subjects, namely the latter's administrative centers making a major contribution to the gross regional product. The following are the key statistical parameters that define the innovation activity of Russia's national and regional economy: the volume of innovative products, works and services and the share of organizations implementing these innovations. The analytical procedures in terms of the assessment of changing innovation parameters are adopted in proportion to the regions' fiscal capacity and the population of urban agglomerations. The present study defined general issues relating to agglomeration development management, updated some conceptual considerations on development trends of agglomeration territories in international practice and in the governance of Russia's regional economy.

3. URBAN AGGLOMERATIONS IN RUSSIA AND WORLDWIDE

The emergence, formation and development of agglomerated urban forms bringing together managerial, financial and human resources is a natural consequence of today's global urbanization. An urban agglomeration is generally understood as a compact cluster of urban settlements organized in a complex multi-faceted system having strong industrial, transport and cultural links between themselves. Agglomerations are traditionally regarded as integrative entities surrounding cities.

[5]Izhguzina, N. R. Podkhody k delimitatsii gorodskikh aglomeratsiy (Approaches to the delimitation of urban agglomerations) // Diskussiya. Zhurnal nauchnykh publikatsiy. 2014, No. 9 (5), pp. 44-51. URL: https://cyberleninka.ru/article/n/podhody-k-delimitatsii-gorodskih-aglomeratsiy/viewer

Demographia World Urban Areas is an annual report containing information about 1,064 urban agglomerations with a population of over 500,000.6 The world's biggest urban agglomeration is Tokyo-Yokohama (Japan) with 38 million people. The city with the highest population density (47,000 residents per square kilometer) is Dhaka (Bangladesh) ranking 13th in the world with a total population of 17,4 million residents. Cairo, Bangkok, Los Angeles, Buenos Aires and Calcutta have a population of over 15 million.Moscow is 15th in the above-mentioned ranking, with a population of 16,85 million people. According to Glavmedia.Net, the following are among the world's top 10 largest agglomerations:7

1. Tokyo, Japan, 38.505 million people;
2. Jakarta, Indonesia, 34.365 million people;
3. Delhi, India, 28.125 million people;
4. Manila, Philippines, 25.65 million people;
5. Seoul, South Korea, 24.315 million people;

Urban population prevails in Russia: 70% of the total population, depending on the census year lives in cities and towns constituting agglomerations. According to expert estimates, Russia has 124 agglomerations with 85 million residents, including the following:

1. 17 agglomerations with a population of over 1 million people;
2. 28 agglomerations with a population of 500,000 to 999,999 people;
3. 45 agglomerations with a population of 250,000 to 499,999 people; and
4. 34 agglomerations with a population of 100,000 to 249,999 people.8

These numbers are somewhat different from the official data provided by the Government Order of the Russian Federation9 that has adopted the Spatial Development Strategy of the Russian Federation for the period up to 2025 (hereinafter called Russia's Spatial Development Strategy). According to this document, Russia has some 40 large and largest urban agglomerations whose population has been growing since the early 2000 and has now exceeded 73 million people.

The distinctive features of agglomerations are conditionality and open borders. This is primarily due to the fact that two oppositely oriented forces affect the development of agglomerations, namely, centripetal/agglomeration-focused force

[6]DemographiaWorldUrbanAreas. 15th annual edition, 2019. URL: http://www.demographia.com/db-worldua.pdf
[7]Krupneyshie aglomeratsii mira v 2019 gody (The world's largest agglomerations in 2019) // Glavmedia.Net. Educational online magazine.URL: https://glavmedia.net/demografiya/337-krupnejshie-aglomeratsii-mira-v-2019-godu
[8] Aglomeratsii Rossii (Russian agglomerations) [Online]. URL: https://howlingpixel.com/i-ru/%D0%90%D0%B3%D0%BB%D0%BE%D0%BC%D0%B5%D1%80%D0%B0%D1%86%D0%B8%D0%B8_%D0%A0%D0%BE%D1%81%D1%81%D0%B8%D0%B8
[9]Government order of the Russian Federation No. 207-r of 13 February 2019 (amended on 21 August 2019) on the Spatial Development Strategy of the Russian Federation for the period up to 2025. Accessed from KonsultantPlus, a Russian computer-based legal research system.

and centrifugal/dispersion force.10 The prevailing action of this or that force is what causes progress or degradation in the agglomerations' development. The French researcher P. Vidal de la Blache made an interesting point in this regard, pointing to "…a specific dilemma about the need to bring together different people in order to benefit from the strengths of the division of labor. However, various factors create difficulties that prevent them from uniting" (Vidal de la Blache, 1922).11 This situation blocks centripetal forces and impedes the development of agglomerations.

Urban agglomerations are not stable territorial entities because territory boundaries, the number of residents and the level of socio-economic development, including the quality of life, are constantly changing. Table 1 shows the expert data on the changing number of residents in Russian agglomerations between 1989 and 2019.

Table 1. Population of Russia's 15 largest agglomerations between 1989 and 2018,
(in millionsof residents)

No	1989		2002		2010		2018	
1	Moscow	15.5	Moscow	17.0	Moscow	18.5	Moscow	20.0
2	Leningrad	5.8	Leningrad	5.5	St. Petersburg	5.7	St. Petersburg	6.3
3	Gorky	2.3	Nizhny Novgorod	2.1	Nizhny Novgorod	2.0	Yekaterinburg	2.1
4	Sverdlovsk	2.0	Yekaterinburg	1.9	Yekaterinburg	2.0	Novosibirsk	2.1
5	Novosibirsk	1.9	Novosibirsk	1.9	Novosibirsk	1.9	Nizhny Novgorod	2.0
6	Kuybyshev	1.7	Rostov	1.7	Rostov	1.8	Rostov	1.8
7	Rostov	1.6	Samara	1.6	Samara	1.6	Chelyabinsk	1.6
8	Chelyabinsk	1.6	Volgograd	1.6	Volgograd	1.5	Kazan	1.6
9	Volgograd	1.5	Chelyabinsk	1.5	Chelyabinsk	1.5	Samara	1.6
10	Kazan	1.5	Kazan	1.5	Kazan	1.5	Volgograd	1.5
11	Omsk	1.4	Omsk	1.4	Omsk	1.3	Krasnodar	1.4
12	Perm	1.3	Ufa	1.3	Ufa	1.3	Ufa	1.4
13	Ufa	1.3	Saratov	1.2	Voronezh	1.2	Omsk	1.4
14	Voronezh	1.2	Perm	1.2	Krasnoyarsk	1.2	Krasnoyarsk	1.4
15	Saratov	1.2	Voronezh	1.2	Saratov	1.2	Voronezh	1.2

* This table is an extract from the table given in: Bashirov, V. Top 20 largest Russian agglomerations between 1979 and 2018 [Online] URL: https://sevabashirov.livejournal.com/284341.html

According to the table, the population of the largest agglomerations underwent almost no changes over 30 years in terms of numbers, yet their rank order did chang due to intraregional migrations influenced by these or those stimulating and discouraging factors.

[10]Nikitskaya, E. F., Valishvili, M. A., Gretchenko, A. A. Gorodskie aglomeratsii v Rossii: ot teorii k praktike (Urban agglomerations in Russia: From theory to practice) // Upravlenie ekonomicheskimi sistemami. Online scientific journal, 2018, No. 10. URL: http://uecs.ru/index.php?option=com_flexicontent&view=items&id=5139

[11] Vidal de la Blache, P. Principes de geographie humaine. – Paris: Librairie armand colin, 1922. URL: https://archive.org/details/principesdegogra00vida/page/6/mode/2up

Western researchers relate the development of agglomerations to the action of agglomerative effects through the lens of the agglomeration process involving industry and populations (Rusanovsky, V., Markov, V. et al., 2018).12 The agglomeration process is exposed to the action of two opposite trends that combine the spontaneous and objective agglomeration-forming process with the State's efforts to make this process controllable. This is evidenced by the availability of numerous official and informal approaches to delimitating urban agglomerations that exist in both international and Russian practice.

Let us take the example of some Western countries. US statistical offices use a network of districts to establish agglomerations. Canadian statisticians identify 150 geographical agglomerations grouped around one or several kernels of two types: census metropolitan areas (CMA) and census agglomerations (CA). In Switzerland, Great Britain and France, statisticians identify agglomerations by considering a number of criteria, mainly the number of residents and the employment rate (or the number of jobs).13 Of special interest is the following characteristic proper to French statistics: the Chevenment law (1999) identified major urban agglomerations with a population of over 50,000 people, whereas 15,000 people should reside in the agglomeration kernel.

Russia has no official methodologies for delimitating agglomerations. There are, however, numerous approaches developed by various research institutions and individual researchers that consider criteria such as the urban kernel's population, population density, the external zone's development and comprehensive criteria providing a general characterization of agglomerations, among others. In our view, the most realistic methodology for delimitating agglomerations in the present-day conditions should be based on the following criteria: the urban kernel's population should be over 100,000 people, and, at least, two cities/towns should be located within 1.5-hour transport accessibility (Shmidt, A. et al., 2016, p. 778)14.

The spontaneous establishment of agglomerations forms various frameworks that define its spatial structure and ensure a stable expansion and development of agglomerated territories. Agglomeration effects manifest themselves in the development of inter-settlement transport links, increasing entrepreneurial activities, the beautification of suburban territories and other positive changes aimed at improving the population's quality of life (Maleeva, T., Selyutina, L., 2014).

The environmental framework remains constant, and transportation facilities, urban environment, infrastructure services, multifunctional and specialized centers make an agglomeration attractive in the eyes of its residents and migrants. There exist two types of agglomeration effects, localization/clustering and

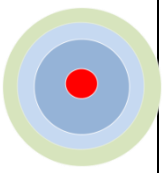
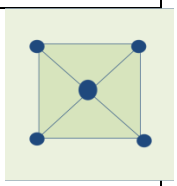
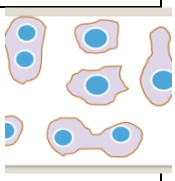
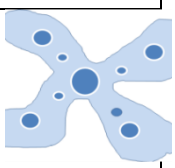
[12]Rusanovsky, V. Markov, V., Brovkova, A. Modelirovanie effekta prostranstvennoy lokalizatsii v gorodskikh aglomeratsiyakh Rossii (Modelling the spatial localization effect in Russia's urban agglomerations) // Ekonomicheskaya politika. 2018. Vol. 13. No 6, pp. 136-163.

[13]Izhguzina, N. R. Podkhody k delimitatsii gorodskikh aglomeratsiy (Approaches to the delimitation of urban agglomerations) // Diskussiya. Zhurnal nauchnykh publikatsiy. 2014, No. 9 (5), pp. 45-47. URL: https://cyberleninka.ru/article/n/podhody-k-delimitatsii-gorodskih-aglomeratsiy/viewer

[14]Shmidt, A. V., Antonyuk, V. S. Francini, A. Gorodskie aglomeratsii v regionalnom razvitii: teoreticheskie, metodicheskie i prikladnye aspekty (Urban aglomerations in regional development: Theoretical, methodological and applied aspects) // Ekonomika regiona, 2016, vol. 12, pp. 776-789.

urbanization.15The appearance of the above effects depends on the type of spatial agglomeration model (Table 2). Russia is characterized by monocentric agglomerations grouped around one urban kernel that influences all surrounding settlements. In this case, the center is much larger in size and economic development than its surroundings.16

Table 2. Spatial agglomeration models

No	Name of Model	Description	Diagram
1.	Monocentric model	All development processes are focused in the center from which expansion and development zones branch off. The monocentric model's strength is its ability to set up highly-efficient transport and infrastructure networks enabling the city to develop compactly and to create multifunctional residential areas	
2.	Polycentric model	Urban development produces compact cities by actively exploiting urban territories and developing satellite towns that have close ties with the central city and between themselves. The model also takes into consideration the important role of farther settlements in the development of the agglomeration's economy.	
3.	Dispersion model	The development of unconnected entities accompanies the city's development. This model exists due to the underdeveloped transport and logistics systems whose evolution leads to its transformation into other types of models.	
4.	Radial/Linear model	The city develops along transport corridors with "rays" emerging in each of them. These rays are closely related to the main city, but not necessarily between themselves. The radial model is most appropriate for rapidly growing metropolitan areas.	

Source: Compiled by the authors based on Agglomerations: Opportunities for and models of urban development. [Online]. URL: http://conflictmanagement.ru/aglomeratsii-vozmozhnosti-razvitiya-gorodov-i-modeli

Agglomerated territories in Russia create socio-economic issues that can be tackled only as part of inter-municipal and inter-regional interactions. A high level of socio-economic differentiation in Russia's regions undermines the effectiveness of Government regulation of economic life and, consequently, there is a need to transform existing territorial sub-systems for economic regulation by developing urban agglomerations. The presence of disproportions in Russia's agglomeration development is related to the unequal spatial distribution of

[15]Zhuk, N. P. Vzaimodeystvie kak factor innovatsionnogo razvitiya: aglomeratsionnye effekty (Interaction as a factor in innovation development: Agglomeration effects) // Innovatsii. 2014,No 1 (183), p. 33.
[16]Aglomeratsii: vozmozhnosti razvitiya gorodov i modeli (Agglomerations: Opportunities for urban and model development) [Online]. URL: http://conflictmanagement.ru/aglomeratsii-vozmozhnosti-razvitiya-gorodov-i-modeli

agglomerations and to major differences in their population numbers and their current level of socio-economic development.

Among the characteristic features of Russian urban agglomerations is the involvement of various sources of funding, including tax and non-tax revenues of all levels and intragovernmental transfers allocated to the interregional development of innovative infrastructure, information technologies, distribution and logistics. Attracting funding from the local budget for the socio-economic development of agglomerations is possible only within the framework of municipal investment programs and inter-municipal agreements. There is, however, a problem with inconsistent strategies for municipality development due to the municipalities' fear of loosing their independence.

Russia's regional policy and, therefore, regional management moved to the next level following the divulgation of the above-mentioned Russian Spatial Development Strategy, which lists the following among cities having the potential for economic growth:

1. Cities constituting large and largest urban agglomerations that will annually contribute over 1% to national economic growth (20 centers);
2. Prime centers of economic growth among Russia's federal subjects which will annually contribute from 0.2% to 1% to national economic growth (44 centers);
3. Prime centers of economic growth among Russia's federal subjects which will annually contribute up to 0.2% to national economic growth (31 centers);
4. Prime mineral, resource-based and agro-industrial centers (27 centers);
5. Prime centers of economic growth which provide the necessary conditions for creating world-class research and educational institutions (20 centers).

In order to implement the Spatial Development Strategy, the Russian Ministry of Economic Development elaborated a project entitled A Roadmap for Agglomeration Development in the Russian Federation.17 The Ministry lists the following among the roadmap's performance indicators:

1. Moving Russian cities up on Mercer's Quality of Living Ranking;
2. Entering2 or 3 Russian cities annually on PricewaterhouseCoopers' Cities of Opportunity ranking.

Mercer's ranking, established by Mercer Human Resource Consulting, has offices in 145 cities and 41 country around the globe. Mercer's Quality of Living City Reports are released annually. According to the information provided on the company's official website, the following are some of the factors considered in the quality of living rankings and used to compare more than 500 cities worldwide: 1) recreation; 2) public services and transport; 3) socio-cultural environment; 4) schools and education; 5) medical and health considerations; 6)

[17]A Roadmap for Agglomeration Development in the Russian Federation // Official Website of the Ministry of Economic Development of the Russian Federation. URL: http://old.economy.gov.ru/minec/activity/sections/planning/wg/dk

political and social environment; 7) natural environment; 8) housing; 9) economic environment; and 10) consumer goods18.

International organizations and government agencies use these data to plan and assess the quality of life in these or those regions around the world. The following ten cities topped Mercer's Ranking in 2019: Vienna (Austria), Zurich (Switzerland), Vancouver (Canada), Munich (Germany), Auckland (New Zealand), Düsseldorf (Germany), Frankfurt (Germany), Copenhagen (Denmark), Geneva (Switzerland) and Basel (Switzerland). Russia is represented by Moscow and St. Petersburg, ranking 167th and 174th respectively.

PricewaterhouseCoopers (PWC) is a consulting company publishing regular Cities of Opportunity Reports showing rankings of the world's most attractive cities. The study comprises 30 cities based on their economic strengths, adaptation flexibility and quality of life. Four Swiss cities (Zurich, Bern, Basel and Geneva) entered the ranking for the first time in 2019, the number of cities under review thus totaling 34. Interestingly, all of these Swiss cities showed very good results at the global level. The PricewateerhouseCoopers' Cities of Opportunity Ranking compares factors such as technological opportunities, intellectual capital, business environment and cost of life. London topped the ranking for the second consecutive time, Singapore and Toronto are also in top three, and Moscow ranked 22nd.19

4. INNOVATIVE AGGLOMERATION DEVELOPMENT

The development of agglomerations as advanced development zones is one of the major driving forces behind technology leapfrogging at meso- and macro-economic levels. Interestingly, it was Adna Ferrin Weber that introduced the term 'agglomeration' into economic sciences in her study The Growth of Cities in the Nineteenth Century. According to her, among the drivers of urban population growth are technical progress, territorial division of labor and others.20Consequently, the emergence of agglomerations has been, from the very beginning, related to scientific, technological and innovative trends.

The following are some of the factors behind innovative agglomeration development: increased interaction between market players and the development of innovative infrastructure, information technologies and distribution and logistics systems. Over time, these factors result in the reverse process characterized by the diffusion of innovations, distributed initially in the economic area of agglomerations. Innovative mass-market products, activities and services are the most appropriate for agglomerations. In this case, the diffusion of innovations has chances to take place quickly.

International innovation-focused rankings are a global tool used to make comprehensive assessments of the innovative potential of countries. Among the

[18]Quality of Living City Ranking. 2019 QUALITY OF LIVING RANKING What Factors Determine Quality of Living? [Online].URL: https://mobilityexchange.mercer.com/Insights/quality-of-living-rankings

[19]London i Singapur vozglavili reyting gorodov vozmozhnostey (London and Singapore topped the Cities of Opportunity ranking) // CentralAsiaMonitorURL: https://camonitor.kz/25361-london-i-singapur-vozglavili-reyting-gorodov-vozmozhnostey.html

[20]Weber, A. F. Rost gorodov v 19 stoletii (The Growth of cities in the nineteenth century) / Trans. from English by A. N. Kotelnikova. St. Petersburg: E. D. Kuskova Publishing House, 1903, 464 p.

best-known global tools for a comparative analysis of the innovative development of countries are the following:

1. Global Innovation Index (GII), calculated by analysts from the INSEAD Business School (Lausanne, Switzerland);

2. European Innovation Scoreboard (EIS), provides a comparative analysis of innovation performance in the EU countries, other European countries and neighboring regions;21

3. Knowledge Assessment Methodology (KAM), helps countries assess their capacity for knowledge production, reception and distribution and their readiness for transition to knowledge-based development model.

Table 3 shows the Global Innovation Index's metrics about the innovation performance of top ten countries over a five-year period. Switzerland remains an undisputed leader in innovations and other competing countries move up and down between the 2nd and 10th positions. Remaining at the 43rd-to-48th position, Russia lags far behind the leading countries.

Table 3. Global Innovation Index of top ten countries and Russia between 2015 and 201922

Ranking	GII-2015	GII-2016	GII-2017	GII-2018	GII-2019
1	Switzerland 68.30	Switzerland 66.28	Switzerland 67.69	Switzerland 68.40	Switzerland 67.24
2	Great Britain 62.42	Sweden 63.57	Sweden 63.82	Netherlands 63.32	Sweden 63.65
3	Sweden 62.40	Great Britain 61.93	Netherlands 63.36	Sweden 63.08	USA 61.73
4	Netherlands 61.58	USA 61.40	USA 61.40	Great Britain 60.13	Netherlands 61.44
5	USA 60.10	Finland 59.90	Great Britain 60.89	Singapore 59.83	Great Britain 61.30
6	Finland 59.97	Singapore 59.16	Denmark 58.70	USA 59.81	Finland 59.83
7	Singapore 59.36	Ireland 59.03	Singapore 58.69	Finland 59.63	Denmark 58.44
8	Ireland 59.13	Denmark 58.45	Finland 58.49	Denmark 58.39	Singapore 58.37
9	Luxembourg 59.02	Netherlands 58.29	Germany 58.39	Germany 58.03	Germany 58.19
10	Denmark 57.70	Germany 57.94	Israel 58.13	Ireland 57.19	Israel 57.43

[21] European innovation scoreboard. Internal Market, Industry, Entrepreneurship and SMEs. URL: https://ec.europa.eu/growth/industry/policy/innovation/scoreboards_en

[22] The Global Innovation Index 2019: Creating Healthy Lives—The Future of Medical Innovation. The Global Innovation Index 2017.Innovation Feeding the World. The Global Innovation Index 2016. Winning with Global Innovation. The Global Innovation Index 2015 Effective Innovation Policies for Development. URL: https:--www.wipo.int-publications-en-details.jsp?id=4434

43-48	Russia (48) 39.32	Russia (43) 38.50	Russia (45) 38.76	Russia (46) 37.90	Russia (46) 37.62

Source: The Global Innovation Index 2019: Creating Healthy Lives—The Future of Medical Innovation. The Global Innovation Index 2017.Innovation Feeding the World. The Global Innovation Index 2016. Winning with Global Innovation. The Global Innovation Index 2015 Effective Innovation Policies for Development. URL: https:--www.wipo.int-publications-en-details.jsp?id=4434

PricewaterhouseCoopers (PwC) is an international network of companies that assesses the innovation performance of the world's largest agglomerations using benchmarks such as the technology penetration rate, workforce productivity, intellectual capital/educational background and creative industries development.In the so-called Creative Industries Mapping Document, the UK's Department for Digital, Culture, Media and Sport in 1998 offered a definition of creative industries, used today by most urban development specialists:"Creative industries have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property".23

PricewaterhouseCoopers has been publishing the Creative Capital Index Reports since 2016 and in collaboration with the Calvert 22 Foundation, a British non-profit charity foundation. This initiative was undertaken in response to the growing importance of creativity as a special tool of economic growth.24 Experts from PwC and Calvert 22 elaborated an assessment methodology based on both objective/statistical data and subjective data (surveys of creative specialists). The creative capital index is divided into five groups representing these creative areas: people, city, government, business and brands. This approach makes city creativity assessment as objective as possible.

The main purpose of the Creative Capital Index is to assess and compare the potential of the world's most dynamic cities in terms of their prospects for economic upgrading and investment attractiveness. This Index assesses the creative capital indicators of 15 Russian cities (Voronezh, Veliky Novgorod, Vladivostok, Yekaterinburg, Kazan, Kaliningrad, Krasnodar, Moscow, Nizhny Novgorod, Novosibirsk, Omsk, Perm, Saint-Petersburg, Tyumen and Ufa) and those of 7 big cities around the world (Berlin, Hong Kong, New York, London, Seoul, Sydney and Helsinki).

Table 4. Creative capital indicators of the world's biggest cities in 2018 (mean scores)

	Moscow	Berlin	London	Helsinki	New York	Hong Kong	Seoul	Sydney
Final Index	**50**	**70**	**70**	**65**	**72**	**53**	**54**	**62**
City	50	74	74	73	71	58	63	73
People	46	58	59	57	65	49	40	55

[23]Kreativnye industrii: ekonomicheskaya tsennost i kulturnoe soderzhanie (Creative industries: A creative value and cultural content). EventLIVE. URL: https://event-live.ru/articles/mnenie/mnenie-1_529.html
[24] Issledovanie PricewaterhouseCoopers (The PricewaterhouseCoopers Study). URL: https://www.pwc.ru/ru/publications/creative-capital-index.html

Business	50	64	61	63	53	32	37	36
Government	48	79	82	64	93	68	73	79
Brands	57	79	83	67	88	61	62	66

Source: PricewaterhouseCoopers. URL: *https://www.pwc.ru/ru/publications/creative-capital-index.html*

The creative sector of Moscow's economy shows an annual growth of 22% whereas Moscow's total economy increases by 20% only. This indicator is one of the best among the cities under investigation. The main driving forces behind this growth are the spheres of digital technology, culture, are, design and architecture.

As of now, Berlin's creative sector amounts to 8.5% of the city's total economy, second only to London and New York. The Hong Kong government promotes the development of creative industries with a view to making Hong Kong the creative capital of Asia. Create Hong Kong is an office set up in 2009 with this objective in mind. Today, digital technologies form the basis of Seoul's creative economy, with 50% of the total size of the creative sector, followed by the media (29%), design and architecture (19%).

The spatial organization of the EU and US innovation systems has distinctive features and mechanisms. Specifically, the process of integration of national economies continues in the EU, which is associated with cultural, language, bureaucratic and other barriers, and a common national market is at the disposal of the USA. The sources of external agglomeration effects are implemented through a) sharing mechanisms, b) matching mechanisms and c) learning mechanisms. The latter are the sources of external diversification effects.25

The research study on the territorial dynamics of innovation carried out by Crescenzi et al (2007)26 highlighted a number of specific features of the US and EU innovation systems. The USA shows a relatively higher stability of innovation-related geographical spread related to the fact that, in the USA, the generation of knowledge flows and innovations occurs, as a rule, in more or less specific areas whereas interregional interactions and, to a certain extent, their equal distribution prevail in Europe. Researchers put forward the hypothesis that three potential factors, namely distance between innovation centers, composition of investment in research and development and workforce mobility, may stand behind the differences between the USA and Europe in terms of the impact of introduced innovative resources on innovative outputs. In particular, in the USA, the radius of influence of an agglomeration on the surrounding area usually does not exceed 80 to 110 km (Varga, 200027; Acs, 200228) whereas, in Europe, it is

[25]Vorobyev, P. V., Davidson, N. B., Kislyak, N. V., Kuznetsov, P. D. Raznoobrazie i kontsentratsiya otrasley kak faktory ekonomicheskoy aktivnosti (The variety and concentration of industries as economic factors) // Vestnik UrFU. Seriya i upravlleniye. 2014, No. 6, pp. 4-18.

[26] Crescenzi, Riccardo, Rodriguez-Pose, Andres and Storper, Michael (2007) The territorial dynamics of innovation: a Europe-United States comparative analysis. Journal of economic geography, 7 (6). pp. 673-709. ISSN 1468-2702 DOI: 10.1093/ieg/lbm030 © 2007 This version available at: http://eprints.lse.ac.uk/23328/

[27] Varga A. (2000) Local academic knowledge spillovers and the concentration of economic activity, Journal of Regional Science 40, 289–309.

[28] Acs, Z.J. (2002) Innovation and the Growth of Cities, Northampton: Edward Elgar Publishing.

about 180 minutes or 200 to 300 km (Greunz, 200329; Bottazzi and Peri, 200330; Rodriguez-Pose and Crescenzi, 200831). These space-time limitations are due more to communication models and proximity in time rather than to migrations.

The study by Gordon and McCann (2005) provides an excellent illustration of the London agglomeration's impact on innovation.32 Empirical data revealed that innovations are dispersed throughout interior regions rather than being limited to the city center. As an example, research institutions are located in the agglomeration's western part, also densely inhabited by highly qualified specialists.The observations revealed that innovations in the urban environment are related to the early stages of the product life cycle and are more connected to major, well-established companies rather than new ones. The innovation strengths of the urban landscape can likely be explained in terms of the agglomeration effect, although factual data point to the impact of urbanization and not to the localization effect. The innovation behavior in London seems to have little in common with the strong local inter-business connections.

Of great interest is the explosive growth of China's innovation potential. More than 80% of all patent applications in China come from densely populated provinces or the municipalities of Guangdong, Beijing, Shanghai, Jiangsu and Zhejiang (Rodríguez-Pose and Callum Wilkie, 2016).33Between 1991 and 2014, two main innovation centers emerged in Shanghai – the Hongkou-Yangpou District centered around Wujiaochang and the Changning-Xuhui District centered around Xujiahui, Caohejing and Hongkiao. The spatial structure of Shanghai's innovative activities emerged in the city center, gradually comprising innovation-focused industries in other districts, shifting from east to south in 1991-2014, which resulted in a decrease in innovative activities in the older districts. At the time, the developing highway network between research organizations, innovation parks and enterprises accelerated the agglomeration effect that manifested itself in the expansion of innovation-based production(Duan et at., 2015).34

The Beijing innovative agglomeration emerged around the city center. The University of Beijing, the Tsinghua University, Renmin University of China, Beijing Jiao Tong University and other universities along with the Zhong Guan Cun Technoloogy and Research Centre, located in the northwestern part of Beijing became the kernel of the city's innovation-based production. Innovative activities that kept growing between 1996 and 2010 in Beijing's suburbs showed

[29] Greunz, L. (2003) Geographically and technologically mediated knowledge spillovers between European regions. Annals of Regional Science 37: 657–680.
[30] Bottazzi, L. and Peri, G. (2003) Innovation and spillovers in regions: evidence from European patent data. European Economic Review 47: 687–710.
[31] Rodriguez-Pose, A. and Crescenzi, R. (2008) R&D, spillovers, innovation systems and the genesis of regional growth in Europe. Regional Studies 42(1): 51–67.
[32] Ian R. Gordon and Philip McCann ournal of Economic Geography5(2005) pp. 523–543 Advance Access published on 10 May 2005 DOI: 10.1093/jeg/lbh072
[33] Andrés Rodríguez-Pose, Callum Wilkie, Putting China in perspective: a comparative exploration of the ascent of the Chinese knowledge economy, *Cambridge Journal of Regions, Economy and Society*, Volume 9, Issue 3, November 2016, Pages 479–497, https://doi.org/10.1093/cjres/rsw018
[34]Duan Dezhong, Du Debin, Liu Chengliang. Spatial-temporal evolution mode of urban innovation spatial structure: A case study of Shanghai and Beijing[J]. 地理学报, 2015, 70(12): 1911-1925 https://doi.org/10.11821/dlxb201512005http://www.geog.com.cn/article/2015/0375-5444/0375-5444-70-12-1911.shtml

a decrease between 2010 and 2014. Thus, Beijing's innovative production remains a single core center grouped mostly around universities and the technology hub and the scope of innovative activities does not go beyond the local urban agglomeration.

Regions, or federal subjects, are the territorial areas of innovation development in Russia because, according to the Constitution of the Russian Federation, they are bearers of public authority. At the same time, other organizational forms of innovation activities from the territorial viewpoint are needed to enhance innovation processes. Currently, State-controlled technological development zones, innovation clusters and special economic zones, among others, prevail in the Russian economy today. Randomly emerging urban agglomerations give an example of market self-regulation in which the State participates to a lesser degree. The innovative development of agglomerations may be seen as an unused innovation growth resource that does not, however, destroy the existing territorial administration system.

In the context of Russia's innovation development, agglomerations define the real boundaries of territories within which the regional research and development segments are localized. Notably, such segments can go beyond the boundaries of a specific region. The highest innovative activity is generated in the center, or kernel, of an urban agglomeration due to economic concentration. Among factors behind the agglomeration's innovative development are increased interaction between market players, the development of innovative infrastructure and information technologies, distribution and logistics systems. Over time, these factors result in the reverse process characterized by the diffusion of innovations, distributed initially in the economic area of agglomerations. Innovative mass-market products, activities and services are the most appropriate for agglomerations. In this case, the diffusion of innovations has chances to take place quickly.

As far as municipalities are concerned, they are territories in which competitiveness is created for the sake of the entire population rather than independent business entities functioning to their own advantage. As innovative activities expand, competition can involve urban agglomerations too. A view was expressed that only research centers and innovation-producing cities can compete.35

Table 5 shows Russia's ten largest agglomerations and related federal subjects based on innovation activity and fiscal capacity indicators.

Table 5. Innovative activity of Russia's largest agglomerations in 2018

Position	**Agglomeration**	**Federal entity belonging to this agglomeration**	**Fiscal capacity after distribution of subsidies for 2016, %**	**Federal entity's innovation activity indicator for 2016**	
				Output of innovative products,	*Innovation-producing organization*

[35]Menshchikova, V. I. Rybina, O. A. Regionalny segment natsionalnoy innovatsionnoy sistemy: osnovnye elementy (The regional segment of the national innovation system: Key elements) // Sotsialno-ekonomicheskie yavleniya i protsessy. Problemy sotsialno-ekonomicheskogo razvitiya regionov: Materialy mezhdun. nauch.-praktich. konf. 10-12 November, 2010, No. 6(022). Tambov: Izd-vo TROO "Nauka. Biznes. Obshchestvo", 2010, pp. 141-145.

				works and services, %[*)]	*s, %*[**)]
1.	Moscow	City of Moscow	264.8	3.0	14.3
		Moscow Oblast	121.1	13.2	8.9
2.	St. Petersburg	City of St. Petersburg	182.4	9.9	16.1
		Leningrad Oblast	154.6	2.7	9.3
3.	Samara and Togliatti	Samara Oblast	108.8	13.5	4.3
4.	Yekaterinburg	Sverdlovsk Oblast	104.6	6.9	9.6
5.	Rostov	Rostov Oblast	75.0	5.8	8.2
6.	Nizhny Novgorod	Nizhny Novgorod Oblast	92.5	15.7	11.1
7.	Novosibirsk	Novosibirsk Oblast	86.0	6.1	7.5
8.	Kazan	Republic of Tatarstan	116.8	20.9	21.3
9.	Chelyabinsk	Chelyabinsk Oblast	81.2	6.2	22.2
10.	Volgograd	Volgograd Oblast	76.2	2.2	4.6
Russia's national average			100	6.5	7.5

[*)]Output of innovative products, works and services (as a percentage of the overall volume of dispatched products and performed works and services).
[**)]Innovative activity of organizations (the share of organizations implementing technological, organizational and marketing innovations among all examined organizations, in %), data for 2017.
Source: Rosstat (Russia's Federal Service for State Statistics) URL: http://www.gks.ru/bgd/regl/b17_14p/Main.htm;Russia's Ministry of Finance URL:https://www.minfin.ru/ru/

The rates obtained lead to the conclusion that there is no connection between the spread of innovation production, the territorial extent of agglomerations and the corresponding regions' fiscal capacity. This fact challenges the view, prevailing among researchers and experts, that one of the main reasons behind innovation-related retardation is the lack of financial resources necessary for the implementation of innovative projects and programs. The St. Petersburg agglomeration (Leningrad Oblast) whose fiscal capacity was 154.6% in 2018 against 2.7% of the innovative production volume is a good example of such

inconsistencies. On the contrary, the Nizhny Novgorod agglomeration (Novgorod Oblast) showed better results in the innovations field (15.7%) despite a lower fiscal capacity (92.5%).

The ranking of federal subjects by output of innovations (Table 6) confirms the lack of connections between the size of territories, extent of funding and innovative activities. The top ten innovation-oriented territories are not necessarily those with an appropriate level of fiscal capacity. Interestingly, the Moscow Oblast ranks eighth although it has the highest fiscal capacity of all regions under investigation.

Table 6. Top 10 Russian regions by output of innovative products, works and services in 2018

Position	**Federal entity**	**Output of innovative products, works and services, %**	**Fiscal capacity after distribution of subsidies for 2016, %**	**Urban agglomeration corresponding to the federal entity**	**Population of the urban agglomeration, in mln of residents**
1.	Republic of Mordovia	24.3	79.9	Saransk	0.6
2.	Khabarovsk Krai	21.3	79.0	Khabarovsk	0.67
3.	Republic of Tatarstan	20.9	116.8	Kazan	1.5-1.6
4.	Perm Krai	18.4	93.7	Perm	1.1
5.	Nizhny Novgorod Oblast	15.7	92.5	Nizhny Novgorod	2.3
6.	Belgorod Oblast	14.9	84.1	Belgorod	0.6
7.	Samara Oblast	13.5	108.8	Samara and Togliatti	2.4
8.	Moscow Oblast	13.2	121.1	Moscow	17.2
9.	Yaroslavl Oblast	12.8	99.6	Yaroslavl	0.75
10	Republic of Udmurtia	12.6	81.5	Izhevsk (Southern part of the Republic of Udmurtia)	0.7

Sources: Rosstat URL: http://www.gks.ru/bgd/regl/b17_14p/Main.htm;
Cities of Russia URL: http://statinformation.ru/nasgor/saranagl.html

Another notable trend is the lack of correlation between socio-economic and innovation development levels. Let us consider the positions of a number of regions in two 2018 rankings (Table 7):

1) Socio-Economic Situation of the Federal Subjects of Russia Ranking, published by RIA Rating, a Russian analytical agency;36 and
2) Innovative Regions of Russia Ranking, published by the Association of Innovative Regions of Russia (ASI).37

Table 7. Positions of leading regions and rank outsiders in the socio-economic ranking (RIA Rating) and the Innovative Regions of Russia Ranking (ASI) in 2018

No	Regions	Ranking position	
		RIA	ASI
Leading regions/agglomerations			
1	Moscow (Moscow agglomeration)	1	3
2	St. Petersburg (St. Petersburg agglomeration)	2	1
3	Khanty-Mansi Autonomous Okrug - Yugra	3	54
4	Moscow Oblast (Moscow agglomeration)	4	5
5	Republic of Tatarstan (Kazan agglomeration)	5	2
6	Yamalo-Nenets Autonomous Okrug	6	70
7	Sverdslovsk Oblast (Yekaterinburg agglomeration)	7	14
8	Tyumen Oblast (Tyumen agglomeration)	8	11
9	Krasnodar Krai (Krasnodar agglomeration)	9	20
10	Leningrad Oblast (St. Petersburg agglomeration)	10	36

Sources: Socio-Economic Situation of Russian Regions Ranking (2019). URL: https://riarating.ru/infografika/20190604/630126280.html; Innovation-Focused Regions of Russia Ranking (2018). URL: http://i-regions.org/reiting/rejting-innovatsionnogo-razvitiya

As seen in Table 7, the socio-economic situation is about the same as the innovation development level in the the federal cities of Moscow and St. Petersburg, Moscow Oblast and the Republic of Tatarstan. The remaining regions demonstrate a marked discrepancy between positions in the socio-economic and innovation rankings.

The Moscow agglomeration centered around Moscow City deserves special mention. The capital regions is far ahead of all other federal subjects of Russia in terms of fiscal capacity (264.8%). However, the positions of Moscow City as a federal subject and an agglomeration kernel are not absolute, though high, in these or those rankings.

Moscow authorities take active measures to devise and develop an innovative system, having at their disposal the fiscal capacity that far exceeds all other federal subjects, which obliges Moscow to be an absolute leader. This does not

[36]Reyting sotsialno-ekonomicheskogo polozhenia regionov (Socio-Economic Situation of Russian Regions Ranking) 2019. URL: https://riarating.ru/infografika/20190604/630126280.html
[37]Reyting innovatsionnykh regionov Rossii (Innovation-Focused Regions of Russia Ranking) 2018. URL: http://i-regions.org/reiting/rejting-innovatsionnogo-razvitiya

happen in practice, though. One of the possible reasons behind this is the economic policy's social orientation aimed at maintaining the territorial brand and Moscow's capital city image through urban land improvement and creation of capital-intensive infrastructure facilities.

CONCLUSIONS AND RECOMMENDATIONS

Our review of international development revealed that innovation activitiesconcentrate around specific innovation centers and interactions between them (the European Union), develop locally or comprise the country's entire economic space (the USA) or focus in specific agglomerations (China). Due to the proximity of innovation centers, European regions rely on the neighboring regions' innovative resources as a source of innovations and, consequently, work on expanding interregional cooperation. In the USA, innovations are, as a rule, generated in relatively autonomous geographical regions that rely on their own research resources and maximize the circulation of knowledge within national borders. Therefore, the USA develop specialized innovations whereas Europe witnesses the duplication of their high-priority areas resulting from the ongoing integration process and the emergence of communication barriers peculiar to such a multinational community.

Consequently, the US innovation model aims at bringing highly qualified specialists to autonomous agglomerations to implement innovative activities there whereas the EU model focuses on the interaction between agglomerations during the development and implementation of innovations. Importantly, the mobility of human capital and the specialization and interactions between agglomerations have a different impact on innovations in the USA and in Europe.

The innovative development of Chinese agglomerations is related less to investment in knowledge generation or the Chinese provinces' socio-economic background than to external factors resulting from the joint placement and concentration of economic resources in a small area of well-connected innovation centers. Overall, our analysis of the development of Beijing and Shanghai agglomerations reveals, on one hand, the shrinking and expansion of the innovation space to the periphery in the former case and its contraction into an urban agglomeration in the latter case.

The Russian economy enters a new phase of economic development characterized mainly by the focus on innovation in all spheres of social life, specifically, in the production sector. Transformations taking place in the world economy substantiate the need for a constant implementation of forward-looking scientific and technical advances into economic activities aimed at improving productivity and competitiveness.

Russia's federative structure gives priority to the socio-economic development at regional and municipal levels. This demonstrates the combination of the active involvement strategy and decentralized management, peculiar to the economic policy of the State interested in fostering economic growth and improving the population's prosperity. Under the circumstances, the State pays considerable attention to the establishment of a comprehensive national innovation-focused system, which is essential in the development of sustainable innovation.

Currently, the development of Russian agglomerations is tightly related to the urbanization process. The constant growth of the large cities' territories led to the erratic emergence and expansion of agglomeration areas. Up till now, Russian agglomeration territories have developed in an uncontrolled manner, hence a tendency to draw economic resources into the most developed regions. The resulting unequal distribution of the innovative potential in the federal districts has led to an unbalanced socio-economic development.

The adoption of the Spatial Development Strategy of the Russian Federationprovides favorable conditions for implementing organizational, legal and institutional measures necessary for a coherent and speedy development of agglomerations as a basic prerequisite for the development of the postindustrial economy in Russia in the medium-term perspective. To remove restrictions and correct the imbalances in the evolution of existing Russian agglomerations, it is necessary, above all, to position agglomerations as development actors and to identify their place in the public strategic management systems.
The main obstacle to the development of agglomerated territories in Russia is the State's lack of a unified rights-based approach to this sphere's formation and development. A number of essential requirements are necessary to develop urban agglomerations in Russia:

1. Identification of agglomeration development benchmarks that should be consistent with the federal priorities for developing the national economy;
2. Consideration of agglomerations as territorial entities;
3. Balance between agglomeration effects and the current system for the regional administration of socio-economic developments;
4. Regard for local socio-economic, climatic, cultural and other specificities; and
5. Rosstat's statistical record keeping of agglomerations.

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