HIGHER SCHOOL OF ECONOMICS
NATIONAL RESEARCH UNIVERSITY

INSTITUTE FOR STATISTICAL STUDIES
AND ECONOMICS OF KNOWLEDGE

RUSSIAN CLUSTER OBSERVATORY

RUSSIAN REGIONAL INNOVATION SCOREBOARD

ISSUE 6

HIGHER SCHOOL OF ECONOMICS
NATIONAL RESEARCH UNIVERSITY

INSTITUTE FOR STATISTICAL STUDIES
AND ECONOMICS OF KNOWLEDGE

RUSSIAN CLUSTER OBSERVATORY

RUSSIAN REGIONAL INNOVATION SCOREBOARD

ISSUE 6

MOSCOW 2020

Editor
Leonid Gokhberg

Authors:
Gulnara Abdrakhmanova, Sergey Artemov, Pavel Bakhtin, Dinara Borodina, Sergey Bredikhin, Kirill Ditkovsky, Svetlana Fridlyanova, Konstantin Fursov, Mikhail Gershman, Leonid Gokhberg, Ekaterina Islankina, Elena Kashinova, Elena Khabirova, Galina Kovaleva, Natalia Kovaleva, Maxim Kotsemir, Evgeniy Kutsenko, Gleb Kuzmin, Ilya Kuzminov, Irina Kuznetsova, Vera Kuznetsova, Denis Martynov, Svetlana Martynova, Elena Nechaeva, Elena Popova, Tatyana Ratay, Galina Sagieva, Ekaterina Streltsova, Anton Timofeev, and Valeriya Vlasova

Russian Regional Innovation Scoreboard. Issue 6 / G. Abdrakhmanova, S. Artemov, P. Bakhtin et al.; L. Gokhberg (ed.); National Research University Higher School of Economics. – Moscow: HSE, 2020.

The Issue 6 prepared by the HSE Institute for Statistical Studies and Economics of Knowledge as part of Russian Cluster Observatory activities is dedicated to the assessment of innovation development of Russian regions on the basis of ranking scores.

The study is based on an indicator system describing socio-economic conditions for innovation, science and technology potential, level of export and innovative activities, quality of innovation policy. Applied indicators meet Russian and international statistical standards, methodological approaches conform to the practice of calculating regional innovation indices and forming corresponding rankings under the auspices of the European Commission and other international organisations.

In addition to ranking scores of innovation development of Russian regions, this publication presents the results of Future Preparedness Ranking of Russian regions, assessing the quality of regional strategic management.

This publication was produced in the framework of the National Research University Higher School of Economics' (HSE) Basic Research Programme and supported by a subsidy provided in the scope of the Russian Academic Excellence Project '5-100'.

Table of Contents

List of Tables and Figures

Introduction

Since 2012, the National Research University Higher School of Economics Institute for Statistical Studies and Economics of Knowledge (HSE ISSEK) has been regularly publishing the Russian Regional Innovation Scoreboard. The previous five issues presented indices for 2008, 2010, 2012, 2013, 2014, and 2015.[1]

The ranking is based on a special system of quantitative and qualitative regional innovation development indicators which represent the results of extensive HSE ISSEK's research and match the current statistical standards applied both in Russian state statistics and by leading countries and international organisations (such as the OECD, Eurostat, etc.).[2] It also includes indicators applied in a similar ranking published by the European Commission (Regional Innovation Scoreboard).[3]

Due to the lack of information on the subject, this series of analytical publications was produced to describe the current state and dynamics of innovation processes in Russian regions. The authors' intention was to create a multi-level hierarchical system of indicators grouped into five thematic blocks, which, in turn, have been broken down into a number of specific headings. Apart from ranking the regions by the integrated Russian Regional Innovation Index, it enables to benchmark their positions in certain areas using the aforementioned thematic indicators.

This is the sixth issue of the Russian Regional Innovation Scoreboard, presenting calculations based on the results of the regions' performance in 2017. The report has two sections. The first section analyses the current state of Russian regions' innovation development with the help of an updated indicator system and describes the main changes. It presents a detailed description of the final ranking results, along with key elements of regions' innovation development, such as ***Socio-Economic Conditions for Innovation, S&T Potential, Innovative Activity, Export Activity*** (a new block), and ***Quality of Regional Innovation Policy***, each with specific sub-rankings.

As in the previous issue, this report includes a regional Future Preparedness Index. It is calculated to assess how the science, technology, and innovation development agenda contributes to policy development and current activities of Russian regional authorities.

The regional innovation development and Future Preparedness Index algorithms are disclosed with comprehensive methodological comments on the indicators used.

The second section offers an innovation profile for each Russian region and provides an integrated assessment of its position in innovation development ranking based on all indicators.

The achieved results will provide federal and regional authorities responsible for innovation policy decision-making with the necessary information that they currently lack, the companies will gain a better understanding of regional characteristics when launching their business projects, and the public will acquire a tool for assessing regional authorities' performance.

---

[1] HSE ISSEK Russian Regional Innovation Scoreboard: https://issek.hse.ru/rir/ (last accessed on: 18.06.2019).

[2] Methodological basics of science and innovation statistics, key concepts, and indicators are presented in the special terminology dictionary: Gokhberg L.M. (Editor) (2012) Economics of Knowledge in Statistical Terms: Science, Technology, Innovation, Education, Information Society. M.: Ekonomika.

[3] European Commission (2019) Regional Innovation Scoreboard 2019. https://ec.europa.eu/growth/sites/growth/files/ris2019.pdf (last accessed on: 18.06.2019).

List of Acronyms

BBIA – Broadband Internet Access

CSDB – Central Statistical Database (Rosstat)

EAI – Export Activity Index

Eurostat – Statistical Office of the European Union

FPI – Future Preparedness Index

GDP – Gross Domestic Product

GISIP – Geoinformation System of Industrial Parks, Technology Parks, and Clusters of the Russian Federation

GRP – Gross Regional Product

HSE – National Research University Higher School of Economics

IAI – Innovation Activity Index

ICT – Information and Communication Technologies

ISSEK – HSE Institute for Statistical Studies and Economics of Knowledge

NACE – Nomenclature Générale des Activitiés Économiques dans les Communautés Européennes / Statistical Classification of Economic Activities in the European Community

OECD – Organisation for Economic Co-operation and Development

OKVED2 – All-Russian Classification of Economic Activities OK 029-2014 (NACE Rev. 2)

QIPI – Quality of Innovation Policy Index

Rospatent – Federal Service for Intellectual Property

Rosstat – Federal State Statistics Service

RRII – Russian Regional Innovation Index

RSCI – Russian Science Citation Index

R&D – Research and Development

SECI – Socio-Economic Conditions for Innovation Index

SME – Small and Medium Enterprises

STEM – Science, Technology, Engineering, Mathematics

STI – Science, Technology and Innovation

STPI – S&T Potential Index

UnISIS – Unified Interdepartmental Statistical Information System[4]

[4] Professions and skill areas included in the STEM group for the purposes of this study: mathematics and natural sciences, engineering, technology and engineering sciences, and basic medicine (higher education programmes only).

Abbreviated Names of Russian Regions

Adyg – Republic of Adygea
AltK – Altai Region
AltR – Altai Republic
Amur – Amur Region
Arch – Arkhangelsk Region
Ast – Astrakhan Region
Bash – Republic of Bashkortostan
Bel – Belgorod Region
Bryan – Bryansk Region
Bur – Republic of Buryatia
Chech – Chechen Republic
Chel – Chelyabinsk Region
Chuk – Chukotka Autonomous Region
Chuv – Chuvash Republic
Crimea – Republic of Crimea
Dag – Republic of Dagestan
Ing – Republic of Ingushetia
Irk – Irkutsk Region
Iva – Ivanovo Region
JAR – Jewish Autonomous Region
Kalm – Republic of Kalmykia
Kam – Kamchatka Region
Kare – Republic of Karelia
KBR – Kabardia-Balkar Republic
KCR – Karachay-Cherkess Republic
Kem – Kemerovo Region
Khab – Khabarovsk Region
Khak – Republic of Khakassia
Kir – Kirov Region
Klg – Kaluga Region
Kln – Kaliningrad Region
KMAR – Khanty-Mansi Autonomous Region – Yugra
Komi – Komi Republic
Kost – Kostroma Region
Krnd – Krasnodar Region
Krsn – Krasnoyarsk Region
Kurg – Kurgan Region
Kurs – Kursk Region
Len – Leningrad Region
Lip – Lipetsk Region
Mag – Magadan Region
Mari – Mari El Republic
Mosr – Moscow Region
Mrd – Republic of Mordovia
Msc – Moscow
Murm – Murmansk Region
NAR – Nenets Autonomous Region
Nizh – Nizhny Novgorod Region
Novgr – Novgorod Region
Nvs – Novosibirsk Region
Omsk – Omsk Region
Orel – Orel Region
Oren – Orenburg Region
Osset – Republic of North Ossetia – Alania
Penz – Penza Region
Perm – Perm Region
Prim – Primorsky Region
Rost – Rostov Region
Psk – Pskov Region
Ryaz – Ryazan Region
Sam – Samara Region
Sakha – Republic of Sakha (Yakutia)
Sar – Saratov Region
Sev – Sevastopol
Skln – Sakhalin Region
Smol – Smolensk Region
SPb – Saint Petersburg
Stav – Stavropol Region
Sver – Sverdlovsk Region
Tamb – Tambov Region
Tat – Republic of Tatarstan
Tom – Tomsk Region
Tul – Tula Region
Tuva – Republic of Tuva
Tver – Tver Region
Tyum – Tyumen Region
Udm – Udmurt Republic
Uln – Ulyanovsk Region
Vla – Vladimir Region
Vlgd – Vologda Region
Volg – Volgograd Region
Vrn – Voronezh Region
YNAR – Yamalo-Nenets Autonomous Region
Yaros – Yaroslavl Region
Zab – Trans-Baikal Region

SECTION I.

INNOVATION DEVELOPMENT OF RUSSIAN REGIONS

1.

REGIONAL INNOVATION SCOREBOARD INDICATORS: KEY CHANGES

The rapid development of science and technology, the global competition for ideas and ways to apply them in practice have been shaping the world's leading countries' economic policy agenda for years. It is focused on promoting entrepreneurial initiative, attracting private investment in breakthrough technological areas, and increasing high-tech exports. Under these circumstances, promoting innovation and a knowledge-based economy becomes the only viable social development scenario for Russia. The country's regional diversity opens wide opportunities to implement promising innovation strategies in each Russian region, based on competencies and knowledge of the community about its region's potential, available technologies, and occupied market niches. The region's and investment attractiveness, the prospects of increasing employment and improving living standards are directly related to these aspects. However, successful accomplishment of these objectives largely depends upon the quality and availability of data on the current state and dynamics of innovative processes in the regions.

Innovation is a broad concept, not always directly amenable to positive analysis. If we want to build a complete picture of a region's affairs, and more importantly, design ways to further promote its innovation, listing relevant public initiatives or counting the number of companies, which view themselves as innovative ones, is insufficient. We need to identify the strengths and weaknesses of each region, uncover the factors contributing to, or, conversely, hindering, the implementation of the innovation development scenario. Sound evidence-based information is essential for proper assessment of authorities' performance with respect to regional features.

The National Research University Higher School of Economics has been preparing the Russian Regional Innovation Scoreboard for several years. It is a professional analytical product, which provides a knowledge database for substantiating regional science, technology, and innovation policies. The sixth issue of the ranking is based on 53 indicators, which combination with a transparent calculation methodology and open source data, not only enables to benchmark Russian regions in terms of their overall innovative development, but also juxtaposes them by basic parameters, such as digitisation potential, quality of human capital, S&T potential, companies' innovative activity, export of knowledge, goods, and services, and the quality of regional policy in sectors under consideration. The structure of the indicators is shown in Figure 1.1.

First and foremost, the ranking is useful for its individual profiles of all 85 Russian regions with a detailed depiction of their results for all indicators of innovation development and features of innovation system. Thus, the Scoreboard can be used a tool for the comprehensive monitoring of regional authorities' activities and a more accurate distribution of federal support instruments.

Apart from new ways for updating the data, this issue presents an original set of indicators and a calculation methodology. The main changes in the structure of indicators were largely dictated by the current policy agenda and trends in organising R&D and innovation activities, for which the authors proposed appropriate measurement techniques. The ambitious national goals and strategic development objectives[5], including becoming one of the five largest economies in the world, the accelerated introduction of digital technologies, and creation of a high-performance export-oriented sector in basic industries, have been formulated and prepared for practical implementation as a list of national projects. Six out of the twelve areas for strategic development of the Russian Federation are focused on supporting the science, technology, and innovation track ('Education', 'Science', 'Small and Medium Entrepreneurship', 'Digital Economy', 'Labour Productivity and Employment', and 'International Cooperation and Export'). The new Scoreboard indicators help analyse the current state and, potentially, the dynamics of Russian regions in implementing various national projects.

The indicator system applied in this issue of the Scoreboard was modernised in several thematic areas.

1. Educational Potential of the Population

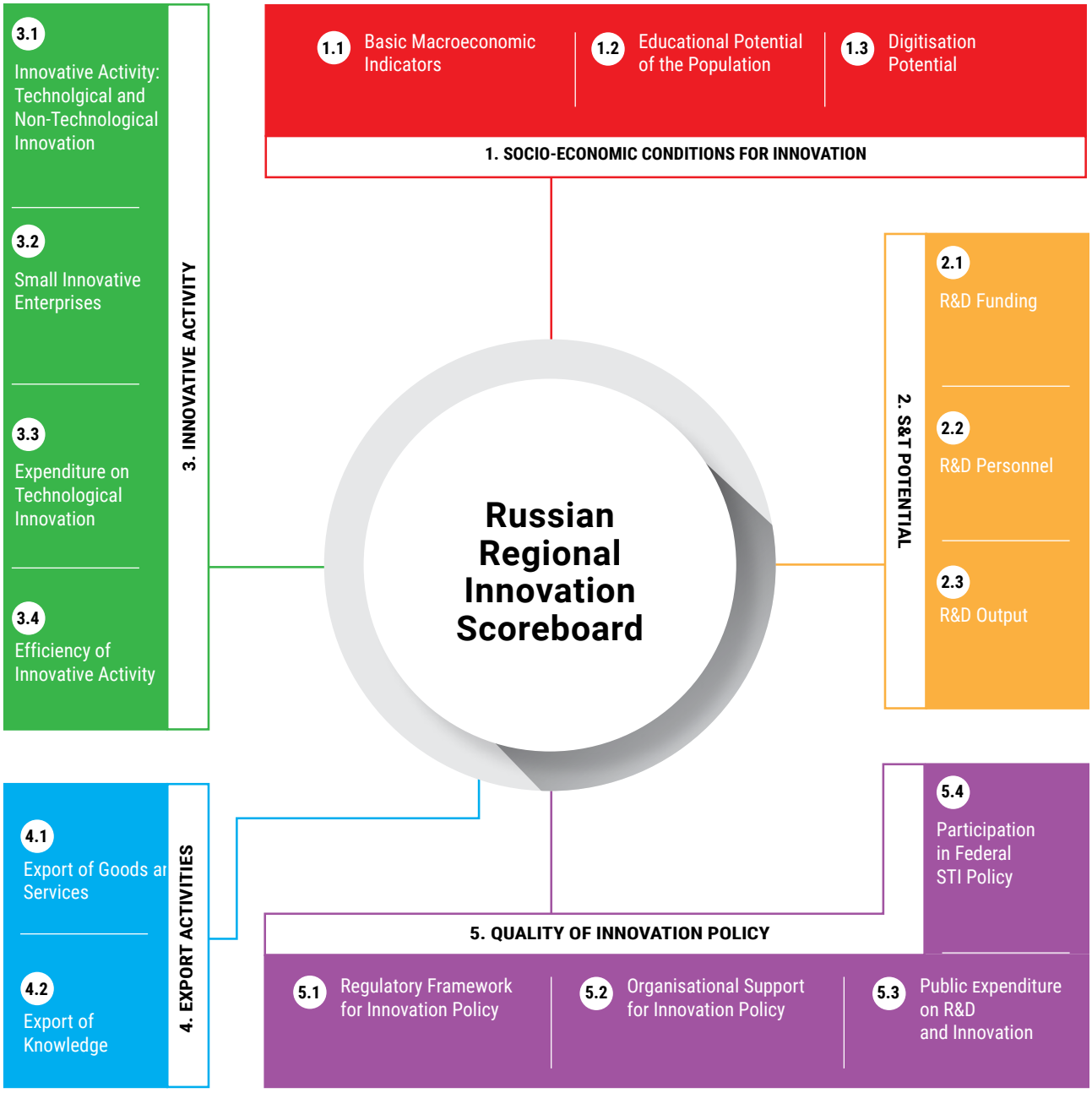
This heading (in the ***Socio-Economic Conditions for Innovation*** thematic block) was significantly extended by incorporating new indicators, to measure the following:

- participation of employed population in lifelong learning;
- STEM enrolment in higher education programmes;
- secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population.

These new indicators make it possible to analyse the educational potential in Russian regions by taking into account the current trends, in particular, the growing demand for STEM professionals and lifelong learning. Russia's international comparison results in these particular areas vary significantly. For example, we are still on par with the world's leading economies in the number of higher education degrees. At the same time, Russia lags behind several foreign countries in terms of participation of adult population in lifelong learning.

[5] RF Presidential Decree no. 204 'On National Goals and 2024 Strategic Objectives of the Russian Federation through to 2024' of May 07, 2018.

Figure 1.1. Russian Regional Innovation Scoreboard Structure



We believe such analytics will provide a sound rationale for choosing effective educational policies.

2. Digitisation Potential

This updated heading in the *Socio-Economic Conditions for Innovation* thematic block comprises the following indicators:

- enterprises with broadband top speed access over 100 Mbps;
- enterprises providing ICT related training of staff;
- active Internet users in the adult population.

Unlike in the previous issues of the Scoreboard, where the development of information society was measured by 'Households with internet access' and 'Enterprises with broadband top speed access over 256 Kbps', present indicators provide a fuller description of businesses' and households' digitisation level: increased volume and rate of data transfer, increased number of active internet users, and enterprises' increased attention to promoting digital literacy of their employees.

3. R&D Output

The main change in this heading of the *S&T Potential* thematic block is the refined indicator of 'Number of publications in scientific journals indexed in Web of Science per 10 researchers' (in the previous issues of the Scoreboard we used the number of RSCI-indexed publications). This new approach to measuring publication

activity of Russian regions' researchers is intended to assess the international recognition of their research results, i.e. articles peer-reviewed in a globally recognised international database.

4. Export Activity

A new thematic block called ***Export Activity*** and the calculation of the corresponding sub-index, the EAI (Figure 1.1), are one of major transformations in the indicator system of this Russian Regional Innovation Scoreboard. The new block includes two headings:

- Export of Goods and Services: exports of goods, non-resource exports, exports of services, and exports of innovative goods and services.
- Export of Knowledge, which includes indicators, such as 'Patent activity abroad', 'Exports of technologies', and 'International students in higher education programmes'.

The ***Export Activity*** indicators provide external assessment of domestic goods' and services' competitiveness in the framework of a comprehensive measurement of Russian regions' innovation development level. Introduction of this block was largely motivated by shifting the federal policy's focus onto promotion of exports, both in terms of innovative goods and services sales on foreign markets and international demand for Russian-made technologies, inventions, and higher education services.

5. Participation in Federal STI Policy

This heading was added into the ***Quality of Innovation Policy*** thematic block. It includes indicators assessing the regions' participation in the federal science, technology, and innovation (STI) policy on the basis of regional innovation projects supported at the federal level (their quantity, funding, number of development institutions that have provided appropriate incentives), initiatives on development of innovation infrastructure and territories with high STI potential.

The authors proposed a unified benchmarking method of identifying recipients of public support in order to exclude a vast variety of regions' independent interpretations of their own achievements. For example, only cluster development centres, creative youth innovation centres, regional engineering centres, and Quantorium children's technology parks were classified as innovation infrastructure facilities for small and medium enterprises which have received federal budget funding.

Territories with high STI potential are clusters with any of the following statuses: 'pilot innovative cluster', 'innovative cluster – world-class investment attractiveness leader', and 'industrial cluster'; industrial technology and high technology parks; 'science cities' ('naukograds'), and special economic zones.

Territories that have been granted a special status under STI public support measures include special administrative areas: the Russky Island (Primorsky Region) and the Oktyabrsky Island (Kaliningrad Region), Skolkovo Innovation Centre (a geographically separate complex), and the International Medical Cluster.

When developing the new indicators, the authors thought the binary approach to assessing the quality of innovation policy at the regional level (i.e. just checking whether there are any legal, organisational, or institutional innovation support solutions) as no longer sufficient in providing a full scope of existing affairs and benchmarking Russian regions. Over the last years, many regions have introduced (at least nominally) the key innovation policy elements: they adopted innovation-related laws, designed and approved innovation development strategies and innovation support programmes. Active regional institutions responsible for the coordination of innovation policy and innovation-based development also became a *sine qua non*. In order to maintain the continuity of previous rankings with the new indicator system, we still use indicators from the Regulatory Framework of Innovation Policy and Organisational Support of Innovation Policy thematic headings. The overall assessment, however, is based on the calculated arithmetic mean values for each heading, not on each separate indicator.

In the sixth issue of the Scoreboard the indicators in ***Quality of Innovation Policy*** thematic block – 'Number of innovative projects supported by the federal authorities' and 'Number of federal development institutions supporting innovative projects' – were calculated using data for the calendar year preceding the publication, i.e. 2018, while the values of statistical indicators are given for the latest available period.

Table 1.1 presents 53 indicators of the Russian Regional Innovation Index (RRII) grouped into five thematic blocks, which allow one to calculate the relevant sub-indices: Socio-Economic Conditions for Innovation Index (SECI), S&T Potential Index (STPI), Innovation Activity Index (IAI), Export Activity Index (EAI), and Quality of Innovation Policy Index (QIPI). Russian regions are ranked by each of these sub-indices. The overall index, the RRII, is calculated as the arithmetic mean of the normalised values of all indicators used in the Scoreboard.

In this issue we present a Russian regions' Future Preparedness Index for the second time. It is based on six indicators (not three, like in the previous edition). For the first time the Scoreboard includes indicators, such as 'Thematic diversification of regional strategies', 'Similarity

of regional media agendas to the information environment of advanced countries', 'Correspondence of regional strategic agendas to relevant federal strategies', and 'Public attitudes to STI policy measures in the region'.

The RRII and regional Future Preparedness Index (FPI) algorithms are given in Section 4.1 and detailed methodological comments on all indicators applied to calculate the indices are provided in Section 4.2.

Table 1.1. Russian Regional Innovation Scoreboard Indicators

No.	Full name of indicator	Short name of indicator	Data source
1. SOCIO-ECONOMIC CONDITIONS FOR INNOVATION			
1.1 Basic Macroeconomic Indicators			
1.1.1	GRP per worker employed in the region, *thousand roubles*	GRP per worker	Rosstat; CSDB; UnISIS
1.1.2	Fixed assets renewal coefficient, %	Fixed assets renewal coefficient	Rosstat; UnISIS
1.1.3	Employment in medium-high and high-tech manufacturing as a percentage of the average employment in the region	Employment in high-tech manufacturing	Rosstat; UnISIS
1.1.4	Employment in knowledge-intensive activities as a percentage of the average employment in the region	Employment in knowledge-intensive activities	Rosstat; UnISIS
1.2 Educational Potential of the Population			
1.2.1	Population aged 25-64 with higher education as a percentage of the total population in each age group*	Participation of adult population in higher education	Rosstat, National labour force survey
1.2.2	Higher education enrolment – bachelor's, specialist's, and master's degree programmes per 10,000 population	Higher education enrolment per 10,000 population	Russian Ministry of Science and Higher Education, National higher education survey; Rosstat, demographic statistics
1.2.3	Students specialising in mathematics, natural sciences, engineering, technology and technical sciences, and basic medicine as a percentage of the total higher education enrolment – bachelor's, specialist's, and master's degree programmes	STEM enrolment in higher education programmes	Russian Ministry of Science and Higher Education, National higher education survey
1.2.4	Participation of employed population aged 25-64 in lifelong learning	Participation of employed population in lifelong learning	Rosstat, National labour force survey
1.2.5	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	Russian Ministry of Science and Higher Education, National secondary vocational education survey; Rosstat, demographic statistics
1.2.6	Students specialising in mathematics, natural sciences, engineering, technology and technical sciences, and basic medicine as a percentage of the total secondary vocational education enrolment –programmes for mid-career professionals	STEM enrolment in programmes for mid-career professionals	Russian Ministry of Science and Higher Education, National secondary vocational education survey
1.3 Digitisation Potential			
1.3.1	Enterprises with broadband top speed access over 100 Mbps as a percentage of the total number of enterprises	Enterprises with broadband top speed access over 100 Mbps	Rosstat, National ICT usage by enterprises survey
1.3.2	Enterprises providing ICT related training of staff as a percentage of the total number of enterprises	Enterprises providing ICT related training of staff	Rosstat, National ICT usage by enterprises survey
1.3.3	Active Internet users in the adult population as a percentage of population aged 15-74	Active Internet users in the adult population	Rosstat, National ICT usage by individuals survey
2. S&T POTENTIAL			
2.1 R&D Funding			
2.1.1	Gross domestic expenditure on R&D as a percentage of GRP*	GERD as a percentage of GRP	Rosstat, National R&D survey; UnISIS
2.1.2	Gross domestic expenditure on R&D per researcher, *thousand roubles*	GERD per researcher	Rosstat, National R&D survey
2.1.3	Percentage of gross domestic expenditure on R&D financed by organisations of the business enterprise sector	GERD financed by the business enterprise sector	Rosstat, National R&D survey
2.1.4	Average monthly salary of R&D personnel as a percentage of average nominal monthly salary in the region's economy	Average monthly salary of R&D personnel as a percentage of regional average	Rosstat, National R&D survey; UnISIS
2.2 R&D Personnel			
2.2.1	R&D personnel as a percentage of the annual average number of the employed in the region's economy	R&D personnel employed in the region	Rosstat, National R&D survey; UnISIS

(continued)

No.	Full name of indicator	Short name of indicator	Data source
2.2.2	Researchers under 39 as a percentage of the total number of researchers	Young researchers	Rosstat, National R&D survey
2.2.3	Researchers with scientific degrees as a percentage of the total number of researchers	Researchers with scientific degrees	Rosstat, National R&D survey
	2.3 R&D Output		
2.3.1	Number of publications in scientific journals indexed in Web of Science per 10 researchers[1)]	Publication activity	Web of Science; Rosstat, National R&D survey
2.3.2	Number of patent applications filed in the Russian Federation by Russian residents per 1 million labour force aged 15-72	Patent activity	Rospatent; Rosstat, CSDB
2.3.3	Number of advanced manufacturing technologies developed in the region per 1 million labour force aged 15-72	Development of advanced manufacturing technologies	Rosstat, National survey of advanced manufacturing technology; UnISIS
	3. INNOVATIVE ACTIVITY		
	3.1 Innovative Activity: Technological and Non-Technological Innovation		
3.1.1	Enterprises engaged in technological innovation as a percentage of all enterprises*	Enterprises engaged in technological innovation	Rosstat, National innovation survey
3.1.2	Enterprises engaged in non-technological (marketing and/or organisational) innovation as a percentage of all enterprises*	Enterprises engaged in non-technological innovation	Rosstat, National innovation survey
3.1.3	Enterprises having market-ready technological innovation developed in-house as a percentage of all enterprises*	Enterprises having developed in-house technological innovations	Rosstat, National innovation survey
3.1.4	Enterprises participating in joint R&D projects as a percentage of all enterprises*	Enterprises participating in joint R&D projects	Rosstat, National innovation survey
	3.2 Small Innovative Enterprises		
3.2.1	Small enterprises engaged in technological innovation as a percentage of all small enterprises*	Small enterprises engaged in technological innovation	Rosstat, National small enterprises innovation survey
	3.3 Expenditure on Technological Innovation		
3.3.1	Expenditures on technological innovation as a percentage of total sales*	Expenditure on technological innovation	Rosstat, National innovation survey
	3.4 Efficiency of Innovative Activity		
3.4.1	Innovative goods and services as a percentage of total sales	Innovative goods and services	Rosstat, National innovation survey
3.4.2	Technologically new or significantly improved goods and services new to the market as a percentage of total sales*	Innovative goods and services new to the market	Rosstat, National innovation survey
3.4.3	Enterprises having noticed material and energy cost reduction as the main effect of their innovative activity as a percentage of all enterprises engaged in technological innovation	Enterprises having reduced material and energy costs through innovation	Rosstat, National innovation survey
	4. EXPORT ACTIVITY		
	4.1 Export of Goods and Services		
4.1.1	Exports of goods per 1,000 roubles of GRP, *roubles*	Exports of goods	Federal Customs Service, National database; Rosstat, National survey of fish and seafood export
4.1.2	Non-resource exports per 1,000 roubles of GRP, *roubles*	Non-resource exports	Federal Customs Service, National database; Rosstat, National survey of fish and seafood exports
4.1.3	Exports of services per 1,000 roubles of GRP, *roubles*	Exports of services	Rosstat, National service exports survey, National survey of transportation service exports and imports

(continued)

No.	Full name of indicator	Short name of indicator	Data source
4.1.4	Exports of innovative goods and services as a percentage of total innovative goods and services sales	Exports of innovative goods and services	Rosstat, National innovation survey
	4.2 Export of Knowledge		
4.2.1	Number of patent applications filed abroad per 1 million labour force aged 15-72[2)]	Patent activity abroad	WIPO database; Rosstat, National labour force survey
4.2.2	Revenues from technology exports per 1,000 roubles of GRP, *roubles*	Exports of technologies	Rosstat, National survey of technology exports and imports, CSDB
4.2.3	International students as a percentage of the total higher education enrolment – bachelor's, specialist's, and master's degree programmes	International students in higher education programmes	Russian Ministry of Science and Higher Education, National higher education survey
	5. QUALITY OF INNOVATION POLICY		
	5.1 Regulatory Framework for Innovation Policy		
5.1.1	Regional innovation development strategy (concept) and/or relevant section on innovation development (innovation support) in the regional development strategy	Innovation development strategy	Open sources: web portals and regional authorities' websites, specialised regional legislation databases
5.1.2	Priority innovation development zones (areas) outlined in the territorial planning scheme	Special innovation development territories	
5.1.3	Specific legislation defining the main principles, areas, and mechanisms for providing public support for innovative activity in the region	Regional innovation legislation	
5.1.4	Targeted programme or a set of public support measures for innovation and innovators	Innovation support programme	
	5.2 Organisational Support for Innovation Policy		
5.2.1	Specialised coordination (advisory) bodies on innovation policy (innovation support) to consult the region's highest official or highest executive authority	Coordination body on innovation policy	Open sources: web portals and regional authorities' websites, specialised regional legislation databases
5.2.2	Specialised regional development institutions (foundations, agencies, development corporations, etc.) to support innovators and/or implement innovative projects	Regional innovation development institutions	
	5.3 Public Expenditure on R&D and Innovation		
5.3.1	Appropriations on civil S&T as a percentage of the consolidated regional budget	Appropriations on civil S&T in the regional budget	Annual report of the Federal Treasury on execution of regional and local budgets in the Russian Federation
5.3.2	Federal budget appropriations as a percentage of the total expenditure on technological innovation	Federal appropriations in expenditure on technological innovation	Rosstat, National innovation survey
5.3.3	Regional and local budget appropriations as a percentage of the total expenditure on technological innovation	Regional appropriations in expenditure on technological innovation	Rosstat, National innovation survey
	5.4 Participation in Federal STI Policy		
5.4.1	Number of R&D, S&T, and innovative projects supported by federal authorities and development institutions per 1 million labour force aged 15-72	Number of innovative projects supported by federal authorities	Official web portals of federal authorities (including Russian Ministry of Science and Higher Education, Ministry of Economic Development, Ministry of Industry and Trade) and development institutions (including Industrial Development Fund, Russian Science Foundation, Foundation for Assistance to Small Innovative Enterprises (Innovation Promotion Foundation), RVC JSC, RUSNANO Group)

(continued)

No.	Full name of indicator	Short name of indicator	Data source
5.4.2	Number of federal development institutions supporting R&D, S&T, and innovative projects implemented in the region	Number of federal development institutions supporting innovative projects	Official web portals of federal authorities (including Russian Ministry of Science and Higher Education, Ministry of Economic Development, Ministry of Industry and Trade) and development institutions (including Industrial Development Fund, Russian Science Foundation, Foundation for Assistance to Small Innovative Enterprises (Innovation Promotion Foundation), RVC JSC, RUSNANO Group)
5.4.3	Funding provided by federal authorities and development institutions to implement R&D, S&T, and innovative projects in the region per 1 million roubles of GRP, roubles	Federal funding of innovative projects	Official web portals of federal authorities (including Russian Ministry of Science and Higher Education, Ministry of Economic Development, Ministry of Industry and Trade) and development institutions (including Industrial Development Fund, Russian Science Foundation, Foundation for Assistance to Small Innovative Enterprises (Innovation Promotion Foundation), RVC JSC, RUSNANO Group)
5.4.4	Number of innovation development territories granted special status in accordance with public support measures for R&D, S&T, and innovative activities, provided by federal authorities	Number of innovation development territories with federal status	Cluster Map of Russia, GISIP (Geographic Information System. Industrial Parks. Science Parks. Clusters), web portals and websites of relevant public authorities
5.4.5	Number of innovation infrastructure facilities for small and medium-sized enterprises supported by the federal budget	Number of innovation infrastructure facilities for SMEs	Russian Ministry of Economic Development, relevant websites

* Indicators, compatible with those used in the 2019 European ranking: European Commission (2019) Regional Innovation Scoreboard 2019 – Methodology Report. https://ec.europa.eu/docsroom/documents/35946 (last accessed on: 17.06.2019).

1) Publications for 2015–2017.

2) Foreign patent applications, data available for the most recent year (2015).

2.

REGIONAL INNOVATION RANKINGS

2.1. Overall Innovation Development Level

This Innovation Scoreboard was assembled after ranking the Russian regions in descending order by the scores of the Russian Regional Innovation Index (RRII) for 2017. The regions are divided into four groups based on the gap between their integral indicator value and that of the leading region (Table 2.1).

Grouping Russian Regions by Innovation Development Level: Catching Up with the Leader

At the end of 2017, Moscow regained the leading position on the Russian Innovation Scoreboard, which it held from 2008 to 2014. The regions are grouped by the overall innovation development index as follows:

- the first group has eight Russian regions: Moscow – the leader of the ranking, and seven others whose variation of the RRII value does not exceed the capital city's by 20%. The current top list which includes **Moscow**, **the Republic of Tatarstan**, and **St Petersburg** is a frequent occurrence throughout the rankings (the same was observed in the 2012, 2014, and 2015);
- the second – and the largest – group includes 42 regions whose RRII values are 20% lower than the leader's but the gap does not exceed 40%;
- the third group includes 29 Russian regions which lag behind the ranking leader (in terms of the overall innovation development index value) by more than 40% of RRII value not exceeding 60%;
- finally, the fourth group comprises six regions, whose RRII values are lower than Moscow's by over 60%.

As we can see from this distribution, over half of the Russian regions moderately lag behind Moscow in their overall innovation development level.

Geography of Innovation: Pinpointing Innovation Growth Areas

The territorial distribution of regions with different innovation development levels can be described as steadily uneven (Figure 2.1):

- the largest number of regions included in the first group are located in the Central, Volga, and Siberian Federal Districts (two in each district);
- there are no first group regions in the Southern, North Caucasian, and Far Eastern Federal Districts;
- the Volga Federal District is the leader in terms of the combined share of the first and second group regions (79%), followed by the Central Federal District (78%);
- third group regions are distributed across the country more evenly. Over half of the regions in the North Caucasian (57%), Far Eastern (55%), and Southern (50%) Federal Districts belong in this group; one third of them are located in the Ural (33%) and Siberian (30%) Federal Districts, while the North-Western, Central, and Volga Federal Districts account for 27%, 22%, and 21% of third group regions, respectively;
- fourth group regions clearly dominate in the North Caucasian and Far Eastern Federal Districts (29% and 18%, respectively). None of them are located in the Central, Volga, Ural, and Siberian Federal Districts.

Can the Balanced Development of All Innovation Parameters Be the Key to the Leading Regions' Success?

The development of innovative processes in the Russian regions remains uneven, leading to a significant level of diversity. The overall index provides an adjusted assessment by balancing out different components of innovation development, and thereby, concealing them along the way. Hence, it is important to add specific thematic sub-indices data to the RRII values (Figure 2.2). In most cases, regions can have both high and low values of different sub-indices or one or several of sub-index values may significantly deviate from their RRII value:

- only two first group regions show an even[6] development for all five thematic sub-indices: Moscow (the ranking leader) and St Petersburg (bringing up the top 3 regions). In St Petersburg, innovation processes unfold in the most balanced way: 2017 data reveals zero deviation of all sub-index ranks from the overall RRII rank, save for the QIPI (-6 positions). Out of the eight first group regions, only the Sverdlovsk Region (ranked 7th) is lagging behind its RRII score for two sub-indices: the IAI (-10 positions) and EAI (-13);
- in some cases, the gap between the RRII and thematic sub-index scores is extremely wide[7]. One first group region, the Novosibirsk Region (ranked 8th), has very low positions for various sub-indices when compared with the RRII; the gap between the RRII and SECI values

[6] To identify characteristics of each region's innovative development, their RRII scores were cross referenced against thematic sub-index scores (SECI, STPI, IAI, EAI, QIPI). The region's development was considered as even if the deviation of all sub-index scores from the RRII score was under ten points in either direction. Otherwise, the thematic block measured by the relevant sub-index was considered to be either a strength or a weakness of this region's innovation development.

[7] The deviation of sub-index scores from the RRII score for 30 positions in either direction was adopted as a threshold value.

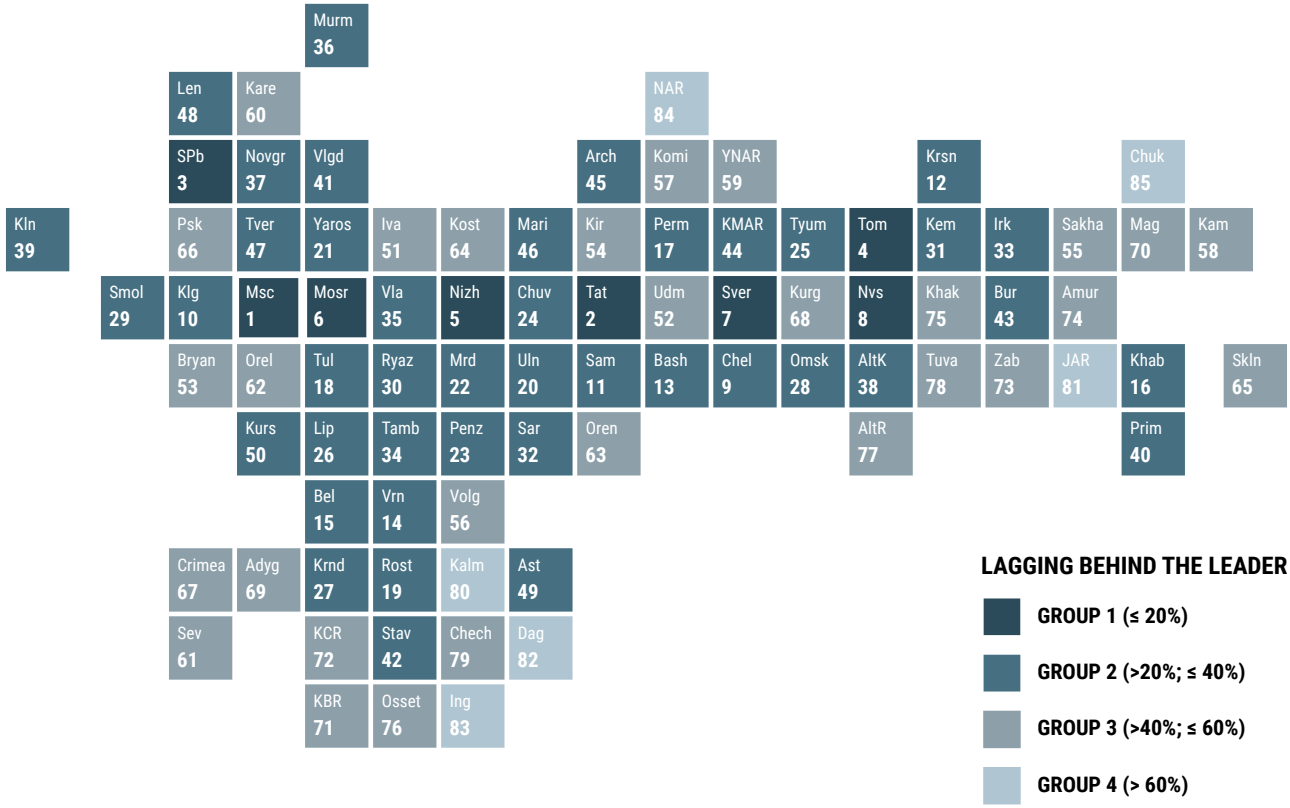
Table 2.1. Russian Regions' Ranking by Russian Regional Innovation Index: 2017

Region	RRII group	RRII ranking	RRII	SECI ranking	STPI ranking	IAI ranking	EAI ranking	QIPI ranking
Moscow	I	1	0.5378	1	5	7	2	2
Republic of Tatarstan	I	2	0.5375	2	13	1	9	1
St Petersburg	I	3	0.5356	3	3	3	1	9
Tomsk Region	I	4	0.5312	4	1	4	18	4
Nizhny Novgorod Region	I	5	0.4957	34	4	8	3	6
Moscow Region	I	6	0.4616	32	6	12	13	7
Sverdlovsk Region	I	7	0.4570	7	10	17	20	11
Novosibirsk Region	I	8	0.4414	38	8	37	7	3
Chelyabinsk Region	II	9	0.4288	9	22	29	16	12
Kaluga Region	II	10	0.4207	26	16	27	32	5
Samara Region	II	11	0.4167	5	37	39	25	10
Krasnoyarsk Region	II	12	0.4124	14	29	28	22	13
Republic of Bashkortostan	II	13	0.4118	17	12	36	26	15
Voronezh Region	II	14	0.4089	13	27	18	41	14
Belgorod Region	II	15	0.4088	40	26	11	31	16
Khabarovsk Region	II	16	0.4077	6	32	15	43	18
Perm Region	II	17	0.3971	45	20	23	21	17
Tula Region	II	18	0.3954	21	66	20	5	25
Rostov Region	II	19	0.3943	31	23	30	11	22
Ulyanovsk Region	II	20	0.3850	68	2	42	39	20
Yaroslavl Region	II	21	0.3849	18	21	19	28	39
Republic of Mordovia	II	22	0.3848	70	58	5	65	8
Penza Region	II	23	0.3822	48	51	6	53	19
Chuvash Republic	II	24	0.3750	49	52	2	71	24
Tyumen Region	II	25	0.3739	11	11	21	33	67
Lipetsk Region	II	26	0.3739	64	69	9	10	40
Krasnodar Region	II	27	0.3723	56	45	10	23	42
Omsk Region	II	28	0.3698	12	17	33	12	65
Smolensk Region	II	29	0.3680	33	31	43	4	45
Ryazan Region	II	30	0.3645	30	53	16	42	30
Kemerovo Region	II	31	0.3630	22	24	66	15	32
Saratov Region	II	32	0.3575	25	36	48	38	21
Irkutsk Region	II	33	0.3551	24	18	47	27	43
Tambov Region	II	34	0.3532	19	57	24	52	28
Vladimir Region	II	35	0.3530	41	33	22	54	34
Murmansk Region	II	36	0.3521	37	63	38	6	46
Novgorod Region	II	37	0.3516	74	9	34	37	38
Altai Region	II	38	0.3505	72	46	13	48	23
Kaliningrad Region	II	39	0.3499	20	60	70	14	29
Primorsky Region	II	40	0.3373	46	19	74	17	49
Vologda Region	II	41	0.3347	43	44	64	19	41

(continued)

Region	RRII group	RRII ranking	RRII	SECI ranking	STPI ranking	IAI ranking	EAI ranking	QIPI ranking
Stavropol Region	II	42	0.3319	60	48	51	29	33
Republic of Buryatia	II	43	0.3298	39	34	46	69	27
Khanty-Mansi Autonomous Region – Yugra	II	44	0.3294	10	54	53	60	44
Arkhangelsk Region	II	45	0.3290	29	43	14	46	71
Mari El Republic	II	46	0.3278	42	15	35	55	64
Tver Region	II	47	0.3277	73	28	25	57	36
Leningrad Region	II	48	0.3266	80	61	26	8	52
Astrakhan Region	II	49	0.3265	16	72	60	40	37
Kursk Region	II	50	0.3251	36	30	57	45	50
Ivanovo Region	III	51	0.3226	78	7	71	59	31
Udmurt Republic	III	52	0.3198	50	65	32	64	35
Bryansk Region	III	53	0.3197	67	38	44	63	26
Kirov Region	III	54	0.3167	76	35	31	35	55
Republic of Sakha (Yakutia)	III	55	0.3159	15	55	55	51	53
Volgograd Region	III	56	0.3064	35	62	62	47	47
Komi Republic	III	57	0.3046	55	14	79	44	56
Kamchatka Region	III	58	0.3002	28	49	49	62	57
Yamal-Nenets Autonomous Region	III	59	0.2994	8	50	52	70	69
Republic of Karelia	III	60	0.2943	65	25	59	50	58
Sevastopol	III	61	0.2942	59	39	56	67	51
Orel Region	III	62	0.2923	23	47	54	58	70
Orenburg Region	III	63	0.2889	53	73	45	30	74
Kostroma Region	III	64	0.2738	61	40	75	56	68
Sakhalin Region	III	65	0.2737	44	75	58	36	78
Pskov Region	III	66	0.2697	62	64	63	34	79
Republic of Crimea	III	67	0.2616	66	77	65	76	48
Kurgan Region	III	68	0.2593	27	80	61	74	60
Republic of Adygea	III	69	0.2577	77	82	41	61	59
Magadan Region	III	70	0.2558	47	74	50	75	73
Kabardia-Balkar Republic	III	71	0.2517	57	67	40	79	77
Karachay-Cherkess Republic	III	72	0.2497	51	42	82	73	61
Trans-Baikal Region	III	73	0.2492	71	78	78	49	63
Amur Region	III	74	0.2423	63	71	73	66	76
Republic of Khakassia	III	75	0.2406	79	70	77	24	83
Republic of North Ossetia – Alania	III	76	0.2384	54	59	81	78	66
Altai Republic	III	77	0.2267	58	79	68	80	75
Republic of Tuva	III	78	0.2183	52	81	84	84	54
Chechen Republic	III	79	0.2179	83	68	72	83	62
Republic of Kalmykia	IV	80	0.2106	75	41	83	82	72
Jewish Autonomous Region	IV	81	0.2071	82	76	76	68	82
Republic of Dagestan	IV	82	0.1905	85	56	80	81	80
Republic of Ingushetia	IV	83	0.1646	69	83	85	85	81
Nenets Autonomous Region	IV	84	0.1624	84	84	69	72	84
Chukotka Autonomous Region	IV	85	0.1214	81	85	67	77	85

Figure 2.1. Region Groups by Russian Regional Innovation Index: 2017



is 30 points. In six second group regions (the **Republic of Mordovia**, **Altai**, **Leningrad**, **Lipetsk**, **Novgorod**, and **Ulyanovsk Regions**), lagging behind the RRII was found mostly in indicators measuring the *Socio-Economic Conditions for Innovation* and their combination with *S&T potential*.

- In many Russian regions, it is namely indicators of *Socio-Economic Conditions for Innovation* thematic block, as well as indicators of R&D Funding and R&D Output thematic headings, that show big difference from the integral innovation development indicator. For example, the STPI turned out to be a weakness in 20 first and second group regions, but a strength in 13 third and fourth group regions. In turn, the SECI opens good development prospects for 18 Russian regions that are strong innovators and may become major drivers for 16 regions less developed in innovation.

Figure 2.2. Russian Regions with the Highest RRII Values: Thematic Sub-Index Rankings: 2017

	SECI	STPI	IAI	EAI	QIPI
MOSCOW	1	5	7	2	2
REPUBLIC OF TATARSTAN	2	13	1	9	1
ST PETERSBURG	3	3	3	1	9
TOMSK REGION	4	1	4	18	4
NIZHNY NOVGOROD REGION	34	4	8	3	6
MOSCOW REGION	32	6	12	13	7
SVERDLOVSK REGION	7	10	17	20	11
NOVOSIBIRSK REGION	38	8	37	7	3

SECI — SOCIO-ECONOMIC CONDITIONS FOR INNOVATION INDEX

STPI — S&T POTENTIAL INDEX

IAI — INNOVATION ACTIVITY INDEX

EAI — EXPORT ACTIVITY INDEX

QIPI — QUALITY OF INNOVATION POLICY INDEX

RANKING POSITION: 1–3 4–10 11–40 41–85

2.2. Socio-Economic Conditions for Innovation

The Russian Regions' Ranking by the Socio-Economic Conditions for Innovation Index (SECI) provides an aggregate assessment of their economic, educational, and digital development, describing their potential for creating, adapting, mastering, and applying innovations (Table 2.2). It is based on 13 indicators grouped into three thematic headings:

- Basic Macroeconomic Indicators (SECI-1)
- Educational Potential of the Population (SECI-2)
- Digitisation Potential (SECI-3)

Top 13 SECI regions: the Urals Profile

The first SECI group includes 13 Russian regions: Moscow, the Republic of Tatarstan, St Petersburg, Tomsk, Samara, Khabarovsk, and Sverdlovsk Regions, Yamal-Nenets Autonomous Region, Chelyabinsk Region, Khanty-Mansi Autonomous Region – Yugra, Tyumen, Omsk, and Voronezh Regions. The largest number of regions – leaders by *Socio-Economic Conditions for Innovation* are located in the Ural Federal District (38.5%); Central, Volga, and Siberian Federal Districts, each having 15.4% of Russian regions in the first SECI group (Figure 2.3).

Moscow, the SECI Leader: Bets on Human Capital and Digital Development

Moscow occupies the top place of the SECI ranking. The capital city maintains its leadership position due to the highest values of the following indicators:

- participation of adult population in higher education
- higher education enrolment per 10,000 population
- enterprises with broadband top speed access over 100 Mbps
- enterprises providing ICT related training of staff

The SECI provides an averaged-out assessment, which covers certain specific aspects of socio-economic conditions for innovation. Let us take a closer look at regions' positions in terms of the SECI thematic headings (Figure 2.4).

Basic Macroeconomic Indicators (SECI-1): the Key to Success Is Not Just the Size of GRP

The top positions in Basic Macroeconomic Indicators of innovation are held by the Voronezh Region (ranked 1st in SECI-1) and the Republics of Ingushetia (2nd) and Tatarstan (3rd). Each of these Russian regions succeeded in their own specific way:

- The **Voronezh Region** and the **Republic of Ingushetia** are the leaders in 'Fixed assets renewal coefficient' indicator (ranked 1st and 2nd, respectively), remaining, however, at very modest positions regarding all other indicators in this thematic heading. At the same time, the Republic of Ingushetia did not make it into the first SECI region group: it is only 69th in the ranking table, and 83rd in the overall RRII ranking;
- The **Republic of Tatarstan** showed the most even development among first group regions by most macroeconomic indicators: 10th place in 'GRP per worker', 9th in 'Fixed assets renewal coefficient' and 'Employment in high-tech manufacturing'.

The country's leading regions by the value of the 'GRP per worker' indicator are the **Yamal-Nenets Autonomous Region** (2nd) and the **Khanty-Mansi Autonomous Region – Yugra** (3rd); however, when it comes to the overall assessment of Basic Macroeconomic Indicators, they lag behind the SECI-1 sub-ranking leader (22 and 68 positions, respectively). This is due to the low scores in 'Employment in high-tech manufacturing' and 'Employment in knowledge-intensive activities'.

Educational Potential of the Population (SECI-2): University Diploma vs Lifelong Learning, Manual Workers vs Professionals

The SECI-2 sub-ranking leader, the **Tomsk Region**, has advanced not only in 'Higher education enrolment per 10,000 population' (2nd), but also in 'STEM enrolment' (4th). The region has gained an even higher ranking position in the 'Participation of employed population in lifelong learning' than in the 'Participation of adult population in higher education' (ranked 11th and 32nd, respectively). First group regions generally display a significant gap between these two factor values:

- federal cities have a higher share of educated adults, who, nevertheless, participate in lifelong learning much less actively: **Moscow** (ranked 20th in SECI-2) is 1st and 72nd by the corresponding indicator values and **St Petersburg** (ranked 7th in SECI-2) is 3rd and 59th;
- in the Ural and Siberian Federal Districts, the situation is reversed: the **Sverdlovsk Region** (ranked 5th in SECI-2) scored 49th in 'Participation of adult population in higher education' and 2nd in 'Participation of employed population in lifelong learning'.
- the **Chelyabinsk Region** (ranked 9th in SECI-2) has taken up 42nd and 5th ranking positions by the relevant indicator values, while the **Omsk Region** (ranked 4th in SECI-2) is 70th and 3rd.

Table 2.2. Russian Regions' Ranking by Socio-Economic Conditions for Innovation Index: 2017*

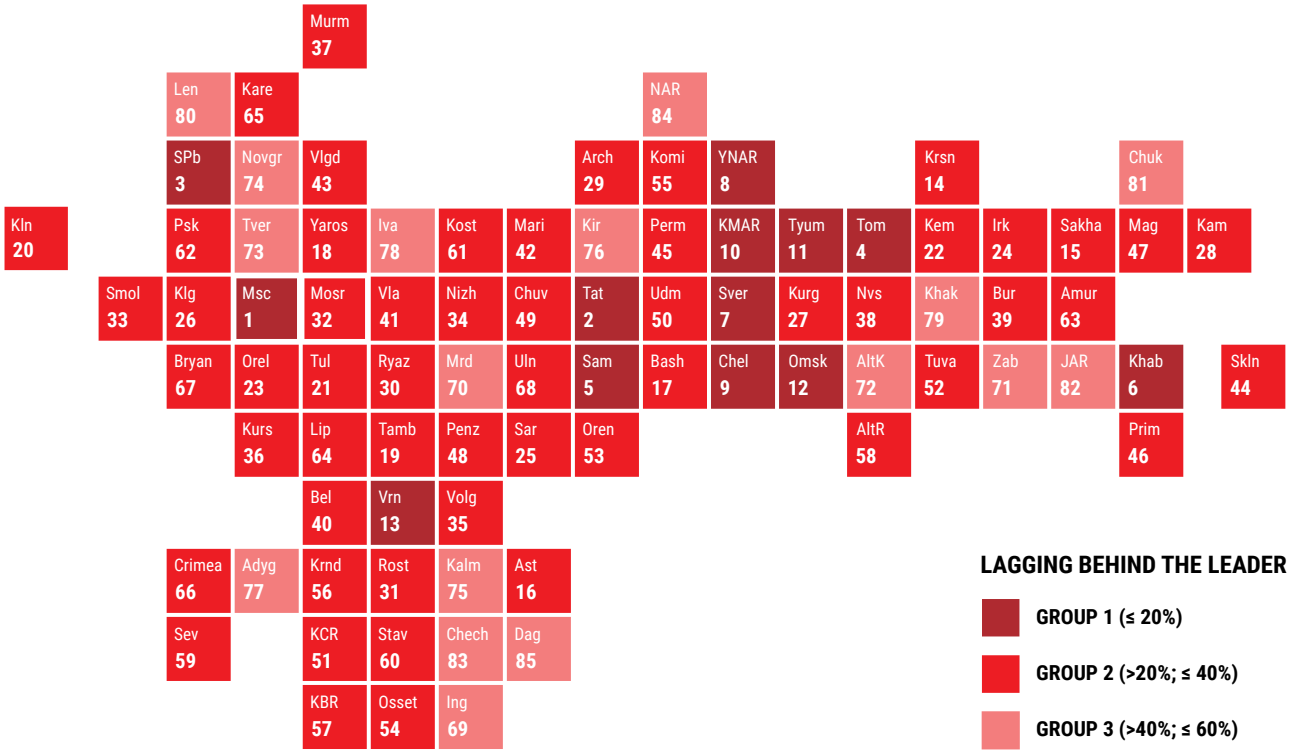
Region	SECI group	SECI ranking	SECI	SECI-1 group	SECI-2 group	SECI-3 group
Moscow	I	1	0.5519	II	II	I
Republic of Tatarstan	I	2	0.5234	I	I	III
St Petersburg	I	3	0.5191	II	I	II
Tomsk Region	I	4	0.5190	II	I	III
Samara Region	I	5	0.4904	I	I	IV
Khabarovsk Region	I	6	0.4820	III	I	III
Sverdlovsk Region	I	7	0.4810	II	I	III
Yamal-Nenets Autonomous Region	I	8	0.4766	II	I	III
Chelyabinsk Region	I	9	0.4659	II	I	III
Khanty-Mansi Autonomous Region – Yugra	I	10	0.4653	III	I	II
Tyumen Region	I	11	0.4567	II	I	III
Omsk Region	I	12	0.4530	II	I	IV
Voronezh Region	I	13	0.4464	I	II	III
Krasnoyarsk Region	II	14	0.4396	II	I	IV
Republic of Sakha (Yakutia)	II	15	0.4370	II	II	III
Astrakhan Region	II	16	0.4335	II	II	III
Republic of Bashkortostan	II	17	0.4265	II	II	III
Yaroslavl Region	II	18	0.4219	I	II	IV
Tambov Region	II	19	0.4178	II	II	III
Kaliningrad Region	II	20	0.4156	II	II	III
Tula Region	II	21	0.4155	II	II	III
Russian Federation			0.4121			
Kemerovo Region	II	22	0.4119	III	II	IV
Orel Region	II	23	0.4113	II	I	IV
Irkutsk Region	II	24	0.4070	II	II	IV
Saratov Region	II	25	0.4058	II	II	IV
Kaluga Region	II	26	0.4008	I	II	IV
Kurgan Region	II	27	0.4007	II	II	IV
Kamchatka Region	II	28	0.4000	III	II	III
Arkhangelsk Region	II	29	0.3997	I	II	IV
Ryazan Region	II	30	0.3996	II	II	IV
Rostov Region	II	31	0.3985	II	II	III
Moscow Region	II	32	0.3976	II	III	III
Smolensk Region	II	33	0.3974	III	II	III
Nizhny Novgorod Region	II	34	0.3970	II	II	IV
Volgograd Region	II	35	0.3967	III	II	IV
Kursk Region	II	36	0.3962	II	II	IV
Murmansk Region	II	37	0.3960	III	II	III
Novosibirsk Region	II	38	0.3925	II	II	III
Republic of Buryatia	II	39	0.3925	II	II	IV
Belgorod Region	II	40	0.3920	II	II	IV
Vladimir Region	II	41	0.3917	II	II	III

* SECI-1 shows the distribution of regions by indicators included into 1.1 Basic Macroeconomic Indicators, SECI-2 – 1.2 Educational Potential of the Population, and SECI-3 – 1.3 Digitisation Potential.

(continued)

Region	SECI group	SECI ranking	SECI	SECI-1 group	SECI-2 group	SECI-3 group
Mari El Republic	II	42	0.3904	II	II	IV
Vologda Region	II	43	0.3860	III	II	IV
Sakhalin Region	II	44	0.3852	III	II	IV
Perm Region	II	45	0.3841	I	II	IV
Primorsky Region	II	46	0.3796	III	II	IV
Magadan Region	II	47	0.3773	III	II	IV
Penza Region	II	48	0.3770	III	II	IV
Chuvash Republic	II	49	0.3767	II	II	IV
Udmurt Republic	II	50	0.3738	II	II	IV
Karachay-Cherkess Republic	II	51	0.3666	III	II	III
Republic of Tuva	II	52	0.3648	I	III	IV
Orenburg Region	II	53	0.3642	III	II	IV
Republic of North Ossetia – Alania	II	54	0.3623	III	II	III
Komi Republic	II	55	0.3606	III	II	III
Krasnodar Region	II	56	0.3597	III	II	IV
Kabardia-Balkar Republic	II	57	0.3584	II	III	II
Altai Republic	II	58	0.3574	II	III	III
Sevastopol	II	59	0.3548	III	II	IV
Stavropol Region	II	60	0.3541	III	II	III
Kostroma Region	II	61	0.3532	III	II	IV
Pskov Region	II	62	0.3490	II	III	III
Amur Region	II	63	0.3490	IV	II	IV
Lipetsk Region	II	64	0.3477	III	III	III
Republic of Karelia	II	65	0.3448	IV	III	III
Republic of Crimea	II	66	0.3430	II	III	III
Bryansk Region	II	67	0.3349	II	III	IV
Ulyanovsk Region	II	68	0.3338	I	III	IV
Republic of Ingushetia	III	69	0.3267	I	IV	III
Republic of Mordovia	III	70	0.3241	II	III	IV
Trans-Baikal Region	III	71	0.3229	II	III	IV
Altai Region	III	72	0.3171	III	III	IV
Tver Region	III	73	0.3161	III	III	IV
Novgorod Region	III	74	0.3151	III	III	IV
Republic of Kalmykia	III	75	0.3143	III	III	IV
Kirov Region	III	76	0.3140	III	III	IV
Republic of Adygea	III	77	0.3092	III	III	IV
Ivanovo Region	III	78	0.3059	IV	II	IV
Republic of Khakassia	III	79	0.2994	III	III	IV
Leningrad Region	III	80	0.2904	II	III	IV
Chukotka Autonomous Region	III	81	0.2825	III	III	IV
Jewish Autonomous Region	III	82	0.2795	III	III	IV
Chechen Republic	III	83	0.2721	III	III	IV
Nenets Autonomous Region	III	84	0.2581	II	IV	IV
Republic of Dagestan	III	85	0.2407	II	IV	IV

Figure 2.3. Region Groups by Socio-Economic Conditions for Innovation Index: 2017



Regions leading in the SECI-2 ranking significantly differ by participation of population in higher and secondary vocational education:

- in the European part of the country, priority is given to university diplomas. For example, **St Petersburg** (ranked 7th in SECI-2) is 3rd by the 'Higher education enrolment per 10,000 population', and 73rd by the same indicator for secondary vocational education.
  The **Republic of Tatarstan** (ranked 6th) is 7th and 17th, respectively;
- regions located to the east of the Ural Mountains have either a balanced enrolment into vocational and professional education programmes, or a predominant polytechnical and vocational education enrolment.
  For example, the **Omsk Region** (ranked 4th in SECI-2) is 5th by 'Higher education enrolment per 10,000 people', and 4th by the same indicator for secondary vocational education; the **Khabarovsk Region** (2nd) is 11th and 12th, respectively; and the **Sverdlovsk Region** (5th) is 24th and 5th.

Digitisation Potential (SECI-3): the Balance between Economy and Society

Regions included in the top of the SECI-3 sub-ranking tend to have higher results for all indicators of this group:

- apart from having the highest scores for 'Enterprises with broadband top speed access over 100 Mbps' and 'Enterprises providing ICT related training of staff' indicators, **Moscow** also occupies the 12th ranking position by the 'Active Internet users in the adult population' indicator; **St Petersburg** (ranked 2nd in SECI-3) is ranked 4th and 2nd for the same indicators, sharing 12th place with Moscow; the **Sverdlovsk Region** (ranked 7th in SECI-3) is placed 12th, 11th, and 15th, respectively.

However, there is an exception:

- The **Yamal-Nenets Autonomous Region** (ranked 5th in SECI-3), the 'champion' by 'Active Internet users in the adult population', is only 33rd in terms of 'Enterprises providing ICT related training of staff' and 71st by 'Enterprises with broadband top speed access over 100 Mbps'.

Figure 2.4. Russian Regions with the Highest SECI Values: Thematic Sub-Index Rankings: 2017

	SECI-1	SECI-2	SECI-3
MOSCOW	11	20	1
REPUBLIC OF TATARSTAN	3	6	10
ST PETERSBURG	18	7	2
TOMSK REGION	27	1	14
SAMARA REGION	5	3	66
KHABAROVSK REGION	59	2	18
SVERDLOVSK REGION	41	5	7
YAMAL-NENETS AUTONOMOUS REGION	23	13	5
CHELYABINSK REGION	17	9	19
KHANTY-MANSI AUTONOMOUS REGION – YUGRA	69	8	4
TYUMEN REGION	48	10	12
OMSK REGION	49	4	42
VORONEZH REGION	1	42	32

SECI-1 – BASIC MACROECONOMIC INDICATORS

SECI-2 – EDUCATIONAL POTENTIAL OF THE POPULATION

SECI-3 – DIGITISATION POTENTIAL

RANKING POSITION: 1–3 4–10 11–40 41–85

2.3. S&T Potential

Russian Regions' Ranking by the S&T Potential Index (STPI) provides an integrated assessment of regions' development level in areas such as R&D personnel, R&D funding, publication and patent activity, and the development of advanced manufacturing technologies (Table 2.3). The ranking is calculated on the basis of ten indicators grouped in three thematic headings:

- R&D Funding (STPI-1)
- R&D Personnel (STPI-2)
- R&D Output (STPI-3)

Top 12 Regions in the STPI Ranking: Neva – Moskva – Volga – Yenisei

The first STPI ranking group includes 12 Russian regions: the Tomsk and Ulyanovsk Regions, St Petersburg, the Nizhny Novgorod Region, Moscow, the Moscow, Ivanovo, Novosibirsk, Novgorod, Sverdlovsk, and Tyumen Regions, and the Republic of Bashkortostan. Regions leading in R&D Funding and R&D Output are, in general, evenly distributed across the country: half of them are located in the Central and Volga Federal Districts (25% each) and the remaining 50% are in the North-Western, Ural, and Siberian Districts (Figure 2.5).

Tomsk Region, the STPI Leader: High-Class R&D Personnel and Their Output

The Tomsk Region tops the STPI ranking. The region amassed the maximum ***S&T Potential*** score due to the high R&D Personnel and R&D Output indicators values, especially in 'Publication activity' and 'Patent activity':

- the region's score is almost six times higher than the national average for the 'Number of publications in scientific journals indexed in Web of Science per 10 researchers';
- the 'Number of patent applications filed in the Russian Federation per 1 million labour force' score is two times higher than the national average.

At the same time, the Tomsk Region holds one of the lowest positions in R&D Funding, lagging behind the leader – the Ulyanovsk Region – by more than 40%. Thus, the STPI results adjust the values of individual parameters, which aggregated score measures the regional ***S&T Potential***. The ranking of Russian regions in the first STPI group by the specific thematic headings is presented in Figure 2.6.

R&D Funding (STPI-1): Each Successful Region Succeeds in its Own Way

The top five regions in terms of R&D funding are the Ulyanovsk (ranked 1st in STPI-1), Nizhny Novgorod (2nd), Novgorod (3rd), Tyumen (4th) Regions, and the Republic of Bashkortostan (5th). An analysis of their situation revealed two different patterns of achieving high rankings:

- only the **Ulyanovsk Region** – the leader of the STPI-1 – has equally high values of all indicators: 1st ranking position by 'GERD per researcher', 2nd by 'GERD as a percentage of GRP', 3rd by 'Average monthly salary of R&D personnel as a percentage of regional average', and 4th by 'GERD financed by the business enterprise sector';
- The regions that came 2nd – 5th in the STPI-1 ranking succeeded due to high scores for some of the indicators, therefore, compensating for low ones of others. For example, the **Nizhny Novgorod Region** got the highest score for 'GERD as a percentage of GRP' but was only 55th by 'GERD financed by the business enterprise sector'. On the contrary, the **Republic of Bashkortostan** and the **Novgorod Region** lagged behind by the indicator, measuring the ratio between R&D funding and region's macroeconomic indicators (ranked 34th and 21st, respectively), but made it to the top three by 'GERD financed by the business enterprise sector' (2nd and 3rd). The most competitive researchers' salary was recorded in the **Tyumen Region** (the leader by the 'Average monthly salary of R&D personnel as a percentage of regional average'), but it did not make it into the top ten in terms of other STPI-1 indicators (ranked 14th, 17th, and 18th, respectively).

R&D Personnel (STPI-2): Is a Scientific Degree a Must-Have?

Russian regions leading in the STPI-2 ranking display similar potential of R&D Personnel: high indicators of employment in the sector combined with low (even extremely low) levels of qualifications of personnel directly engaged in performing R&D:

- the STPI-2 sub-ranking leader, **Moscow**, is ranked 1st by 'R&D personnel employed in the region' and 45th by 'Researchers with scientific degrees'. A similar picture was revealed in the **Moscow** (ranked 2nd and 64th, respectively) and **Nizhny Novgorod Regions** (3rd and 79th),

Table 2.3. Russian Regions' Ranking by S&T Potential Index: 2017*

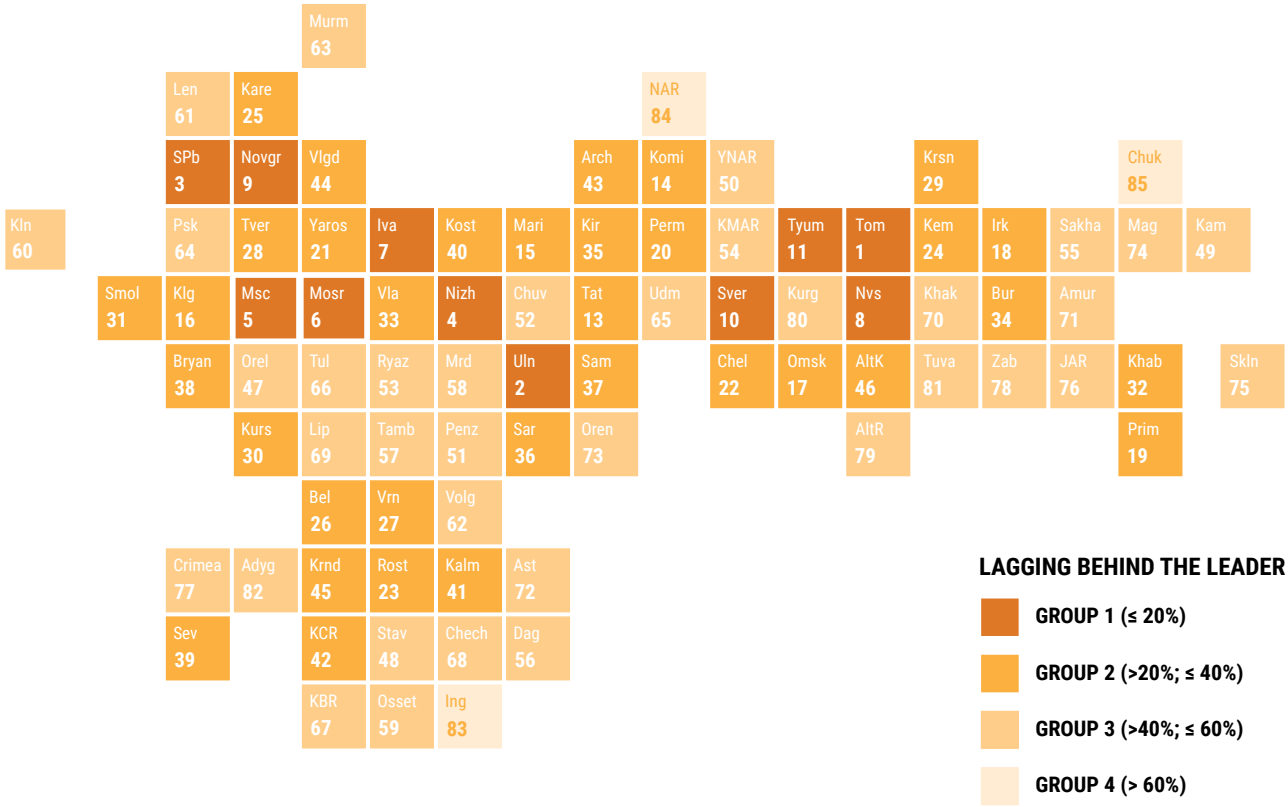
Region	STPI group	STPI ranking	STPI	STPI-1 group	STPI-2 group	STPI-3 group
Tomsk Region	I	1	0.6004	III	I	I
Ulyanovsk Region	I	2	0.5943	I	II	III
St Petersburg	I	3	0.5693	II	I	II
Nizhny Novgorod Region	I	4	0.5598	II	I	III
Moscow	I	5	0.5236	III	I	II
Moscow Region	I	6	0.5165	III	I	II
Ivanovo Region	I	7	0.5148	IV	II	I
Novosibirsk Region	I	8	0.5032	III	I	II
Novgorod Region	I	9	0.4966	II	III	III
Sverdlovsk Region	I	10	0.4929	III	II	III
Tyumen Region	I	11	0.4888	II	II	III
Republic of Bashkortostan	I	12	0.4863	II	II	III
Republic of Tatarstan	II	13	0.4750	III	II	II
Komi Republic	II	14	0.4632	II	II	IV
Mari El Republic	II	15	0.4600	IV	II	II
Kaluga Region	II	16	0.4558	III	II	II
Omsk Region	II	17	0.4404	II	III	III
Russian Federation			0.4305			
Irkutsk Region	II	18	0.4273	IV	II	III
Primorsky Region	II	19	0.4205	III	II	III
Perm Region	II	20	0.4198	III	II	III
Yaroslavl Region	II	21	0.4195	III	II	III
Chelyabinsk Region	II	22	0.4173	III	III	III
Rostov Region	II	23	0.4161	III	II	III
Kemerovo Region	II	24	0.4145	III	II	III
Republic of Karelia	II	25	0.4090	IV	II	III
Belgorod Region	II	26	0.4057	IV	II	III
Voronezh Region	II	27	0.4050	III	II	III
Tver Region	II	28	0.4008	III	III	III
Krasnoyarsk Region	II	29	0.3993	III	III	III
Kursk Region	II	30	0.3985	III	III	III
Smolensk Region	II	31	0.3969	II	III	III
Khabarovsk Region	II	32	0.3953	III	II	III
Vladimir Region	II	33	0.3907	III	II	III
Republic of Buryatia	II	34	0.3881	IV	I	III
Kirov Region	II	35	0.3874	III	II	IV
Saratov Region	II	36	0.3844	III	II	III
Samara Region	II	37	0.3831	III	III	III
Briansk Region	II	38	0.3823	III	III	III
Sevastopol	II	39	0.3816	III	III	III

* STPI-1 shows the distribution of regions by indicators included into 2.1 R&D Funding, STPI-2 – 2.2 R&D Personnel, and STPI-3 – 2.3 R&D Output.

(continued)

Region	STPI group	STPI ranking	STPI	STPI-1 group	STPI-2 group	STPI-3 group
Kostroma Region	II	40	0.3807	III	III	III
Republic of Kalmykia	II	41	0.3804	IV	II	II
Karachay-Cherkess Republic	II	42	0.3759	IV	II	III
Arkhangelsk Region	II	43	0.3747	III	III	IV
Vologda Region	II	44	0.3735	IV	II	III
Krasnodar Region	II	45	0.3712	III	II	III
Altai Region	II	46	0.3637	III	II	IV
Orel Region	III	47	0.3597	IV	II	III
Stavropol Region	III	48	0.3590	IV	II	IV
Kamchatka Region	III	49	0.3570	IV	II	III
Yamal-Nenets Autonomous Region	III	50	0.3554	IV	III	III
Penza Region	III	51	0.3539	III	III	IV
Chuvash Republic	III	52	0.3500	III	III	IV
Ryazan Region	III	53	0.3490	IV	III	III
Khanty-Mansi Autonomous Region – Yugra	III	54	0.3489	III	III	IV
Republic of Sakha (Yakutia)	III	55	0.3476	IV	II	IV
Republic of Dagestan	III	56	0.3415	IV	II	III
Tambov Region	III	57	0.3413	III	III	IV
Republic of Mordovia	III	58	0.3413	IV	III	III
Republic of North Ossetia – Alania	III	59	0.3400	IV	III	III
Kaliningrad Region	III	60	0.3397	IV	III	III
Leningrad Region	III	61	0.3374	IV	III	III
Volgograd Region	III	62	0.3356	IV	III	IV
Murmansk Region	III	63	0.3349	IV	II	IV
Pskov Region	III	64	0.3321	IV	III	IV
Udmurt Republic	III	65	0.3285	IV	III	III
Tula Region	III	66	0.3264	III	III	IV
Kabardia-Balkar Republic	III	67	0.3251	IV	II	IV
Chechen Republic	III	68	0.3218	IV	II	IV
Lipetsk Region	III	69	0.3215	IV	II	IV
Republic of Khakassia	III	70	0.3170	IV	II	III
Amur Region	III	71	0.3108	IV	II	IV
Astrakhan Region	III	72	0.3096	IV	III	III
Orenburg Region	III	73	0.3087	IV	III	IV
Magadan Region	III	74	0.3041	IV	II	IV
Sakhalin Region	III	75	0.2978	IV	III	IV
Jewish Autonomous Region	III	76	0.2965	IV	I	IV
Republic of Crimea	III	77	0.2928	IV	III	IV
Trans-Baikal Region	III	78	0.2924	IV	III	IV
Altai Republic	III	79	0.2727	IV	III	IV
Kurgan Region	III	80	0.2717	IV	III	IV
Republic of Tuva	III	81	0.2695	IV	II	IV
Republic of Adygea	III	82	0.2582	IV	III	IV
Republic of Ingushetia	IV	83	0.2169	IV	II	IV
Nenets Autonomous Region	IV	84	0.1810	IV	III	IV
Chukotka Autonomous Region	IV	85	0.0000	IV	IV	IV

Figure 2.5. Region Groups by S&T Potential Index: 2017



St Petersburg (4th and 55th), and the **Tomsk Region** (6th and 37th);

- a pattern different from most other regions in the group was found only in the **Ivanovo Region** (ranked 7th in STPI): it came 72nd by 'R&D personnel employed in the region' and 14th by Researchers with scientific degrees'.

In general, Russian regions leading in the STPI-2 ranking do not have a high value of the 'Young researchers' indicator: only the **Tyumen**, **Tomsk**, and **Ulyanovsk Regions** and the **Republic of Bashkortostan** are among the top 10 regions by the 'Researchers under 39 in the total number of researchers' (ranked 2nd, 3rd, 5th, and 7th, respectively).

R&D Output (STPI-3): the Ivanovo Miracle

The distribution of regions in the STPI-3 sub-ranking revealed an interesting case of the **Ivanovo Region**: it is the only Russian region that received the highest scores for all three R&D Output indicators. It ranks 1st by the 'Number of patent applications filed in the Russian Federation per 1 million labour force aged 15–72', 2nd by the 'Number of publications in scientific journals indexed in Web of Science per 10 researchers', and 8th by the 'Number of advanced manufacturing technologies developed in the region per 1 million labour force aged 15–72'. Only the leader of this sub-ranking, the Tomsk Region, has evenly high scores for the STPI-3 indicators (ranked 4th, 3rd, and 16th, respectively).

Regions with advanced S&T potential tend to have higher patent activity scores than those of publication activity:

- only the **Ivanovo**, **Tomsk**, and **Novosibirsk Regions** are among the top ten Russian regions by the 'Number of publications in scientific journals indexed in Web of Science per 10 researchers' (ranked 2nd, 3rd, and 8th, respectively); the remaining first group regions scored between 20th (Sverdlovsk Region) and 77th ranking positions (Novgorod Region) for this indicator;
- five out of the twelve regions in the first STPI region group received maximum scores for the 'Number of patent applications filed in the Russian Federation per 1 million labour force aged 15–72': the **Ivanovo Region** (ranked 1st), **Moscow** (2nd), the **Moscow** (3rd) and **Tomsk Regions** (4th), and **St Petersburg** (5th). Other regions have scored between 11th (**Novosibirsk Region**) and 41st (**Novgorod Region**) ranking positions for this indicator.

Figure 2.6. Russian Regions with the Highest STPI Values: Thematic Sub-Index Rankings: 2017

	STPI-1	STPI-2	STPI-3
TOMSK REGION	13	2	2
ULYANOVSK REGION	1	36	24
ST PETERSBURG	7	3	5
NIZHNY NOVGOROD REGION	2	4	44
MOSCOW	25	1	6
MOSCOW REGION	14	6	9
IVANOVO REGION	49	25	1
NOVOSIBIRSK REGION	23	5	7
NOVGOROD REGION	3	67	16
SVERDLOVSK REGION	10	15	12
TYUMEN REGION	4	20	35
REPUBLIC OF BASHKORTOSTAN	5	29	34

STPI-1 — R&D FUNDING

STPI-2 — R&D PERSONNEL

STPI-3 — R&D OUTPUT

RANKING POSITION: 1–3 4–10 11–40 41–85

2.4. Innovative Activity

Russian regions' Ranking by the Innovative Activity Index (IAI) provides a comprehensive assessment of the rate of the creation, implementation, and use of technological, organisational, and marketing innovations (Table 2.4). The index includes nine indicators grouped into four thematic headings:

- Innovative Activity: Technological and Non-Technological Innovation (IAI-1)
- Small Innovative Enterprises (IAI-2)
- Expenditure on Technological Innovation (IAI-3)
- Efficiency of Innovative Activity (IAI-4)

Top Eight Regions in the IAI Ranking: the Innovative Land of the Volga

The first IAI ranking group comprises eight Russian regions: the Republic of Tatarstan, the Chuvash Republic, St Petersburg, the Tomsk Region, the Republic of Mordovia, the Penza Region, Moscow, and the Nizhny Novgorod Region. Their IAI scores significantly (by more than 50%) exceed the relevant national average. The country's large, economically developed centres are particularly successful in their innovative activity, with more than half of them located in the Volga Federal District (Figure 2.7).

The Republic of Tatarstan, the IAI leader: Every Fifth Company is Innovative

The Republic of Tatarstan tops the IAI ranking. The region got high scores for most of the innovation development components exceeding the national averages. For example, 20.3% of local enterprises were engaged in development and implementation of technological innovations.
At the same time, the Chuvash Republic has an even higher value for this indicator (22.2%), but came in second in the overall *Innovative Activity* ranking. Analysing the regions by specific parameters, which make up their overall IAI ranking, provides a more detailed picture (Figure 2.8).

Innovative Activity: Technological and Non-Technological Innovation (IAI-1): a Balanced Approach Leads to the Top

Leadership of the first IAI region group is largely caused by the active implementation of innovations by enterprises. The top positions in the IAI-1 sub-ranking are occupied by the Chuvash Republic (ranked 1st), the Republic of Tatarstan (2nd), St Petersburg (3rd), Moscow (4th), the Tomsk (5th) and Penza (6th) Regions, and the Republic of Mordovia (8th). All of them have high scores for most of the indicators in the Innovative Activity: Technological and Non-Technological Innovation:

- the **Chuvash Republic** ranks first by enterprises engaged in technological and non-technological innovation and is among the top 10 Russian regions by 'Enterprises having developed in-house technological innovations' (ranked 4th) and 'Enterprises participating in joint R&D projects' (10th);
- the IAI-1 ranking leaders tend to have more active enterprises that create innovations independently. This is confirmed by a significant value of 'Enterprises having developed in-house technological innovations' (over 50% higher than the national average). The **Penza Region** (ranked 1st), **St Petersburg** (3rd), and the **Chuvash Republic** (4th) have the highest scores for this indicator;
- non-technological (organisational and marketing) innovations are more often created and applied in the **Chuvash Republic** (1st), the **Republic of Tatarstan** (3rd), **St Petersburg** (5th), and the **Tomsk Region** (6th). The share of enterprises in these regions, which are engaged in such types of innovation, ranges between 6% and 10%, which is more than two times the national average;
- the ability to manufacture and sell competitive products and raise the innovative activity to a radically new level is directly related to companies' cooperation. The leaders in this respect are the **Tomsk Region** (ranked 1st), **Moscow** (2nd), and **St Petersburg** (3rd), with 9.1%, 8.6%, and 7.6% values for 'Enterprises participating in joint R&D projects' (the national average value is 3.2%).

Small Innovative Enterprises (IAI-2): Size Does Not Matter

The Russian capital is the only first IAI group region that was also included in the top three of the IAI-2 sub-ranking. The latter is calculated on the basis of a single indicator: 'Small enterprises engaged in technological innovation as a percentage of all small enterprises', which measures willingness of small businesses to apply S&T innovations and serves as an important parameter in estimating the development of small innovative entrepreneurship in regions.
Russian regions, leading in the 'Small enterprises engaged in technological innovation' indicator, have quite different profiles:

- **Moscow** is third by this indicator value; other first IAI group regions with high relevant scores include the **Tomsk Region** (7th) and **St Petersburg** (8th).

Table 2.4. Russian Regions' Ranking by Innovative Activity Index*

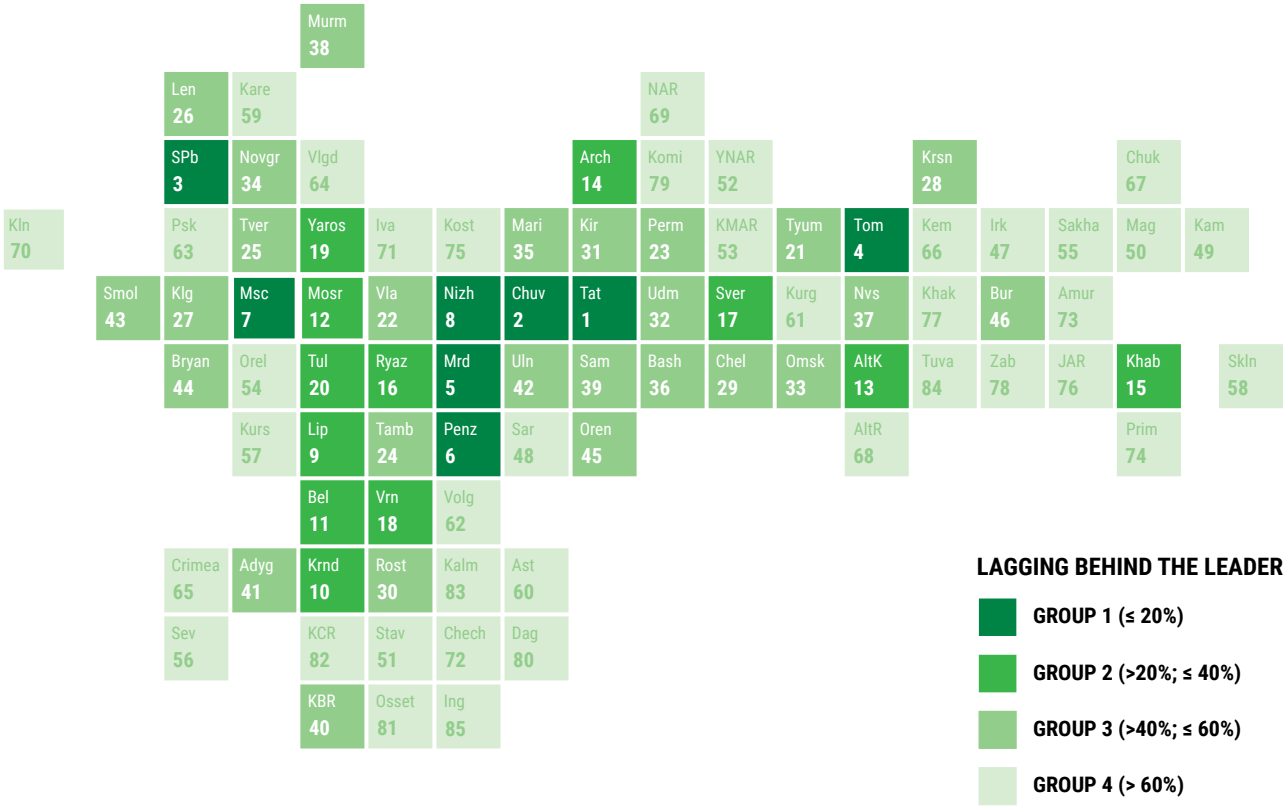
Region	IAI group	IAI ranking	IAI	IAI-1 group	IAI-2 group	IAI-3 group	IAI-4 group
Republic of Tatarstan	I	1	0.5702	I	IV	II	III
Chuvash Republic	I	2	0.5439	I	IV	III	IV
St Petersburg	I	3	0.5125	I	III	II	IV
Tomsk Region	I	4	0.5050	I	III	II	IV
Republic of Mordovia	I	5	0.4999	II	III	III	III
Penza Region	I	6	0.4813	I	IV	II	IV
Moscow	I	7	0.4785	I	II	II	IV
Nizhny Novgorod Region	I	8	0.4702	II	IV	I	IV
Lipetsk Region	II	9	0.4533	II	II	III	IV
Krasnodar Region	II	10	0.4265	III	IV	II	III
Belgorod Region	II	11	0.4186	II	III	II	IV
Moscow Region	II	12	0.4122	III	IV	I	IV
Altai Region	II	13	0.3996	III	I	IV	IV
Arkhangelsk Region	II	14	0.3897	IV	IV	IV	I
Khabarovsk Region	II	15	0.3853	III	IV	II	III
Ryazan Region	II	16	0.3771	II	III	III	IV
Sverdlovsk Region	II	17	0.3767	III	IV	III	IV
Voronezh Region	II	18	0.3742	III	III	III	IV
Yaroslavl Region	II	19	0.3657	III	IV	III	IV
Tula Region	II	20	0.3540	III	IV	III	IV
Tyumen Region	III	21	0.3404	III	IV	IV	IV
Vladimir Region	III	22	0.3358	III	IV	III	IV
Perm Region	III	23	0.3340	IV	IV	III	IV
Tambov Region	III	24	0.3161	III	IV	II	IV
Tver Region	III	25	0.3101	III	IV	I	IV
Leningrad Region	III	26	0.3097	III	IV	II	IV
Kaluga Region	III	27	0.3096	III	IV	III	IV
Russian Federation			0.3096				
Krasnoyarsk Region	III	28	0.3092	III	III	III	IV
Chelyabinsk Region	III	29	0.3051	III	IV	III	IV
Rostov Region	III	30	0.3045	IV	IV	II	IV
Kirov Region	III	31	0.3013	IV	IV	II	IV
Udmurt Republic	III	32	0.2920	IV	IV	III	IV
Omsk Region	III	33	0.2889	IV	IV	I	IV
Novgorod Region	III	34	0.2887	III	III	IV	IV
Mari El Republic	III	35	0.2883	IV	IV	IV	III
Republic of Bashkortostan	III	36	0.2853	IV	IV	III	IV
Novosibirsk Region	III	37	0.2702	III	IV	IV	IV
Murmansk Region	III	38	0.2691	III	IV	IV	IV
Samara Region	III	39	0.2684	IV	IV	III	IV
Kabardia-Balkar Republic	III	40	0.2526	IV	II	IV	IV
Republic of Adygea	III	41	0.2478	IV	IV	IV	III

* IAI-1 shows the distribution of regions by indicators included into 3.1 Innovative Activity: Technological and Non-Technological Innovation, IAI-2– 3.2 Small Innovative Enterprises, IAI-3 – 3.3 Expenditures on Technological Innovations, and IAI-4 – 3.4 Efficiency of Innovative Activity.

(continued)

Region	IAI group	IAI ranking	IAI	IAI-1 group	IAI-2 group	IAI-3 group	IAI-4 group
Ulyanovsk Region	III	42	0.2409	IV	IV	III	IV
Smolensk Region	III	43	0.2393	IV	IV	III	IV
Briansk Region	III	44	0.2393	IV	IV	IV	IV
Orenburg Region	III	45	0.2387	IV	IV	II	IV
Republic of Buryatia	III	46	0.2379	IV	III	III	IV
Irkutsk Region	IV	47	0.2264	IV	IV	III	IV
Saratov Region	IV	48	0.2230	IV	IV	III	IV
Kamchatka Region	IV	49	0.2210	IV	IV	IV	IV
Magadan Region	IV	50	0.2181	IV	IV	IV	IV
Stavropol Region	IV	51	0.2089	IV	IV	III	IV
Yamal-Nenets Autonomous Region	IV	52	0.2059	IV	III	IV	IV
Khanty-Mansi Autonomous Region – Yugra	IV	53	0.2052	IV	IV	II	IV
Orel Region	IV	54	0.2032	IV	IV	IV	IV
Republic of Sakha (Yakutia)	IV	55	0.2007	IV	IV	IV	IV
Sevastopol	IV	56	0.1983	IV	III	IV	IV
Kursk Region	IV	57	0.1975	IV	IV	IV	IV
Sakhalin Region	IV	58	0.1936	IV	IV	I	IV
Republic of Karelia	IV	59	0.1842	IV	IV	IV	IV
Astrakhan Region	IV	60	0.1793	IV	IV	IV	IV
Kurgan Region	IV	61	0.1773	IV	IV	IV	IV
Volgograd Region	IV	62	0.1751	IV	IV	IV	IV
Pskov Region	IV	63	0.1702	IV	IV	IV	IV
Vologda Region	IV	64	0.1662	IV	IV	IV	IV
Republic of Crimea	IV	65	0.1655	IV	III	IV	IV
Kemerovo Region	IV	66	0.1638	IV	IV	IV	IV
Chukotka Autonomous Region	IV	67	0.1632	IV	IV	IV	IV
Altai Republic	IV	68	0.1630	IV	IV	IV	IV
Nenets Autonomous Region	IV	69	0.1599	IV	I	IV	IV
Kaliningrad Region	IV	70	0.1583	IV	IV	IV	IV
Ivanovo Region	IV	71	0.1545	IV	IV	IV	IV
Chechen Republic	IV	72	0.1538	IV	IV	IV	III
Amur Region	IV	73	0.1531	IV	IV	III	IV
Primorsky Region	IV	74	0.1487	IV	IV	IV	IV
Kostroma Region	IV	75	0.1464	IV	IV	IV	IV
Jewish Autonomous Region	IV	76	0.1368	IV	IV	IV	IV
Republic of Khakassia	IV	77	0.1273	IV	IV	IV	IV
Trans-Baikal Region	IV	78	0.1204	IV	IV	IV	IV
Komi Republic	IV	79	0.1154	IV	IV	IV	IV
Republic of Dagestan	IV	80	0.0970	IV	IV	IV	IV
Republic of North Ossetia – Alania	IV	81	0.0882	IV	IV	IV	IV
Karachay-Cherkess Republic	IV	82	0.0544	IV	IV	IV	IV
Republic of Kalmykia	IV	83	0.0365	IV	IV	IV	IV
Republic of Tuva	IV	84	0.0345	IV	IV	IV	IV
Republic of Ingushetia	IV	85	0.0271	IV	IV	IV	IV

Figure 2.7. Region Group by Innovative Activity Index: 2017



- The **Nenets Autonomous Region** has the largest value for 'Small enterprises engaged in technological innovation' indicator. It was included in the fourth IAI group, being only 69th in the corresponding ranking and second to last (84th) in the overall innovation development ranking. The **Altai Region** (ranked 2nd in the IAI-2) occupies 13th ranking position in the IAI and 38th – in the RRII.

Expenditure on Technological Innovation (IAI-3): the Bulk of Funding Comes from the Federal Budget

The IAI-3 sub-ranking is based on the 'Expenditure on technological innovation as a percentage of total sales' indicator:

- the highest intensity of current and capital expenditure on the development and implementation of technologically new or significantly improved goods and services and production processes was observed in the **Nizhny Novgorod Region** (6.7%). Other IAI leaders with high expenditure on technological innovation include the **Tomsk** (ranked 6th in the IAI-3) and **Penza Regions** (7th);
- regions leading in 'Expenditure on technological innovation' significantly differ when assessing their innovative activity and the overall innovation development scores: the **Moscow Region** (ranked 2nd in the IAI-3) is 12th in the overall IAI ranking (second group) and 6th in the RRII ranking (first group); on the contrary, the **Sakhalin Region** (ranked 3rd) is 58th in the overall IAI ranking and 65th in the RRII ranking, keeping it only in the fourth and third groups, respectively.

Efficiency of Innovative Activity (IAI-4): Not Novel Enough

Out of all first group regions, the highest Efficiency of Innovative Activity was found in the **Republics of Mordovia** (ranked 2nd in the IAI-4) and **Tatarstan** (8th). The leading regions again differ in values of the indicators included in this thematic heading:

- top positions in 'Innovative goods and services' (ranked 2nd and 4th, respectively) are combined with more modest scores for 'Innovative goods and services new to the market' (14th and 15th), and even lower scores for 'Enterprises having reduced material and energy costs through innovation' (20th and 30th). Indeed, the share of new to the market goods and services in the leading regions of the IAI-4 sub-ranking remains only at about 2.5% (despite the fact that the share of innovative goods and services as a percentage of total

Figure 2.8. Russian Regions with the Highest IAI Values: Thematic Sub-Index Rankings: 2017

	IAI-1	IAI-2	IAI-3	IAI-4
REPUBLIC OF TATARSTAN	2	28	11	8
CHUVASH REPUBLIC	1	39	22	18
ST PETERSBURG	3	8	17	31
TOMSK REGION	5	7	6	36
REPUBLIC OF MORDOVIA	8	11	30	2
PENZA REGION	6	46	7	24
MOSCOW	4	3	19	63
NIZHNY NOVGOROD REGION	11	22	1	12

IAI-1 — INNOVATIVE ACTIVITY: TECHNOLOGICAL AND NON-TECHNOLOGICAL INNOVATION

IAI-2 — SMALL INNOVATIVE ENTERPRISES

IAI-3 — EXPENDITURE ON TECHNOLOGICAL INNOVATION

IAI-4 — EFFICIENCY OF INNOVATIVE ACTIVITY

RANKING POSITION: 1–3 4–10 11–40 41–85

sales is much higher, at 27.5% and 19.7%, respectively). It happens because process innnovations, which are mainstream innovations at enterprises, are not associated with the development of new products;

- generally, the first IAI group regions received relatively low scores for the share of enterprises that reduced material and energy costs through innovation: their rankings range between 20th (the **Republic of Mordovia**) and 76th (**Moscow**).

2.5. Export Activity

The Russian regions' ranking by the Export Activity Index (EAI) is a composite assessment that reflects regions' positions on global markets and their involvement in international knowledge exchanges, including foreign patenting, technology transfer, and education and training of international students (Table 2.5). The ranking is based on seven indicators grouped into two thematic headings:

- Export of Goods and Services (EAI-1)
- Export of Knowledge (EAI-2)

Top 12 Regions in the EAI Ranking: at the Country's Frontiers

The first EAI ranking group comprises 12 Russian regions: St Petersburg, Moscow, the Nizhny Novgorod, Smolensk, Tula, Murmansk, Novosibirsk, and Leningrad Regions, the Republic of Tatarstan, the Lipetsk, Rostov, and Omsk Regions. Most of them are located in the Central (33.3%) and North-Western (25%) Federal Districts. Half of the most export-active Russian regions are located at the country's borders (Figure 2.9).

St Petersburg, the EAI Leader: Technology Exports and High Patent Activity Abroad

St Petersburg's leadership in the EAI ranking is caused by the high scores for two foreign economic activity indicators: 'Revenues from technology exports per 1,000 roubles of GRP' and 'Number of patent applications filed abroad per 1 million labour force aged 15-72' (5 and 3.2 times higher than the national average, respectively). Both of these indicators are included in the Export of Knowledge, which makes the northern capital the leader by the relevant sub-index. In the Export of Goods and Services, St Petersburg lags behind most of the first EAI group regions.
Ranking of the Russian regions by thematic headings are presented in Figure 2.10.

Export of Goods and Services (EAI-1): Towards a Non-Resource Economy

The EAI-1 sub-ranking revealed several more successful first group regions, which made it into the top ten by the relevant indicator values:

- the **Murmansk** (ranked 4th) and **Lipetsk** (5th) **Regions**, **Moscow** (7th), the **Republic of Tatarstan** (8th), the **Leningrad Region** (9th) and **St Petersburg** (10th) are the leaders in 'Exports of goods';
- in 'Non-resource exports' the highest scores are held by the **Lipetsk** (ranked 1st), **Murmansk** (2nd), **Rostov** (6th), **Smolensk** (7th), and **Tula** (8th) **Regions**;
- the most active exporters of services are the **Smolensk** (ranked 3rd) and **Nizhniy Novgorod** (5th) **Regions**, **Moscow** (7th), the **Novosibirsk** (8th) **Region** and **St. Petersburg** (9th); the highest values for 'Exports of innovative goods and services' were found in the **Tula** and **Rostov Regions** and the **Republic of Tatarstan**: ranked 5th, 6th, and 10th, respectively.

The highest overall scores for Export of Goods and Services belong to the **Murmansk** (ranked 3rd in the EAI-1), **Lipetsk** (4th), and **Rostov** (5th) **Regions**. 'Non-resource exports' values made the largest contribution to their success in the ranking.

Export of Knowledge (EAI-2): Stepping up Technology and Higher Education Exports

The EAI-2 sub-ranking is led by **St Petersburg** (ranked 2nd), **Moscow** (3rd), **Nizhny Novgorod** (4th) and **Omsk** (5th) **Regions**. The strengths of the leading knowledge-exporting regions are high values for 'Patent activity abroad' and 'Technology exports':

- **Moscow** and the **Nizhny Novgorod Region** have top scores of the above indicators; **St Petersburg** is 2nd for the both of them;
- the **Omsk** (ranked 3rd), **Leningrad** (5th), and **Smolensk** (6th) **Regions** have the highest values for 'International students in higher education programmes'. The leader here is the **Astrakhan Region**, which is 40th in EAI ranking and 49th in the overall RRII ranking.

Table 2.5. Russian Regions' Ranking by Export Activity Index*

Region	EAI group	EAI ranking	EAI	EAI-1 group	EAI-2 group
St Petersburg	I	1	0.5629	II	I
Moscow	I	2	0.5390	II	I
Nizhny Novgorod Region	I	3	0.5331	II	I
Smolensk Region	I	4	0.5223	II	II
Tula Region	I	5	0.5121	I	II
Murmansk Region	I	6	0.4647	I	III
Novosibirsk Region	I	7	0.4624	III	I
Leningrad Region	I	8	0.4614	II	II
Republic of Tatarstan	I	9	0.4611	II	II
Lipetsk Region	I	10	0.4561	I	III
Rostov Region	I	11	0.4544	I	III
Omsk Region	I	12	0.4514	III	I
Moscow Region	II	13	0.4487	II	II
Kaliningrad Region	II	14	0.4461	II	III
Kemerovo Region	II	15	0.4452	I	IV
Chelyabinsk Region	II	16	0.4416	II	III
Primorsky Region	II	17	0.4291	II	III
Tomsk Region	II	18	0.4203	IV	I
Vologda Region	II	19	0.4066	II	IV
Sverdlovsk Region	II	20	0.4017	II	III
Perm Region	II	21	0.3983	II	IV
Krasnoyarsk Region	II	22	0.3975	II	III
Krasnodar Region	II	23	0.3898	II	III
Republic of Khakassia	II	24	0.3824	I	IV
Samara Region	II	25	0.3746	III	III
Republic of Bashkortostan	II	26	0.3723	II	III
Irkutsk Region	II	27	0.3707	II	III
Yaroslavl Region	II	28	0.3669	III	III
Stavropol Region	II	29	0.3665	II	III
Orenburg Region	II	30	0.3628	III	III
Belgorod Region	II	31	0.3610	II	III
Kaluga Region	II	32	0.3472	III	III
Tyumen Region	II	33	0.3428	III	III
Pskov Region	III	34	0.3358	III	III
Kirov Region	III	35	0.3271	II	IV
Sakhalin Region	III	36	0.3151	II	IV
Novgorod Region	III	37	0.3140	III	IV
Saratov Region	III	38	0.3139	III	III
Ulyanovsk Region	III	39	0.3133	III	IV
Astrakhan Region	III	40	0.3130	IV	III
Voronezh Region	III	41	0.3119	III	III

* EAI-1 shows the distribution of regions by indicators included into 4.1 Export of Goods and Services and EAI-2 – 4.2 Export of Knowledge.

(continued)

Region	EAI group	EAI ranking	EAI	EAI-1 group	EAI-2 group
Ryazan Region	III	42	0.2923	III	III
Khabarovsk Region	III	43	0.2921	II	IV
Komi Republic	III	44	0.2870	IV	III
Kursk Region	III	45	0.2821	IV	III
Arkhangelsk Region	III	46	0.2782	II	IV
Volgograd Region	III	47	0.2656	III	IV
Altai Region	III	48	0.2608	IV	IV
Trans-Baikal Region	III	49	0.2582	II	IV
Republic of Karelia	III	50	0.2580	II	IV
Republic of Sakha (Yakutia)	III	51	0.2553	III	IV
Tambov Region	III	52	0.2525	IV	III
Penza Region	III	53	0.2465	IV	III
Vladimir Region	III	54	0.2450	III	IV
Mari El Republic	III	55	0.2407	III	IV
Kostroma Region	III	56	0.2403	IV	IV
Tver Region	III	57	0.2400	IV	IV
Orel Region	III	58	0.2368	IV	IV
Ivanovo Region	III	59	0.2253	IV	IV
Khanty-Mansi Autonomous Region – Yugra	IV	60	0.2246	IV	IV
Republic of Adygea	IV	61	0.2129	IV	III
Kamchatka Region	IV	62	0.2059	III	IV
Briansk Region	IV	63	0.2021	III	IV
Udmurt Republic	IV	64	0.1989	IV	IV
Republic of Mordovia	IV	65	0.1913	IV	IV
Amur Region	IV	66	0.1852	IV	IV
Sevastopol	IV	67	0.1797	IV	IV
Jewish Autonomous Region	IV	68	0.1675	IV	IV
Republic of Buryatia	IV	69	0.1673	III	IV
Yamal-Nenets Autonomous Region	IV	70	0.1561	IV	IV
Chuvash Republic	IV	71	0.1560	IV	IV
Nenets Autonomous Region	IV	72	0.1483	IV	IV
Karachay-Cherkess Republic	IV	73	0.1443	IV	IV
Kurgan Region	IV	74	0.1362	IV	IV
Magadan Region	IV	75	0.1307	IV	IV
Republic of Crimea	IV	76	0.1273	IV	IV
Chukotka Autonomous Region	IV	77	0.1143	IV	IV
Republic of North Ossetia – Alania	IV	78	0.1035	IV	IV
Kabardia-Balkar Republic	IV	79	0.0940	IV	IV
Altai Republic	IV	80	0.0936	IV	IV
Republic of Dagestan	IV	81	0.0888	IV	IV
Republic of Kalmykia	IV	82	0.0560	IV	IV
Chechen Republic	IV	83	0.0483	IV	IV
Republic of Tuva	IV	84	0.0409	IV	IV
Republic of Ingushetia	IV	85	0.0196	IV	IV

Figure 2.9. Region Groups by the Export Activity Index: 2017

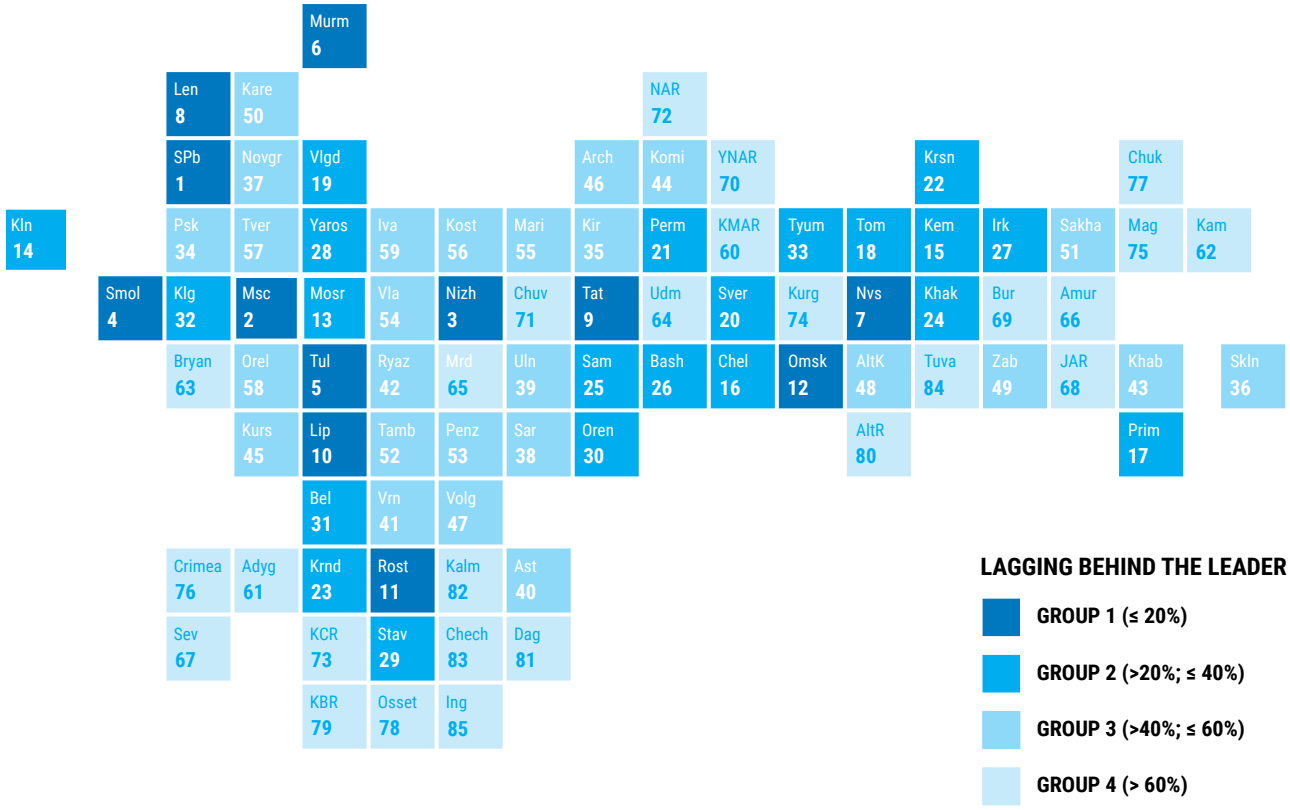


Figure 2.10. Russian Regions with the Highest EAI Values: Thematic Sub-Index Rankings: 2017

	EAI-1	EAI-2
ST PETERSBURG	15	2
MOSCOW	13	3
NIZHNY NOVGOROD REGION	12	4
SMOLENSK REGION	9	7
TULA REGION	6	10
MURMANSK REGION	3	32
NOVOSIBIRSK REGION	34	6
LENINGRAD REGION	25	8
REPUBLIC OF TATARSTAN	14	11
LIPETSK REGION	4	37
ROSTOV REGION	5	34
OMSK REGION	37	5

EAI-1 — EXPORT OF GOODS AND SERVICES

EAI-2 — EXPORT OF KNOWLEDGE

RANKING POSITION: 1–3 4–10 11–40 41–85

2.6. Quality of Innovation Policy

Russian Regions' Ranking by the Quality of Innovation Policy Index (QIPI) provides a comprehensive assessment of the region's development level based on the following parameters: strong legal framework in the field of innovative activity, innovation-specific regional coordination agencies and development institutions, amount of state support for civil S&T, and regions' engagement in federal STI policy (Table 2.6). The ranking is based on 14 indicators grouped into four thematic headings:

- Regulatory Framework for Innovation Policy (QIPI-1)
- Organisational Support for Innovation Policy (QIPI-2)
- Public Expenditure on R&D and Innovation (QIPI-3)
- Participation in Federal STI Policy (QIPI-4)

Top 10 Regions in the QIPI Ranking: the Quality of Policy is the Key to Becoming an Innovation Leader

The first QIPI group includes ten Russian regions: the Republic of Tatarstan, Moscow, the Novosibirsk, Tomsk, Kaluga, Nizhny Novgorod, and Moscow Regions, the Republic of Mordovia, St Petersburg, and the Samara Region. They represent the Volga (40%), Central (30%), Siberian (20%), and North-Western (10%) Federal Districts (Figure 2.11). Seven out of the ten Russian regions, implementing active innovation policy, also occupy leading positions in the overall innovation development ranking.

The Republic of Tatarstan, the QIPI Leader: Public Funding is Not Everything

The Republic of Tatarstan, the most advanced region in terms of *Quality of Innovation Policy*, made it to the top of the QIPI ranking due to its leadership in three of the four thematic headings: 1st position in Regulatory Framework for Innovation Policy and in Organisational Support of Innovation Policy and 2nd in Participation in Federal STI Policy. At the same time, in Public Expenditure on R&D and Innovation, the Republic of Tatarstan significantly lags behind the majority of regions, occupying only 28th ranking position in the QIPI-3.
The scores of first QIPI group of regions by specific thematic headings are shown in Figure 2.12. In the first two sub-rankings, the regions occupy the same positions, highlighting several leaders. This is caused by the features of the QIPI-1 and QIPI-2 sub-indices, which are based on binary indicators (showing only the presence or absence of certain regulatory and organisational support attributes for innovation policy).

Regulatory Framework for Innovation Policy (QIPI-1): a Means to an End

As many as six out of the ten regions are leading in the *Quality of Innovation Policy*, sharing first place in the QIPI-1 sub-ranking:

- The **Republic of Tatarstan**, the **Novosibirsk**, **Kaluga**, **Nizhny Novgorod**, **Moscow** and **Samara Regions** received the highest scores for all indicators in the Regulatory Framework for Innovation Policy thematic heading. It means that these regions employ special strategies, regional laws and programmes to support innovation and granted special status to certain territories for priority development of innovation;
- all first QIPI group regions adopted specialised programmes or sets of public support measures to promote innovation development.

Organisational Support for Innovation Policy (QIPI-2): Relying on Institutions

The QIPI-2 sub-ranking also includes several leading regions:

- first place is shared by the **Republics of Tatarstan** and **Mordovia** and the **Kaluga Region**. They have established coordination or advisory bodies on innovation policy reporting directly to the highest official or the highest executive authority, along with various regional institutions such as foundations, agencies, and development corporations to support innovators;
- most Russian regions in the first QIPI group have regional innovation development institutions, except for the **Moscow Region** and **St Petersburg**.

Public Expenditures on R&D and Innovation (QIPI-3): Equal Opportunities

The **Moscow Region** (ranked 4th in the QIPI-3) and **Moscow** (5th) became the leaders in terms of the combined relative public expenditures on R&D and innovation:

- the capital city is 3rd of the top three Russian regions by the 'Federal appropriations in expenditure on technological innovations' (after the **Smolensk** and **Krasnoyarsk Regions**), and 7th by the same indicator for regional budget expenditures;
- the **Moscow Region** is ranked 5th in both federal and regional budget appropriations in total expenditure on technological innovation.

Table 2.6. Russian Regions' Ranking by Quality of Innovation Policy Index: 2017*

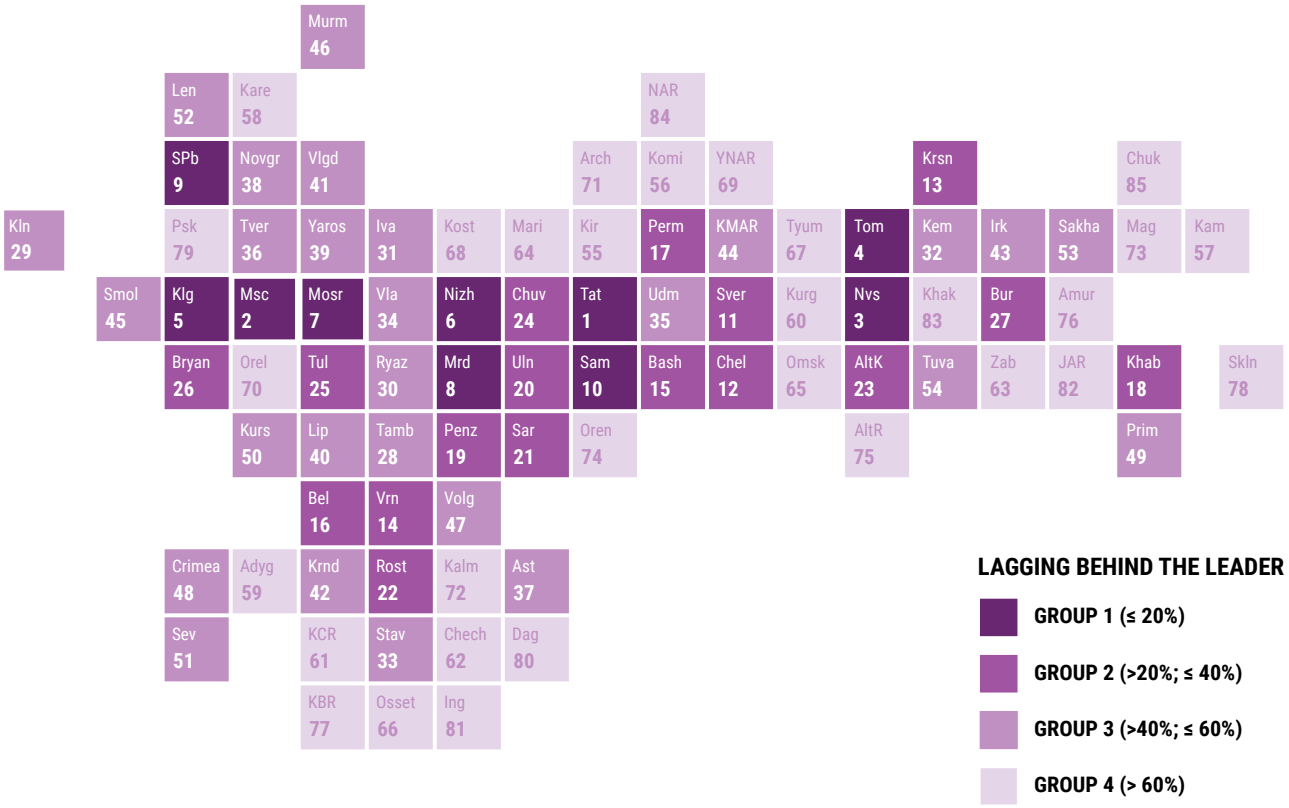
Region	QIPI group	QIPI ranking	QIPI	QIPI-1 group	QIPI-2 group	QIPI-3 group	QIPI-4 group
Republic of Tatarstan	I	1	0.6424	I	I	IV	I
Moscow	I	2	0.5862	III	II	II	I
Novosibirsk Region	I	3	0.5824	I	II	IV	I
Tomsk Region	I	4	0.5791	II	II	IV	I
Kaluga Region	I	5	0.5631	I	I	IV	II
Novgorod Region	I	6	0.5566	I	II	III	II
Moscow Region	I	7	0.5434	I	II	II	II
Republic of Mordovia	I	8	0.5389	II	I	IV	II
St Petersburg	I	9	0.5249	III	II	IV	I
Samara Region	I	10	0.5175	I	II	IV	II
Sverdlovsk Region	II	11	0.5009	I	II	IV	II
Chelyabinsk Region	II	12	0.4947	II	II	III	II
Krasnoyarsk Region	II	13	0.4933	II	II	II	II
Voronezh Region	II	14	0.4632	II	I	III	III
Republic of Bashkortostan	II	15	0.4596	II	II	III	II
Belgorod Region	II	16	0.4584	I	II	IV	II
Perm Region	II	17	0.4471	II	II	IV	II
Khabarovsk Region	II	18	0.4244	I	II	IV	III
Penza Region	II	19	0.4231	I	II	IV	III
Ulyanovsk Region	II	20	0.4219	II	I	IV	III
Saratov Region	II	21	0.4193	II	I	IV	III
Rostov Region	II	22	0.4057	II	II	IV	III
Altai Region	II	23	0.3996	II	IV	IV	II
Chuvash Republic	II	24	0.3991	II	IV	IV	II
Tula Region	II	25	0.3940	III	II	III	III
Briansk Region	II	26	0.3920	II	II	I	IV
Republic of Buryatia	II	27	0.3865	II	II	IV	II
Tambov Region	III	28	0.3850	II	II	IV	III
Kaliningrad Region	III	29	0.3798	IV	II	III	III
Ryazan Region	III	30	0.3737	II	II	IV	III
Ivanovo Region	III	31	0.3713	III	IV	IV	II
Kemerovo Region	III	32	0.3695	II	II	IV	III
Stavropol Region	III	33	0.3624	II	II	IV	III
Vladimir Region	III	34	0.3561	III	IV	IV	II
Udmurt Republic	III	35	0.3507	II	IV	IV	III
Tver Region	III	36	0.3470	II	I	IV	IV
Astrakhan Region	III	37	0.3462	IV	I	IV	III
Novgorod Region	III	38	0.3369	IV	I	IV	IV
Yaroslavl Region	III	39	0.3322	IV	II	IV	III
Lipetsk Region	III	40	0.3312	I	IV	IV	III
Vologda Region	III	41	0.3307	II	II	IV	III

* QIPI-1 shows the distribution of regions by indicators included into 5.1 Regulatory Framework for Innovation Policy, QIPI-2–5.2 Organisational Support for Innovation Policy, QIPI-3 – 5.3 Public Expenditures on R&D and Innovation, and QIPI-4 – 5.4 Participation in Federal STI Policy

(continued)

Region	QIPI group	QIPI ranking	QIPI	QIPI-1 group	QIPI-2 group	QIPI-3 group	QIPI-4 group
Krasnodar Region	III	42	0.3289	III	I	IV	III
Irkutsk Region	III	43	0.3205	III	II	IV	III
Khanty-Mansi Autonomous Region – Yugra	III	44	0.3182	I	II	IV	IV
Smolensk Region	III	45	0.3088	III	IV	II	IV
Murmansk Region	III	46	0.3083	II	II	IV	IV
Volgograd Region	III	47	0.3064	II	II	IV	III
Republic of Crimea	III	48	0.3048	III	IV	I	IV
Primorsky Region	III	49	0.3045	II	IV	IV	III
Kursk Region	III	50	0.3040	I	IV	IV	III
Sevastopol	III	51	0.2945	IV	II	II	IV
Leningrad Region	III	52	0.2835	III	II	IV	III
Republic of Sakha (Yakutia)	III	53	0.2727	II	II	IV	IV
Republic of Tuva	III	54	0.2663	III	II	II	IV
Kirov Region	IV	55	0.2561	III	II	IV	IV
Komi Republic	IV	56	0.2558	II	II	IV	IV
Kamchatka Region	IV	57	0.2511	III	II	IV	IV
Republic of Karelia	IV	58	0.2382	II	IV	IV	IV
Republic of Adygea	IV	59	0.2305	IV	II	IV	IV
Kurgan Region	IV	60	0.2231	II	IV	IV	IV
Karachay-Cherkess Republic	IV	61	0.2208	IV	IV	IV	III
Chechen Republic	IV	62	0.2201	II	II	IV	IV
Trans-Baikal Region	IV	63	0.2199	II	IV	III	IV
Mari El Republic	IV	64	0.2105	III	II	IV	IV
Omsk Region	IV	65	0.2069	IV	IV	IV	III
Republic of North Ossetia – Alania	IV	66	0.2056	III	II	IV	IV
Tyumen Region	IV	67	0.2034	III	IV	IV	IV
Kostroma Region	IV	68	0.2020	III	IV	IV	IV
Yamal-Nenets Autonomous Region	IV	69	0.1973	III	II	IV	IV
Orel Region	IV	70	0.1893	IV	II	IV	IV
Arkhangelsk Region	IV	71	0.1723	IV	IV	IV	IV
Republic of Kalmykia	IV	72	0.1711	IV	II	IV	IV
Magadan Region	IV	73	0.1707	II	II	IV	IV
Orenburg Region	IV	74	0.1644	II	IV	IV	IV
Altai Republic	IV	75	0.1612	IV	IV	I	IV
Amur Region	IV	76	0.1555	II	IV	IV	IV
Kabardia-Balkar Republic	IV	77	0.1489	III	IV	IV	IV
Sakhalin Region	IV	78	0.1478	II	IV	IV	IV
Pskov Region	IV	79	0.1473	IV	IV	IV	IV
Republic of Dagestan	IV	80	0.1296	III	IV	IV	IV
Republic of Ingushetia	IV	81	0.1268	II	IV	IV	IV
Jewish Autonomous Region	IV	82	0.1146	IV	II	IV	IV
Republic of Khakassia	IV	83	0.0907	III	IV	IV	IV
Nenets Autonomous Region	IV	84	0.0316	IV	IV	IV	IV
Chukotka Autonomous Region	IV	85	0.0009	IV	IV	IV	IV

Figure 2.11. Region Groups by Quality of Innovation Policy Index: 2017



The **Republics of Mordovia** and **Tatarstan** have the largest scores for 'Appropriations for civil S&T in the regional budget', ranked 4th and 5th, respectively (the leader of this indicator is **Sevastopol**, with 51st ranking position in the QIPI and 61st in the overall RRII ranking). At the same time, the above regions have low scores for 'Regional appropriations in expenditure on technological innovation' (22nd and 30th, respectively), and lower still for federal budget appropriations (50th and 55th).

Participation in Federal STI Policy (QIPI-4): a Narrow Circle

Regions' involvement in innovation support measures implemented at the federal level was assessed in the scope of this Scoreboard series for the first time. The general conclusion: Russian regions, which are strongly integrated into the federal agenda, have become the most successful in terms of innovation development:

- the leaders of the QIPI-4 sub-ranking are also in the top 10 for the overall assessment of *Quality of Innovation Policy* and innovation development level: the **Tomsk Region** (ranked 4th in both QIPI and RRII), the **Republic of Tatarstan** (1st and 2nd, respectively), the **Novosibirsk Region** (3rd and 8th), **St Petersburg** (9th and 3rd), **Moscow** (2nd and 1st), the **Nizhny Novgorod** (6th and 5th) and **Kaluga** (5th and 10th) Regions.

Regions leading in *Quality of Innovation Policy* have high scores for all QIPI-4 sub-index indicators:

- the largest value for 'Number of innovative projects supported by federal authorities' was found in the **Tomsk Region** (ranked 1st by the corresponding indicator), **Moscow** (2nd), the **Novosibirsk Region** (3rd), **St Petersburg** (4th), and the **Nizhny Novgorod Region** (5th);
- in the 'Number of federal development institutions supporting innovative projects', first place was shared by the **Republic of Tatarstan**, **Moscow**, the **Nizhny Novgorod Region**, and **St Petersburg**; the **Novosibirsk** and **Samara Regions** took 5th place, and the **Tomsk Region** was 9th;
- the largest value of 'Federal funding of innovative projects' was reached by the **Tomsk** (ranked 1st) and **Novosibirsk** (3rd) **Regions**, the **Republic of Mordovia** (6th), and **St Petersburg** (9th);
- the **Moscow Region** has the largest number of innovation development territories with special federal status (ranked 1st by the corresponding indicator), followed by the **Moscow** (2nd), the **Republic of Tatarstan** (3rd), **St Petersburg** (6th), the **Kaluga**, **Nizhny Novgorod**, and **Samara Regions** (8th);
- the **Republic of Tatarstan**, the **Tomsk**, **Kaluga**, and **Samara Regions** share first place in terms of the 'Number of innovative infrastructute facilities for SMEs'.

Figure 2.12. Russian Regions with the Highest QIPI Values: Thematic Sub-Index Rankings: 2017

	QIPI-1	QIPI-2	QIPI-3	QIPI-4
REPUBLIC OF TATARSTAN	1	1	28	2
MOSCOW	49	11	5	5
NOVOSIBIRSK REGION	1	11	25	3
TOMSK REGION	14	11	34	1
KALUGA REGION	1	1	31	9
NIZHNY NOVGOROD REGION	1	11	11	6
MOSCOW REGION	1	11	4	14
REPUBLIC OF MORDOVIA	14	1	17	10
ST PETERSBURG	49	11	26	4
SAMARA REGION	1	11	24	8

QIPI-1 — REGULATORY FRAMEWORK FOR INNOVATION POLICY

QIPI-2 — ORGANISATIONAL SUPPORT FOR INNOVATION POLICY

QIPI-3 — PUBLIC EXPENDITURES ON R&D AND INNOVATION

QIPI-4 — PARTICIPATION IN FEDERAL STI POLICY

RANKING POSITION: 1–3 4–10 11–40 41–85

3.

REGIONS' FUTURE PREPAREDNESS RANKING

The ranking of Russian regions based on the Future Preparedness Index (FPI) provides an assessment of regional strategic management (Figure 3.1). It is calculated using six indicators:

- Planning horizon for regional strategies;
- Focus of regional strategies on technological development;
- Media coverage of regions' progress in STI and industry development;
- Thematic diversification of regional strategies
- Similarity of regional media agendas to the information environment of advanced countries;
- Correspondence of regional strategic agendas to relevant federal strategies.

FPI Leading Regions

The first FPI group includes the **Belgorod Region**, **Moscow**, the **Moscow**, **Nizhny Novgorod**, **Novosibirsk**, **Penza**, and **Primorsky Regions**, the **Republic of Crimea**, the **Samara Region**, **St Petersburg**, the **Sverdlovsk** and **Tambov Regions**, the **Khanty-Mansi Autonomous Region – Yugra**, the **Chelyabinsk Region**, and the **Chuvash Republic**. Regions with a better future preparedness level are evenly distributed throughout the country, in seven of the eight federal districts: the Central (4 regions), Volga (4), Ural (3), Siberian, North-Western, Southern, and Far Eastern Federal Districts.

Planning Horizon for Regional Strategies

As many as five Russian regions shared leadership in scope of the planning horizon: **St Petersburg**, the **Karachay-Cherkess** and **Altai Republics**, the **Voronezh Region**, and the **Komi Republic**. These regions' key strategic documents outline relevant milestones until 2035. The first group of the ranking by the length of regional strategic planning period also includes the **Penza**, **Kemerovo**, and **Arkhangelsk Regions** and the **Kabardia-Balkar Republic**.

Focus of Regional Strategies' on Technological Development

The **Nizhny Novgorod** and **Novosibirsk Regions**, the **Republic of Tatarstan**, the **Samara**, **Sverdlovsk**, **Tambov**, and **Chelyabinsk Regions**, and the **Chuvash Republic** received high scores for their strategic documents focused on science, technology, and innovation aspects.

Media Coverage of Regions' Progress in STI and Industry Development

High scores in terms of the media's focus on innovation activities were received by **Moscow**, the **Moscow** and **Primorsky Regions**. They are included in the first group of regions by the value of 'Media coverage of regions' progress in STI and industry development' indicator.

Thematic Diversification of Regional Strategies

The **Samara**, **Belgorod**, **Ivanovo**, **Kirov**, and **Novosibirsk Regions**, the **Republic of Bashkortostan**, the **Tambov Region** and the **Khanty-Mansi Autonomous Region – Yugra** received high scores for their strategic agenda diversification: these regions' long-term planning documents cover the largest number of unique topics and the widest range of highly relevant STI topics.

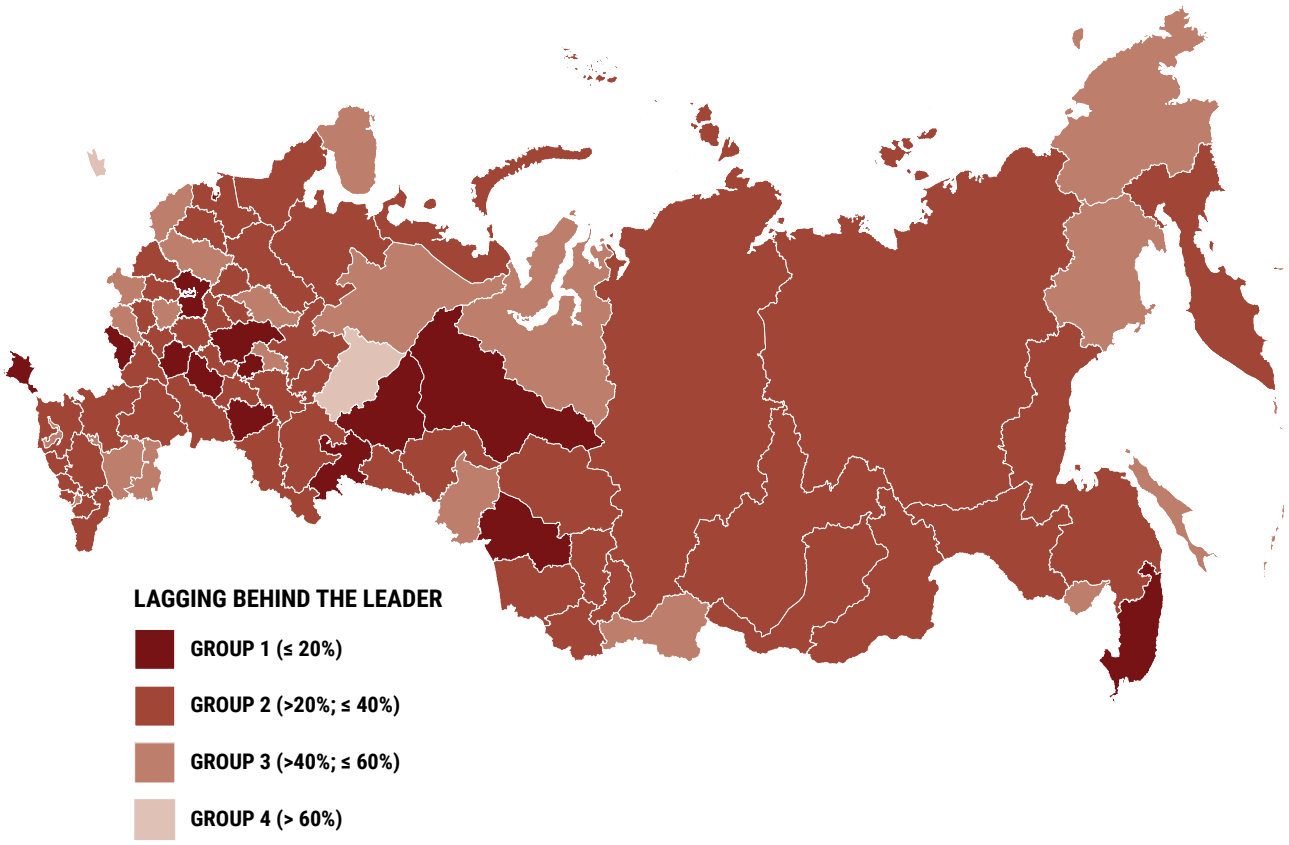
Similarity of Regional Media Agendas to the Information Environment of Advanced Countries

In the context of global scientific and technological development, the leading international media most often wrote about **Moscow** and **St Petersburg**: news agenda of the both capitals turned out to be the most relevant for advanced economies. These cities lead by the value of the 'Similarity of regional media agendas to the information environment of advanced countries' indicator. The second group of the sub-ranking includes the **Altai**, **Transbaikal**, **Kaliningrad**, **Kamchatka**, **Leningrad**, and **Penza Regions**, the **Republics of Altai** and **Karelia**, the **Samara** and **Tomsk Regions**.

Correspondence of Regional Strategic Agendas to Relevant Federal Strategies

Strategic and regulatory documents of the **Samara**, **Belgorod**, **Ivanovo**, **Kirov**, and **Novosibirsk Regions**, the **Republic of Bashkortostan**, the **Rostov** and **Tambov Regions**, the **Khanty-Mansi Autonomous Region – Yugra**, and the **Chuvash Republic** are most strongly integrated into the federal STI development agenda. These regions are included in the first ranking group by the value of the 'Correspondence of regional strategic agendas to relevant federal strategies' indicator.

Figure 3.1. Region Groups by Future Preparedness Index: 2018



4.

METHODOLOGY OF THE RANKING

This section presents exhaustive methodological comments on the ranking calculation algorithm and its concepts, mathematical and statistical analysis, and indicator measurement techniques.

4.1. Ranking Calculation Algorithm

Generally, ranking means ordering certain objects by values of quantitative indicators (ranking estimates). Rankings are used as a comparative assessment tool to benchmark one object against another.

The model applied to calculate the Russian Regional Innovation Scoreboard is based on a concept of ranking the regions by the values of various indices – relative indicators designed as to add incommensurable elements and make an integrated benchmarking of complex socio-economic measurements.

The multi-level hierarchical structure of the indicator system used in the Russian Regional Innovation Index (Table 1.1) enables to create a composite index using all of the selected indicators and also decompose it into sub-indices grouped into thematic blocks and headings (Figure 1.1).

As a result, we can balance out a low score of one indicator (or a set of them) with the high score of another. In doing so, we take into account the entire set of indicators and evaluate the region's maximum potential. Calculating sub-indices allows one to compensate for a large number of indicators and increase the ranking's analytical value.

In order to generalise individual values of each criterion, the indicators in two headings of the ***Quality of Innovation Policy*** thematic block – Regulatory Framework for Innovation Policy and Organisational Support for Innovation Policy – which indicate the presence (or absence) of specialised documents and public agencies supporting innovation policy in the regions and take on the values of '0' or '1', were subjected to linear convolution using equal weighting coefficients: instead of individual indicators, their average values for thematic headings were used in the calculation (the average value of indicators 5.1.1, 5.1.2, 5.1.3, 5.1.4 and the average value of indicators 5.2.1, 5.2.2). Thus, the total number of indicators applied in the calculations was reduced to 49.

In order to develop the system of indicators for the Russian Regional Innovation Index, we had to apply a correlation analysis of the initially selected statistical indicators, which revealed how much changes in one or more values contributed to systemic changes in other values.

When we excluded indicators closely correlated to others, it was possible to avoid 'overloading' the system and design a stable ranking calculation model.

The homogeneity and comparability of the applied indicators were achieved by using their weighted (normalised) values, rather than absolute ones.

For indicators, whose values do not fall within clearly defined ranges (e.g., between 0% and 100%), the distribution asymmetry was assessed (in relation to the average value) before performing the normalisation procedure.

For asymmetric distributions (when most of the regions have low indicator values, while a few have very high ones), in order to level the impact of extreme values on the final ranking, the indicator values were transformed as follows:

$$\tilde{x}_i^r = \sqrt[s]{x_i^r}, \quad (1)$$

where $\tilde{x}_i^r$ is the transformed value of the i-th indicator in the r-th region;
x_i^r is the initial value of the i-th indicator in the r-th region;
s is the transformation degree (ranging between 2 and 4, depending on the asymmetry factor).
If the distribution is symmetrical (the asymmetry factor is <0.5), indicators are not transformed ($s = 1$).

To calculate the 2017 ranking, values of 14 indicators were transformed using formula (1): 2.1.2, 2.3.1, 2.3.2, 3.3.1, 4.1.1, 4.1.2, 5.4.3 (S = 2); 2.3.3, 5.4.1, 5.4.4 (S = 3); 1.1.1, 4.1.3, 4.1.5, 4.2.1 (S = 4). Other indicators did not require transformation.

Normalised indicator values for each region were calculated as the ratio of the difference between the value of the indicator in the region and its minimum value for all regions to the difference between the maximum and minimum values of this indicator for all regions (taking into account the transformation). Thus, the normalised indicator values range from 0 (for regions with the minimum indicator value) to 1 (for regions with the maximum value of this indicator). This approach to normalising takes into account the positive nature of the selected indicators, that is the higher indicator values suggest positive dynamics and contribute to a higher index value.

The values of the composite index and first- and second-level regional sub-indices (by thematic blocks and headings of the indicator system) are calculated as the arithmetic average of the normalised values of the relevant set of indicators. All indicators have equal relevance.

$$I^r = \frac{1}{n}\sum_{i=1}^{n}\frac{\tilde{x}_i^r - \tilde{x}_i^{\min}}{\tilde{x}_i^{\max} - \tilde{x}_i^{\min}}, \quad (2)$$

where I^r is the r-th region's index;
n is the number of indicators applied to calculate the index;
$\tilde{x}_i^r$ is the value of the i-th indicator in the r-th region;
$\tilde{x}_i^{\min}$ is the minimum value of the i-th indicator;
$\tilde{x}_i^{\max}$ is the maximum value of the i-th indicator.

Formula (2) was applied to calculate the final RRII scores for each Russian region, the scores of the first-level sub-indices in the thematic blocks included in the integral index (SECI, STPI, IAI, EAI, QIPI), and second-level sub-indices in the thematic blocks' headings (Basic Macroeconomic Indicators, Educational Potential of the Population, Digitisation Potential, R&D Funding, R&D Personnel, R&D Output, Innovative Activity: Technological and Non-Technological Innovation , Small Innovative Enterprises, Expenditure on Technological Innovation, Efficiency of Innovative Activity, Export of Goods and Services, Export of Knowledge, Regulatory Framework for Innovation Policy, Organisational Support of Innovation Policy, Public Expenditure on R&D and Innovation, and Participation in Federal STI Policy).

If the RRII is calculated using the values of its sub-indices (as opposed to indicators), it can be defined as a weighted average value of the sub-indices. Both calculation methods give the same result. Sub-indices' weighting coefficients are set equal to the share of the number of indicators applied to calculate each sub-index in the total number of selected indicators. The sum of the sub-indices' weighting coefficients equals 1. This ensures the equal contribution of the selected indicators to the final score.

For the proposed system of indicators, the formula for calculating the integral index on the basis of sub-indices looks as follows:

$$\mathbf{RRII}^r = \frac{13}{49}\times \mathbf{SECI}^r + \frac{10}{49}\times \mathbf{STPI}^r + \frac{9}{49}\times \mathbf{IAI}^r + \frac{7}{49}\times \mathbf{EAI}^r + \frac{10}{49}\times \mathbf{QIPI}^r, \quad (3)$$

where $\mathbf{RRII}^r$ is the Russian Regional Innovation Index of the r-th region;
$\mathbf{SECI}^r$ is the r-th region's index for the 'Socio-Economic Conditions for Innovation' thematic block;
$\mathbf{STPI}^r$ is the r-th region's index for the 'S&T Potential' thematic block;
$\mathbf{IAI}^r$ is the r-th region's index for the 'Innovation Activity' thematic block;
$\mathbf{EAI}^r$ is the r-th region's index for the 'Export Activity' thematic block;
$\mathbf{QIPI}^r$ is the r-th region's index for the 'Quality of Innovation Policy' thematic block.

During the final stage of calculating the scores, the regions were ranked in descending order of their RRII and sub-index score and assigned a corresponding position in the overall ranking and sub-rankings. If several regions had the same index values, they were assigned the same rank in line with the highest value in the set.

To measure the regional differentiation, in addition to ranking the regions by the RRII and sub-indices, they were grouped according to the degree of lagging behind the leading region in terms of index/sub-index values. There are four groups in total. The ranges were set using the following scale:

	Lagging behind the leader in terms of relevant index/sub-index value, %
I group	≤ 20
II group	> 20; ≤ 40
III group	> 40; ≤ 60
IV group	> 60

The leading region is in group 1.
The indices were estimated in compliance with the adopted methodology using 2017 statistical data; in some cases, data for an earlier period was used. Relevant information about the data used to calculate the ranking is presented in Table. 1.1.
Data for the Arkhangelsk and Tyumen Regions does not include information on the autonomous areas located on their territories.

Regional Future Preparedness Ranking Calculation Algorithm

The regional Future Preparedness Index (FPI) is calculated as the arithmetic average of the normalised values of all indicators calculated for the region. Afterwards, the regions are ranked in descending order according to their FPI values.

Normalised indicator values for each region are calculated as the ratio of the difference between the indicator value for the region and the minimum indicator value for all regions to the difference between the maximum and minimum values of this indicator for all regions, using the following formula:

$$X_i^r = \frac{x_i^r - x_i^{\min}}{x_i^{\max} - x_i^{\min}}, \quad (4)$$

where X_i^r is the normalised value of the i-th indicator in the r-th region;
x_i^r is the initial value of the i-th indicator in the r-th region;
$x_i^{\min}$ is the minimum value of the i-th indicator;
$x_i^{\max}$ is the maximum value of the i-th indicator.

Thus, the normalised indicator values range from 0 (for regions with the minimum indicator value) to 1 (for regions with the maximum indicator value). This normalising approach takes into account the positive nature of the selected indicators, that is higher indicator values suggest positive dynamics and contribute to a higher index value.

If a region lacked any indicator value, the indicator itself was excluded from the calculation of the FPI for this region.
When calculating the arithmetic average of normalised FPI index values, all indicators were treated as equally relevant.

The Regional Future Preparedness Index is calculated as follows:

$$I^r = \frac{1}{n}\sum_{i=1}^{n} X_i^r, \quad (5)$$

where I^r is the Future Preparedness Index of the r-th region;
n is the number of indicators applied to calculate the FPI;
X_i^r is the normalised value of the i-th indicator in the r-the region.

At the final stage of calculating the ranking, the regions were ranked in descending order of their FPI score and assigned corresponding ranks. If several regions had equal index scores, they were assigned the same rank in line with the highest score in the set.

4.2. Methodological Comments on the Applied Indicators

The following definitions are intended to explain the concepts and indicators applied to build the RRII. In line with the hierarchical model of the composite index (Table 1.1), each subsection comprises relevant thematic blocks (sub-indices), headings, and indicators.

Thematic Block 1. Socio-Economic Conditions for Innovation

This thematic block comprises performance indicators of the regional economy (labour productivity, fixed assets renewal), the availability of human resources to be used in innovation, and digitisation potential.

1.1. Basic Macroeconomic Indicators

The indicators were calculated on the basis of Rosstat CSDB and UnISIS statistical data.
Gross Regional Product (GRP) is a general indicator of regions' economic activity that measures production of goods and services for final use. GRP represents gross value added created by residents of the region and is calculated as the difference between output and intermediate consumption. In its economic content, the GRP indicator is very close to the Gross Domestic Product (GDP). However, there is a significant difference between GDP (federal level) and GRP (regional level). The sum of gross regional products in Russia is not equivalent to GDP, since it does not include the added value of non-marketed public services (such as defence, public administration, etc.) provided by government institutions to society as a whole.
Fixed assets are assets produced for repeated or continuous use over a long period of time (but not less than one year) for the production of goods, the provision of marketed and non-marketed services, management purposes, or for temporary possession and use or temporary use by other organisations on a paid basis. Fixed assets include buildings, structures, machinery and equipment, vehicles, cattle and livestock, perennial plantations, and so on.
1.1.1. GRP per worker employed in the region measures labour productivity. It is calculated as the ratio of GRP adjusted for the value of a fixed set of goods and services for interregional comparisons of regional purchasing power, to the average annual number of workers employed in the region's economy. GRP is adjusted for domestic Russian price differences by dividing the GRP by the cost factor of a fixed set of goods and services for interregional comparison of the population's purchasing power.
Data source: Rosstat National Accounts database.
1.1.2. Fixed assets renewal coefficient is the ratio of fixed assets put into operation during the year to their availability at the end of the year (in percent); it reflects the proportion of new (introduced over the year) fixed assets in their total amount.
Data source: federal statistical survey forms no. 11 'Information on the Availability and Movement of Fixed Assets (Property) and Other Non-Financial Assets' and no. 11 (brief) 'Information on the Availability and Movement of Fixed Assets (Property) of Non-Profit Organisations'.
1.1.3. Employment in medium-high and high-tech manufacturing as a percentage of the average employment in the region in the region is calculated using data on the average number of employees in all organisations by economic activity type.
According to the international classification developed by Eurostat[8], high-tech and medium-high manufacturing sectors include the following economic activities:

- manufacture of basic pharmaceutical products and pharmaceutical preparations (OKVED2/NACE Rev.2 code 21);
- manufacture of computers, electronic and optical products (code 26);
- production of chemicals and chemical products (code 20);
- manufacture of electrical equipment (code 27);
- manufacture of machinery and equipment not elsewhere classified (code 28);
- production of motor vehicles, trailers, and semi-trailers (code 29);
- manufacture of other transport equipment (code 30).

The indicator is calculated as the ratio of the average number of employees engaged in the above economic activities to the average number of workers employed in the region, multiplied by 100.
1.1.4. Employment in knowledge-intensive activities as a percentage of the average employment in the region is calculated using data on the average number of employees in all organisations by economic activity type.
According to the aggregation of economic activity types by technological intensity developed by Eurostat[9],

[8] Eurostat indicators on High-tech industry and Knowledge-intensive services. https://ec.europa.eu/eurostat/cache/metadata/Annexes/htec_esms_an3.pdf (last assessed on: 05.08.2019).
[9] Ibid.

knowledge-intensive service industries include the following economic activities:

- water transport (OKVED2/NACE Rev.2 code 50);
- air transport (code 51);
- publishing activities (code 58);
- motion picture, video and television programme production, sound recording and music publishing activities (code 59);
- programming and broadcasting activities (code 60);
- telecommunications (code 61);
- computer programming, consultancy and related activities (code 62);
- information service activities (code 63);
- financial service activities, except insurance and pension funding (code 64);
- insurance, reinsurance and pension funding, except compulsory social security (code 65);
- activities auxiliary to financial services and insurance activities (code 66);
- legal and accounting activities (code 69);
- activities of head offices; management consultancy activities (code 70);
- architectural and engineering activities; technical testing and analysis (code 71);
- scientific research and development (code 72);
- advertising and market research (code 73);
- other professional, scientific and technical activities (code 74);
- veterinary activities (code 75);
- employment activities (code 78);
- security and investigation activities (code 80);
- public administration and defence; compulsory social security (code 84);
- education (code 85);
- human health activities (code 86);
- residential care activities (code 87);
- social work activities without accommodation (code 88);
- creative, arts and entertainment activities (code 90);
- libraries, archives, museums and other cultural activities (code 91);
- gambling and betting activities (code 92);
- sports activities and amusement and recreation activities (code 93).

This indicator is calculated as the ratio of the average number of employees engaged in the above economic activity types to the average number of employees in the region's economy, multiplied by 100.
Data source for calculating indicators 1.1.3 and 1.1.4: UnISIS database.

1.2. Educational Potential of the Population

1.2.1. Population aged 25-64 with higher education as a percentage of the total population in each age group measures the level of the adult education. This indicator covers the entire population of the country capable of contributing to the creation of a knowledge-based economy: the employed, the unemployed, and people who are not counted as labour force. It reflects the educational system's results achieved over a long period of time and is widely used in international comparisons. The indicator's territorial differentiation correlates with the age structure of the population. The indicator represents both a social and economic aspect, reflecting, on the one hand, the development level of society and social interactions, and, on the other hand, the human potential required to step up innovation activity. It is calculated as the ratio of the population aged 25-64 with higher education to the total number of the population in this age group, multiplied by 100.
Data source: National labour force surveys.

1.2.2. Higher education enrolment – bachelor's, specialist's, and master's degree programmes per 10,000 population is an indicator of higher education (bachelor's, specialist's, and master's degree programmes) availability in the region. It reflects not only the educational potential of new generations (i.e. prospective changes in the educational level of the population) but also, to a certain extent, the state of the regional innovation system, where higher education institutions play an important role. Firstly, they ensure the reproduction of S&T (intellectual) potential required for the creation and commercialisation of new knowledge. Secondly, they support the development of innovative goods, services, and technologies. Finally, they promote the creation and development of innovation infrastructure.
This indicator is calculated as the ratio of the number of students enrolled into higher education programmes (bachelor's, specialist's, master's) to the total number of the population, multiplied by 10,000.
Data sources: federal statistical survey form no. VPO-1 'Information on Educational Institutions Implementing Higher Education Programmes – Bachelor's, Specialist's, Master's Degree Programmes' and demographic statistics.

1.2.3. Students specialising in mathematics, natural sciences, engineering, technology and technical sciences, and basic medicine as a percentage of the total higher education enrolment – bachelor's, specialist's, and master's degree programmes is calculated as the ratio of the number of students specialising in mathematics, natural sciences, engineering, technology and technical sciences, and medicine (enrolled into bachelor's, specialist's, and master's degree programmes) to the total higher education enrolment – bachelor's, specialist's, and master's degree programmes, multiplied by 100.

Data source: federal statistical survey form no. VPO-1 'Information on Educational Institutions Implementing Higher Education Programmes – Bachelor's, Specialist's, Master's Degree Programmes'.

1.2.4. Participation of employed population aged 25-64 in lifelong learning is measured as the ratio of employed population aged 25-65 that completed education, training and/or development programmes to the total employment in this age group in the region, multiplied by 100.

The number of employed population aged 25-65 who completed professional (vocational) education, training and/or development programmes is measured as the total number of employed population aged 25-65 who have completed professional (vocational) education, training or development programmes over the last 12 months and received a corresponding document (diploma, certificate, licence, or credential) or other documentary evidence of having completed said education and training in one of the formats listed in paras a) – o) below:

a) postgraduate programmes for academic personnel (including postgraduate military studies), residency programmes, apprenticeship programmes;
b) higher education – specialist's, master's degree programmes;
c) higher education – bachelor's degree programmes;
d) secondary vocational education – programmes for mid-career professionals;
e) secondary vocational education – programmes for skilled workers, junior technicians and employees;
f) additional professional (vocational) education and development programmes, vocational retraining programmes for people who completed secondary vocational and/or higher education;
g) vocational education and training, retraining, development programmes for skilled workers, junior technicians and employees;
h) driving courses;
i) upgrading of professional skills at workplace under guidance of colleagues (mentors, instructors);
j) training in work safety, labour regulations, fire safety, safe handling of weapons;
k) participation in regional industry and corporate 'Young Professionals' championships ('Worldskills Russia');
l) short-term training courses, work-related training events, workshops, internships;
m) foreign language courses, mastering new equipment, technologies, computer software, legislation, and other topics;
n) financial and budgetary literacy training, training courses in housing and communal services, public services;
o) other training.

If an employee aged 25-65 has completed several different training programmes and courses over the surveyed period, they are counted in the number of employees aged 25-65 having completed vocational education, training and/or development courses only once.

Data source: National labour force surveys.

1.2.5. Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population: it is an indicator measuring the availability of secondary vocational education (programmes for mid-career professionals) in the region. It reflects both the educational potential of the given region (i.e. prospective changes in the educational level of the population), and, to a certain extent, the state of its innovation system where secondary vocational education institutions implementing programmes for mid-career professionals play an important role in training skilled and competent professionals, competitive on the contemporary labour market.

This indicator is calculated as the ratio of the number of students enrolled in secondary vocational education or training programmes for mid-career professionals to the total number of the population, multiplied by 10,000.

Data source: federal statistical survey form no. SPO-1 'Information on Educational Institutions Implementing Secondary Vocational Education Programmes' and demographic statistics.

1.2.6. Students specialising in mathematics, natural sciences, engineering, technology and technical sciences, and basic medicine as a percentage of the total secondary vocational education enrolment – programmes for mid-career professionals is calculated as the ratio of the number of students enrolled into secondary vocational education and training programmes on mathematics, natural sciences, engineering, technology and technical sciences, and medicine to the total number of students enrolled into secondary vocational education and training programmes for mid-career professionals, multiplied by 100.

Data source: federal statistical survey form No. SPO-1 'Information on Educational Institutions Implementing Secondary Vocational Education Programmes' and demographic statistics.

1.3. Digitisation Potential

1.3.1. Enterprises having broadband top speed access over 100 Mpbs as a percentage of the total number of enterprises is an indicator marking enterprises' potential for digitisation of business processes and information interaction with the external environment. It measures both the level of digital development in the region and the general conditions for creation and application of innovations.

This indicator is calculated as the ratio of the number of enterprises which have Internet access with top access speed over 100 Mbps to the total number of surveyed enterprises, multiplied by 100. The range of surveyed organisations (save for small businesses) includes the following economic activity types: forestry and logging (OKVED2 code 02); fishing and aquaculture (code 03); mining and quarrying (Section B); manufacturing (Section C); electricity, gas, steam and air conditioning supply (Section D); water supply; sewerage, waste management and remediation activities (Section E); construction (Section F); wholesale and retail trade; repair of motor vehicles and motorcycles (Section G); transportation and storage (Section H); accommodation and food service activities (Section I); information and communication (Section J); financial and insurance activities (Section K); real estate activities (Section L); professional, scientific, and technical activities (Section M); administrative and support service activities (Section N); public administration and defence; compulsory social security (Section O) (save for administration and operation of prisons, penal colonies, and other detention facilities, and the provision of rehabilitation services to ex-inmates) (code 84.23.4), public order and security activities (code 84.24)); higher education (code 85.22); training of highly skilled personnel (code 85.23); health and social work activities (Section Q); arts, entertainment and recreation (Section R); repair of computers and personal and household goods (code 95).
Data source: federal statistical survey form no. 3-inform 'Information on the Use of Information and Communication Technologies, Production of Computer Hardware and Software, and Provision of Related Services'.

1.3.2. Enterprises providing ICT related training of staff as a percentage of the total number of enterprises is an indicator marking the potential of human resources in the context of economy digitisation.
This indicator is calculated as the ratio of the number of organisations having made expenditures over the reporting year on training their staff in the development and application of information and communication technologies to the total number of the surveyed organisations, multiplied by 100. The range of surveyed organisations (save for small businesses) includes the following economic activity types: forestry and logging (OKVED2 code 02); fishing and aquaculture (code 03); mining and quarrying (Section B); manufacturing (Section C); electricity, gas, steam and air conditioning supply (Section D); water supply; sewerage, waste management and remediation activities (Section E); construction (Section F); wholesale and retail trade; repair of motor vehicles and motorcycles (Section G); transportation and storage (Section H); accommodation and food service activities (Section I); information and communication (Section J); financial and insurance activities (Section K); real estate activities (Section L); professional, scientific, and technical activities (Section M); administrative and support service activities (Section N); public administration and defence; compulsory social security (Section O) (save for administration and operation of prisons, penal colonies, and other detention facilities, and the provision of rehabilitation services to ex-inmates) (code 84.23.4), public order and security activities (code 84.24)); higher education (code 85.22); training of highly skilled personnel (code 85.23); health and social work activities (Section Q); arts, entertainment and recreation (Section R); repair of computers and personal and household goods (code 95).
Data source: federal statistical survey form No. 3-inform 'Information on the Use of Information and Communication Technologies, Production of Computer Hardware and Software, and Provision of Related Services'.

1.3.3. Active Internet users in the adult population as a percentage of population aged 15-74 allows one to assess the demand for, and use of, internet access by the population. This indicator is calculated as the ratio of the population aged 15-74 who access the internet (almost) every day to the total population aged 15-74, multiplied by 100.
Data source: federal statistical survey form no. 1-IT 'Questionnaire for Sample Population Survey on Use of Information Technologies and Information and Telecommunication Networks'.

Thematic Block 2. S&T Potential

Research and development is a major innovation activity. The STPI measures the availability of (financial and human) resources for and the productivity of R&D.

2.1. R&D Funding

Indicators in sections 2.1 and 2.2 were calculated using the data from federal statistical survey form no. 2-science 'National R&D Survey' and the UNISIS database.
Research and development (R&D) are systematically conducted creative activities aimed at increasing the amount of scientific knowledge, among other things, about people, nature, and society, and finding new areas to apply such knowledge. What distinguishes an R&D project from all others is a significant element of novelty. Accordingly, a specific project will or, conversely, will not be classified as an R&D depending on its objective. Research and development includes three types of activities: basic research, applied research, and development.

Gross domestic expenditure on R&D is the actual monetary expenditure on research and development inside the country (including R&D funded from abroad but excluding payments made abroad). The estimation is based on the statistical accounting regarding research and development performed by organisations using their own intramural resources during the reporting year regardless of the source of funds. Gross domestic expenditure on R&D includes current and capital costs. Current expenditures include labour costs, insurance premiums for compulsory pension insurance, compulsory medical insurance, and compulsory social insurance; expenditures for the procurement and manufacture of special equipment (including the costs of relevant work), other material costs (the cost of purchased raw and other materials, components, semi-finished products, fuel, energy, production services, etc.), and other current expenses. Capital expenditures cover the acquisition of land, construction or procurement of buildings, procurement of equipment classified as fixed assets, etc.

2.1.1. Gross domestic expenditure on R&D as a percentage of GRP reflects the proportion between investments in the R&D sector (the costs of research and development) and the region's macroeconomic indicators. This indicator is calculated as the ratio of the total amount of intramural R&D expenditures to GRP, multiplied by 100. For Russia as a whole, internal R&D expenditures are compared to GDP.

2.1.2. Gross domestic expenditure on R&D per researcher is calculated as the ratio of total intramural R&D expenditures to the number of researchers (excluding part-time employees and researchers employed as independent contractors).

2.1.3. Gross domestic expenditure on R&D financed by organisations of the business enterprise sector measures the contribution of business enterprise sector organisations to R&D funding. Business enterprise sector organisations include all organisations whose main activity is related to the production of goods or services (other than higher education services) for sale, including those owned by the state. Business enterprise sector organisations also include private non-profit organisations mainly serving the above organisations. The indicator is calculated as the ratio of intramural R&D expenditures financed by the business sector organisations out of their own funds to the total amount of intramural R&D expenditures, multiplied by 100.

2.1.4. Average monthly salary of R&D personnel as a percentage of average nominal monthly salary in the region measures the comparative level of financial wellbeing of the R&D personnel in the region. The average monthly salary of R&D personnel is calculated using the following formula:

$$\mathrm{MS} = \mathrm{IC}/\mathrm{N}/12, \quad (7)$$

where MS is average monthly salary of R&D personnel;
IC is current intramural expenditures on R&D personnel (excluding part-time employees and researchers employed as independent contractors);
N is the average number of R&D personnel on the payroll (excluding part-time employees and researchers employed as independent contractors).

2.2. R&D Personnel

2.2.1. R&D personnel as a percentage of the annual average number of the employed in the region's economy measures the employment in the R&D sector; it is calculated as the ratio of the average number of R&D personnel on the payroll (excluding part-time employees and researchers employed as independent contractors) to the average annual number of people employed in the region's economy, multiplied by 100.

R&D personnel comprises workers whose systematically conducted creative activities are aimed at increasing knowledge and finding new areas for its application, and those engaged in the direct provision of R&D related services.

Researchers are workers professionally involved in R&D, who directly create new knowledge, products, processes, methods, and systems and manage these activities. Higher education is required to perform these functions. The researcher category also includes administrative and managerial personnel who directly supervise the research (including heads of R&D organisations and departments).

2.2.2. Researchers under 39 as a percentage of the total number of researchers measures the share of young researchers; it is calculated as the ratio of the number of researchers under 39 (excluding part-time employees and researchers employed as independent contractors) to the total number of researchers, multiplied by 100.

2.2.3. Researchers with scientific degrees as a percentage of the total number of researchers is one of the indicators measuring the qualifications of the bulk of researchers directly engaged in R&D. It is calculated as the ratio of the number of researchers with scientific degrees (excluding part-time employees and researchers employed as independent contractors) to the total number of researchers, multiplied by 100.

2.3. R&D Output

2.3.1. Number of publications in scientific journals indexed in Web of Science per 10 researchers is calculated as the ratio of the total number of publications by region's researchers published in scientific journals indexed in Web of Science to the number of researchers employed in the region (excluding part-time employees and researchers employed as independent contractors), multiplied by 10. Publications include any of the following three document types: articles, reviews, and conference papers/proceedings. Scientific journals mean scientific journals, monographs, collections, and conference proceedings indexed in Web of Science. A publication is credited to a specific region if the name of the region or a city thereof (taking into account various transliterations) is listed in the affiliated address of its author or one of the co-authors.

2.3.2. Number of patent applications filed in the Russian Federation by Russian residents per 1 million labour force aged 15-72 measures invention activity in the region. This indicator reflects both R&D output and regional innovation potential.

Patent information is based on the data for filing of applications and issuance of patents (protection documents certifying priority, authorship, and exclusive right for use of the invention during the term of the patent). National estimates are typically based on national patent offices' data (in our case, Rospatent).

According to Para. 1, Article 1350 of the Russian Civil Code, an invention is a technical solution in any area related to a product (in particular, a device, substance, a strain of a microorganism, a plant or animal cell culture) or a method (a process of performing actions in respect of a material object by material means), including to the use of products or methods for a specific purpose.

2.3.3. Number of advanced manufacturing technologies developed in the region per 1 million labour force aged 15-72 is one of the indicators measuring the productivity of S&T activities. Advanced manufacturing technologies are technologies and technological processes (including equipment required for their application) controlled by a computer or based on microelectronics, and applied to design, produce, or process products and services. This includes all groups of advanced manufacturing technologies, including design and engineering; production, processing and assembly; automated transportation of materials and parts, and automated loading/unloading operations; automated monitoring and/or control equipment; communication and management; production information systems; integrated management and control systems.

This indicator was calculated on the basis of data collected using federal statistical survey form no. 1-technology 'Information on the Development and Application of Advanced Manufacturing Technologies' and Rosstat CSDB.

Thematic Block 3. Innovative Activity

To assign the regions their IAI ranks, we used aggregated statistical data for 2017 obtained by surveying large and medium-sized enterprises with the help of federal statistical survey form no. 4-innovation 'Information on Innovative Activity of Enterprises', as well as small enterprises with the help of federal statistical survey form no. 2-MP-innovation 'Information on Technological Innovation of Small Enterprises'.

In this report, the term ***Innovative activity*** means a type of activity connected to the transformation of ideas (usually, the results of research and development or another type of S&T achievements) into technologically new or significantly improved goods and services, introduced onto the market, into new (technologically new) or significantly improved production processes or services delivery (provision) methods, used in practice. Innovative activity includes a broad range of scientific, technological, organisational, financial, and commercial activities which joint efforts lead to innovation. Innovative activities include the following:

- research and development;
- acquisition of tangible technology (machinery and equipment) whose technological purpose is related to implementation of technological and other innovations;
- acquisition of intangible technology from third parties in the form of patents, licenses (contracts) for the use of inventions, industrial designs, utility models, disclosure of know-how, and technological services; acquisition of software related to technological innovations;
- design is an activity connected with the change in the form, appearance or user-friendliness (usability) of products and services;
- engineering, including pre-FEED and FEED, project development and design studies of technological items and solutions during the innovation implementation stage, post-project services during installation, commissioning, and start-up works, etc.;
- personnel training and retraining for the purposes of implementing technological innovation;
- market research.

Technological innovation is the final result of innovative activity, presented in the form of new (technologically new) or significantly improved goods and services, introduced onto the market, or of new (technologically new) or

significantly improved production processes or services delivery (provision) methods, used in practice. An innovation is considered as implemented if it has been launched onto the market or used in the production process.
Marketing innovation includes the implementation of marketing methods, either new or significantly improved, that cover substantial changes in the design and packaging of goods and services. Also, such innovations include the usage of new goods and services sales strategies and new goods and services presentation methods, goods and services launch and the promotion on the target market, as well as the development of new price strategies.
Marketing innovations are aimed at complete satisfaction the target customers' needs and expansion of the target audience, as well as development of new markets to increase sales.
Organisational innovation includes the implementation of new business practices, new workplace organisation and external relations management methods aimed at increasing enterprises' performance as a result of cutting administrative and transaction costs and workplace engineering optimisation (working hours rationalisation) and, hence, reach better labour productivity, access non-marketed assets, and reduce delivery costs.

3.1. Innovative Activity: Technological and Non-Technological Innovation

Innovative activity of enterprises describes the degree to which enterprises (organsations) are involved in general or specific innovative activity during a given period of time. The degree of involvement of an enterprise (organisation) is usually evaluated as a ratio of the number of enterprises (organisations) engaged in technological, marketing, and organisational innovation to the total number of enterprises (organisations) under review in a country, industry, sector, region, etc. during a given period of time.
3.1.1. Enterprises engaged in technological innovation as a percentage of all enterprises describes the level of engagement of the region's enterprises in the development and implementation of technological innovations. The indicator is calculated as the percentage of enterprises engaged in technological (product and/or process) innovation in the total number of enterprises surveyed in the region. Enterprises that made expenditures on that type of innovations during the reporting period (year) are counted. It does not matter if the expenditures were incurred for any specific type or for all types of innovative activities, nor does it matter whether the innovation was completed in the reporting year or moved onto a future period. If such costs were incurred, the enterprise is included as innovation-active.

3.1.2. Enterprises engaged in non-technological (marketing and/or organisational) innovation as a percentage of all enterprises reflects the regional enterprises' involvement in the development and implementation of non-technological innovations. This indicator is calculated as the percentage of enterprises engaged in non-technological (organisational and/or marketing) innovation in the total number of enterprises surveyed in the region. Organisations that did take part in such innovative activities are counted regardless of whether they spent money on them or not.
3.1.3. Innovative activity of enterprises can also be measured by the application of completed innovations and the degree of participation in creating them (in-house, in partnership with other (chiefly, external) organisations, by way of changing or modifying products developed by an external organisation). To calculate the Regional Scoreboard, the indicator **enterprises having market-ready technological innovation developed in-house as a percentage of all enterprises** was used. It is calculated as the share of enterprises developing technological innovations in-house in the total number of enterprises surveyed in the region.
3.1.4. Enterprises participating in joint R&D projects as a percentage of all enterprises was applied to assess the level of R&D cooperation between enterprises. This indicator measures the regional enterprises' involvement in scientific and technological activities, which, in and of itself, initiates innovation and leads to the development of radically better innovations and the production of competitive products. The indicator is calculated as the share of enterprises participating in joint R&D projects in the total number of enterprises surveyed in the region.

3.2. Small Innovative Enterprises

In accordance with Article 4 of Federal Law no. 209-FL 'On the Development of Small and Medium Entrepreneurship in the Russian Federation' of July 24, 2007, enterprises whose average number of employees in the previous calendar year did not exceed 100 are classified as small ones.
3.2.1. Small enterprises engaged in technological innovation as a percentage of all small enterprises measures willingness of small enterprises to apply S&T innovations and serves as an important parameter of small innovative entrepreneurship development in specific regions. This indicator is calculated as the share of innovation-active enterprises in the total number of small industrial enterprises surveyed in the region. According to OKVED2, the following economic activity types are classified as industrial production: mining and quarrying;

manufacturing; electricity, gas, steam, and air-conditioning supply; water supply, sewerage, waste management and remediation.

3.3. Expenditures on Technological Innovation

Expenditures on innovation are the actual cash expenditures on the implementation of different types of innovative activity within a single organisation (industry, region, country). Expenditures on innovation includes current expenditures and capital expenditures. Current expenditures (mainly incurred as production costs) include labour costs (on employees involved in the development and implementation of innovations), unified social tax, and other expenditures not classified as capital costs. Capital (long-term) investments represent the annual expenditures on creating, increasing, and acquiring long-term (over one year) non-current assets not intended for sale (procurement of machinery and equipment, buildings, land plots, natural resources sites, etc. related to technological innovation). The expenditures incurred by the organisation (industry, region, country) during the reporting year are counted, excluding those made in the previous years.

3.3.1. Expenditures on technological innovation as a percentage of total sales is a qualitative characteristic of innovation costs closely related to the results of innovation activities. This indicator is calculated as the ratio of expenditures on technological innovation to the total sales of region's enterprises, expressed as a percentage.

3.4. Efficiency of Innovative Activity

The efficiency of innovation is measured by assessing the volume of innovative products and structure in terms of their novelty. Innovative products (goods and services) are, either new or those having undergone different technological improvements over the last three years. There are two types of innovative goods and services: new (newly introduced) or technologically new (which have undergone substantial technological change) and significantly improved. New (or technologically new) products are goods and services designed based on new (including radically new) technologies or on a combination of new and existing technologies. For said products, the designated area of application, operational characteristics, features, structural design, and the composition of used materials and components are to be new or significantly different from what was applied in the previous products. Significantly improved products are goods and services designed based on the introduction of new or significantly improved production methods, including the methods of products delivery, involving the use of new manufacturing equipment, new methods of production processes engineering, or a combination thereof.

The classification of innovative goods and services by the degree of novelty is also carried out from the market perspective. We can distinguish several types of innovative goods and services by their market novelty: new to the firm's sales market, new to the world market, and new to the firm but not new to the market.

3.4.1. Innovative goods and services as a percentage of total sales was applied to assess the overall efficiency of regional innovative activity of enterprises. This indicator measures contribution of innovative activity to economic growth. This indicator is calculated as the ratio of sales of goods and services, either new or those having undergone different technological improvements over the last three years, to total sales of region's enterprises, expressed as a percentage.

3.4.2. Technologically new or significantly improved goods and services new to the market as a percentage of total sales measures the novelty of innovative products. This indicator is calculated on the basis of goods and services that the regional enterprises brought to the market first, i.e. ahead of its competitors.

3.4.3. The impact of innovation on enterprises' development is assessed using the number of enterprises where specific effects of innovation had the highest impact on performance efficiency. To assign the regions their IAI ranks, we applied the indicator – **enterprises having noticed material and energy costs reduction as the main effect of their innovative activity as a percentage of all enterprises engaged in technological innovation.** It is calculated as the ratio of the number of enterprises where this innovation's effects had the highest impact on performance efficiency to the total number of the region's enterprises engaged in technological innovation, expressed as a percentage.

Thematic Block 4. Export Activity

This thematic block includes indicators measuring regions' export activity on international product, service, and knowledge markets; the exports' contribution to GRP; and the quality of the regional economy's export structure.

4.1. Export of Goods and Services

4.1.1. Exports of goods per 1,000 roubles of GRP measures foreign countries' demand for goods produced in Russian regions, their compliance with international quality standards, and competitiveness on global markets. This indicator is calculated as the ratio of exports of goods to foreign countries to GRP, multiplied by 1,000.

Data sources: Federal Customs Service's database; federal statistical survey form no. 8-VES-fish 'Information on Export of Fish, Fish Products, and Seafood'; Rosstat CSDB.

4.1.2. Non-resource exports per 1,000 roubles of GRP reflects the foreign countries' demand for non-primary non-energy goods produced in Russian regions, their compliance with international quality standards, and competitiveness on global markets. This indicator is calculated as the ratio of exports of non-primary non-energy goods to foreign countries to GRP, multiplied by 1,000.

Data sources: Federal Customs Service's database; federal statistical survey form No. 8-VES-fish 'Information on Export of Fish, Fish Products, and Seafood'; Rosstat CSDB.

4.1.3. Exports of services per 1,000 roubles of GRP allows one to assess the foreign countries' demand for regional services and their competitiveness on global markets.

Data sources: Federal Customs Service's database; federal statistical survey form No. 8-VES (services) 'Information on Export of Fish, Fish Products, and Seafood'; Rosstat CSDB.

4.1.4. Exports of innovative goods and services as a percentage of total innovative goods and services sales measures the foreign countries' demand for Russian innovations, the latter's competitiveness and compliance with quality requirements on export markets. Calculated as the ratio of the exports of innovative goods and services to the regional enterprises' total output of innovative goods and services, expressed as a percentage.

Data source: federal statistical survey form no. 4-innovation 'Information on Innovative Activities of Organisations'.

4.2. Export of Knowledge

4.2.1. One of the indicators assessing the conditions for boosting exports is the **number of patent applications filed abroad per 1 million labour force aged 15-72**. It reflects the Russian regions' activity in creating new technological solutions that hold the demanding standards of foreign patent offices and have the potential for commercialisation on foreign markets.

The PatStat database which aggregates primary patent information from most of the world's patent offices was used to calculate this indicator. Patent applications were attributed to the Russian regions on the basis of applicants' addresses indicated in patent documents: applications are attributed to a specific region if the name of the region or a city thereof (taking into account various transliterations) is mentioned as the applicant's address (for organisations or individuals alike).

4.2.2. Revenues from technology exports per 1,000 roubles of GRP measures the competitiveness of technologies created in the region on foreign markets. This indicator is calculated as the ratio of the total revenues the region has received from the export of knowledge, information, and technology-related services under contracts with foreign partners to GRP, multiplied by 1,000.

Data source: federal statistical survey form no. 1-license 'Information on Commercial Technology Exchanges with Foreign Counties (Partners)' and Rosstat CSDB.

4.2.3. International students as a percentage of the total higher education enrolment – bachelor's, specialist's, and master's degree programmes is calculated as the ratio of the number of students from foreign countries enrolled in higher education programmes to the total number of students enrolled in higher education programmes (bachelor's, specialist's, and master's degree), multiplied by 100.

Data source: federal statistical survey form no. VPO-1 'Information on Educational Institutions Implementing Higher Education Programmes – Bachelor's, Specialist's, Master's Degree Programmes'.

Thematic Block 5. Quality of Innovation Policy

5.1. Regulatory Framework for Innovation Policy

5.1.1. Regional innovation development strategy (concept) and/or relevant section on innovation development (innovation support) in the regional development strategy indicates the presence or absence of a specific document in the system of regional strategic planning documents. An approved innovation development strategy is the most common format of regional innovation development planning. A long-term regional socio-economic development strategy may also be considered as such, if the innovation development issues are presented as a stand-alone section.

5.1.2. Priority innovation development zones (areas) outlined in the territorial planning scheme indicate the presence or absence of zones where innovation becomes a driver of territorial development in regional territorial planning documents (such as territorial planning schemes, territorial planning regulations). This allows one to conclude that there are specific territorial projections of regional innovation policy. The materials substantiating the territorial planning scheme should include a description of the special innovation zones, including the main future development trends.

5.1.3. Specific legislation defining main principles, areas, and mechanisms for providing public support for innovative activity in a region indicates the presence or absence of a specialised regulatory framework for providing public support for innovation in the region. The most common format of such a regulatory framework is regional laws on innovation activities, officially approved measures to support innovators or S&T policies. The indicator takes into account only the documents specifically designed to regulate innovation activities and/or the provision of public support to innovators.

5.1.4. Targeted programme or a set of public support measures for innovation or innovators helps to identify specific programmes implemented in the region providing public support for innovation and innovators operating in the region during the surveyed period. In addition, despite the lack of specialised programmes, a number of regions (even where innovation development was not set as a strategic priority, but they had a legal base for providing public support for innovation activities), had taken the steps to help innovators within the scope of targeted regional and agency-specific programmes and support innovative entrepreneurship. This indicator does not take into account small and medium entrepreneurship development programmes, industry development programmes (save for the creation and development of technology parks), decrees on the establishment of councils/commissions on innovation and technological development, the appointment of their members, and setting priority R&D development trends.

5.2. Organisational Support for Innovation Policy

5.2.1. Specialised coordination (advisory) bodies on innovation policy (innovation support) to consult the region's highest official or highest executive authority indicate the presence or absence of active advisory and/or coordination bodies responsible for innovation policy, established on the basis of documents approved by the highest regional official or the highest executive authority. The advisory and/or coordination innovation policy bodies are considered to be active if, at the time of the assessment, their articles of incorporation remained valid and their membership was updated since the current chief officer or the head of the regional executive authority (who is also the chairman of the advisory and/or coordination innovation policy body) took office.

5.2.2. Specialised regional development institutions (foundations, agencies, development corporations, etc.) to support innovators and/or implement innovative projects indicates the presence or absence of regional development institutions responsible for allocation of funds provided, among other sources, from the regional budget, and directly or indirectly support innovators through innovative infrastructure. Within the framework of the presented methodology, innovative infrastructure facilities (such as business incubators, technology parks, etc.) are not counted among development institutions. The most common types of regional development institutions are foundations, agencies, and development corporations which are not regional executive authorities. An additional piece of evidence proving one has a specialised regional development institute in the region is a functioning official website of this organisation, with published charter and progress reports.

5.3. Public Expenditure on R&D and Innovation

5.3.1. Appropriations on civil S&T as a percentage of the consolidated regional budget. Appropriations on civil S&T include expenditures on basic and applied research. Appropriations for applied research comprise the regional consolidated budget expenditures in the following budget classification sections: applied research in the sphere of general national issues (0112); applied research in national economy (0411); applied research in housing and communal services (0504); applied research in environment protection (0604); applied research in education (0708); applied research in culture and cinematography (0803); applied research in healthcare (0908); applied research in physical education and sports (1104); applied research in mass media (1203). Regional consolidated budget expenditures include the expenditures of the regional budget and expenditures of the region's municipalities (save for inter-budget transfers).
Data source: annual Federal Treasury report on the execution of regional and local budgets in the Russian Federation.

5.3.2. Federal budget appropriations as a percentage of the total expenditure on technological innovation reflects the state's contribution into innovation development of the region. This indicator is calculated as the ratio of expenditures on technological innovations from the federal budget, including funds provided by R&D, S&T, and innovation support foundations (Russian Foundation for Basic Research, Foundation for Assistance to Small Innovative Enterprises, Russian Science Foundation, Foundation for Advanced Research, Industrial Development Fund) to the total expenditures on technological innovation by the region's enterprises, expressed as a percentage.
Data source: federal statistical survey form no. 4-innovation 'Information on the Innovative Activities of Organisations'.

5.3.3. Regional and local budget appropriations as a percentage of the total expenditure on technological innovation measures the contribution of territorial budgets to promoting innovation activities in the region. Calculated as the ratio of expenditures on technological innovation made by regional and local budgets, including funds provided by regional development foundations directly to the organisation or under contracts with the customer, to the total amount of expenditures on technological innovation in the region, expressed as a percentage.
Data source: federal statistical survey form no. 4-innovation 'Information on the Innovative Activities of Organisations'.

5.4. Participation in Federal STI Policy

5.4.1. Number of R&D, S&T, and innovative projects supported by federal authorities and development institutions per 1 million labour force aged 15-72 measures the level of project activities in the field of innovation in Russian regions. Innovative projects supported by federal authorities (the Ministry of Science and Higher Education, Ministry of Economic Development, Ministry of Industry and Trade) and development institutions (Industrial Development Fund, Russian Science Foundation, Foundation for Assistance to Small Innovative Enterprises (Innovation Promotion Fund), RVC JSC, RUSNANO Group) were counted.

5.4.2. Number of federal development institutions supporting R&D, S&T, and innovative projects implemented in the region allows for assessing the variety of federal support tools used by applicants from Russian regions to raise funds for innovative projects.
Data sources: official web portals of the Industrial Development Fund, Russian Science Foundation, Foundation for Assistance to Small Innovative Enterprises (Innovation Promotion Fund), RVC JSC, and RUSNANO Group.

5.4.3. Funding provided by federal authorities and development institutions to implement R&D, S&T, and innovative projects in the region per 1 million roubles of GRP measures the relative weight of innovative projects supported at the federal level in the regional economy. This indicator is calculated as the ratio of the total appropriations from the federal budget to the region (through government agencies and development institutions) to GRP, multiplied by 1,000,000.
Data source: data on the funding of regional innovative projects published on official web portals of federal agencies (the Ministry of Science and Higher Education, Ministry of Economic Development, Ministry of Industry and Trade) and development institutions (the Industrial Development Fund, Russian Science Foundation, Foundation for Assistance to Small Innovative Enterprises (Innovation Promotion Fund), RVC JSC, and RUSNANO Group).

5.4.4. Number of innovation development territories granted special status in accordance with public support measures for R&D, S&T, and innovation activities, provided by federal authorities. This indicator reflects the total number of clusters in Russian regions included in the list of industrial clusters approved by the Russian Ministry of Industry and Trade; the lists of pilot innovation clusters and clusters that won the priority project tender held by the Russian Ministry of Economic Development 'Development of innovative clusters – leaders in world-class investment attractiveness'; high technology industrial parks and technology parks, science cities, special economic zones; and territories with special federal status. The latter include special administrative areas: the Russky Island (Primorsky Region) and the Oktyabrsky Island (Kaliningrad Region), Skolkovo Innovation Centre (a geographically separate complex), and the International Medical Cluster.
Data sources: Cluster Map of Russia (Russian Cluster Observatory, HSE ISSEK), GISIP – Geographic Information System. Industrial Parks. Science Parks. Clusters (Russian Ministry of Industry and Trade), official web portals of Special Economic Zones JSC and the Russian Ministry of Science and Higher Education.

5.4.5. Number of innovation infrastructure facilities for small and medium-sized enterprises supported by the federal budget is calculated as the number of cluster development centres, creative youth innovation centres, regional engineering centres, and Quantorium children's technology parks in the region.
Data sources: minutes of meetings of the Russian Ministry of Economic Development's commission on the consideration and coordination of activities of Russian regions, whose budgets received subsidies to provide public support for SMEs (including farms) and support youth entrepreneurship; official website of Quantorium children's technology parks network.

Methodological Comments on the Regional Future Preparedness Ranking Indicators

The sample used for the purposes of this study (as of early June 2019) included 83 valid federal strategic documents; 85 valid regional socio-economic development strategies; 93 other regional development strategies published in open digital official sources; more than 235,000 news reports published in 2018 by the leading Russian media, covering important positive developments in the field of STI and industry with references to specific Russian regions;

and over 730,000 texts published in English in the international media specialising in various industries. Data processing and analysis was carried out using HSE ISSEK iFORA Big Data Analytics System whose database is regularly updated with international and Russian documents related to science, technology, innovation, education, and digital economy (research publications, patents, grants, analytical texts, etc.); currently it totals more than 350 million documents.

Planning horizon of regional strategies was estimated on the basis of the data on the validity period of the analysed documents. This indicator value was determined in line with the average expiration period: strategies with longer term received higher scores.

Regional strategies' focus on technological development is an indicator measuring the usage of S&T development-related terms in regional strategic planning documents. To calculate the indicator value, we used terminological fields, synonymic and associative chains of thousands of objectively significant terms relevant to STI development topics which reflect current and future global and Russian trends, and can potentially be found in the regional strategic planning documents. The list of terms was created using the iFORA unified semantic knowledge graph in line with the 'search terms multiplier' principle, using advanced parsing and semantic analysis tools, such as parse trees for parsing texts by speech parts and roles in sentence, vector representation techniques for terms and documents, such as word2vec, etc. The iFORA Big Data Mining System whose language models were trained on large arrays of scientific, patent and analytical texts identified synonymous and related terms for three source words: 'science', 'technology', 'innovation'. The scientific and technological vocabulary also includes words and phrases (with all possible inflections and derivatives), such as, e.g. 'scientific and technological development', 'innovation strategy', 'shared research equipment centre', 'technology transfer', 'patenting', 'innovative territorial clusters', etc. Calculating the total frequency of the use of S&T terms in the resulting list provided a value of the indicator measuring the regional strategies' focus on technological development.

Media coverage of regions' progress in STI and industry development: the number of unique STI and industrial development advances covered by the leading Russian media were identified using semantic analysis, sentiment analysis, machine learning techniques comprising combined analysis of tags and full-text data. The identified news included, for example, information on the launch of new, or reconstruction of existing, enterprises, the production of new equipment models, the application of 'green' and other advanced technological processes at existing facilities, the completion of construction of large technical facilities, etc. Coverage of non-technological social and infrastructural development (such as construction of schools, kindergartens, etc.) was specifically excluded. Geotags and tags with the names of towns, municipalities, and regions were extracted from the texts assembled in this way. The extracted toponyms were linked to Russian regions using an integrated algorithm based on synonymous series of geographical names, semantic searches for text patterns, and 'geographical bindings' (linking geotags to Russian regions by coordinates). The resulting number of unique regional STI and industrial development-related events covered in the media shows how often objective successes in the STI sphere were recorded in 2018 in various Russian regions (duplicate news about the same event were eliminated using unique identifiers).

Thematic diversification of regional strategies reflects the structural complexity of regional strategic documents' content in terms of the covered STI-related topics. This indicator was calculated by determining the number of unique highly informative words and phrases related to various fields in the texts (taking into account all possible inflections and derived terms), identified using advanced syntactic methods based on machine learning models, heuristics, and rules. The higher the value of the indicator calculated in this way, the more diversified the strategic agenda of the region is.

Similarity of regional media agendas to the information environment of advanced countries was calculated using semantic analysis of news coverage in leading international media. 'Advanced countries' included Australia, Austria, Belgium, the UK, Germany, Denmark, Ireland, Iceland, Spain, Italy, Canada, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, the US, Finland, France, Sweden, Switzerland, and Japan[10]. To determine the information environment of advanced countries, we selected news items mentioning all variants of the English names of advanced countries and capitals. Likewise, all variants of the English names of Russian regions, capitals, and major cities were used as search queries to process the news coverage in leading international media. Terms' and articles' vector representation techniques were applied in the analysis, including word2vec. Processing the news coverage in leading international media mentioning advanced countries and Russian regions allowed for calculating vector representations for each region and the average vector for the advanced countries' group.

[10] Source of the advanced countries list: United Nations (2018) World Economic Situation and Prospects 2018. New York. https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/WESP2018_Full_Web-1.pdf (last accessed on: 05.08.2019).

The (information environment) similarity vector indicator was calculated for each Russian region in relation to the advanced countries' vector. It varies from 0 to 1 and is calculated using the cosine similarity formula in a 200-dimensional vector space:

$$\mathrm{CosSim}_{A,B} = \frac{\sum_{i=1}^{200} A_i B_i}{\sqrt{\sum_{i=1}^{200} A_i^2}\sqrt{\sum_{i=1}^{200} B_i^2}}, \quad (6)$$

where A is the regional vector;
B is the averaged-out developed countries' vector;
A_i is the i-th value of vector A in 200-dimensional vector space;
B_i is the i-th value of vector B in 200-dimensional vector space.

If a region's information environment (i.e., news coverage context) was similar to that of advanced countries in meaningful terms, the applied model returned a high degree of vector similarity reflecting the similarity of the region's socio-economic profile, its technological level, and development issues with the agenda relevant for advanced countries.

Correspondence of regional strategic agendas with relevant federal strategies was determined using the syntactic and semantic analysis techniques described above. Regional agendas were identified by processing legislation and strategic planning documents developed and approved by the regional authorities. The federal level agenda was identified by collecting, annotating, and analysing valid federal strategic planning documents.

Unique sets of topics were compiled for the two collections of documents. The correspondence of the agendas was calculated as a Jaccard similarity of the respective topic groups $J_{A,B}$:

$$J_{A,B} = \frac{|A \cap B|}{|A \cup B|}, \quad (7)$$

where A is the group of regional agenda topics;
B is the group of federal agenda topics;
$|\ |$ – cardinal number calculation (number of elements);
$\cap$ – intersection of sets;
$\cup$ – union of sets.

SECTION II.

PROFILES OF RUSSIAN REGIONS

CENTRAL FEDERAL DISTRICT

Central Federal District

BELGOROD REGION

0.409 COMPOSITE INNOVATION INDEX

15 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

40

0.392

1.1	Basic Macroeconomic Indicators	0.305	42
1.2	Educational Potential of the Population	0.503	25
1.3	Digitisation Potential	0.286	55

2 S&T POTENTIAL

26

0.406

2.1	R&D Funding	0.304	50
2.2	R&D Personnel	0.440	37
2.3	R&D Output	0.507	11

3 INNOVATIVE ACTIVITY

11

0.419

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.503	10
3.2	Small Innovative Enterprises	0.550	6
3.3	Expenditure on Technological Innovation	0.619	18
3.4	Efficiency of Innovative Activity	0.196	23

4 EXPORT ACTIVITY

31

0.361

4.1	Export of Goods and Services	0.400	31
4.2	Export of Knowledge	0.309	31

5 QUALITY OF INNOVATION POLICY

16

0.458

5.1	Regulatory Framework for Innovation Policy	1.000	1
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.042	56
5.4	Participation in Federal STI Policy	0.592	13

Central Federal District

BELGOROD REGION

1.1	GRP per worker	0.338	12
	Fixed assets renewal coefficient	0.550	4
	Employment in high-tech manufacturing	0.189	57
	Employment in knowledge-intensive activities	0.143	81
1.2	Participation of adult population in higher education	0.353	29
	Higher education enrolment per 10,000 population	0.553	16
	STEM enrolment in higher education programmes	0.348	33
	Participation of employed population in lifelong learning	0.759	20
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.507	61
	STEM enrolment in programmes for mid-career professionals	0.498	66
1.3	Enterprises with broadband top speed access over 100 Mbps	0.341	46
	Enterprises providing ICT related training of staff	0.180	50
	Active Internet users in the adult population	0.338	55
2.1	GERD as a percentage of GRP	0.040	61
	GERD per researcher	0.506	51
	GERD financed by the business enterprise sector	0.407	19
	Average monthly salary of R&D personnel as a percentage of regional average	0.261	82
2.2	R&D personnel employed in the region	0.084	55
	Young researchers	0.720	31
	Researchers with scientific degrees	0.518	34
2.3	Publication activity	0.534	16
	Patent activity	0.403	28
	Development of advanced manufacturing technologies	0.585	5
3.1	Enterprises engaged in technological innovation	0.595	7
	Enterprises engaged in non-technological innovation	0.387	17
	Enterprises having developed in-house technological innovations	0.765	7
	Enterprises participating in joint R&D projects	0.265	37
3.2	Small enterprises engaged in technological innovation	0.550	6
3.3	Expenditure on technological innovation	0.619	18
3.4	Innovative goods and services	0.407	16
	Innovative goods and services new to the market	0.054	21
	Enterprises having reduced material and energy costs through innovation	0.125	70
4.1	Exports of goods	0.500	23
	Non-resource exports	0.585	13
	Exports of services	0.334	53
	Exports of innovative goods and services	0.181	18
4.2	Patent activity abroad	0.426	28
	Exports of technologies	0.000	57
	International students in higher education programmes	0.502	12
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.094	23
	Federal appropriations in expenditure on technological innovation	0.030	54
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.554	12
	Number of federal development institutions supporting innovative projects	0.600	16
	Federal funding of innovative projects	0.480	28
	Number of innovation development territories with federal status	0.325	29
	Number of innovation infrastructure facilities for SMEs	1.000	1

Central Federal District

BRYANSK REGION

0.320 COMPOSITE INNOVATION INDEX

53 RANK

RANK · LEADING REGION INDEX VALUE · RUSSIA AVERAGE VALUE · INDEX VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

67

0.335

1.1	Basic Macroeconomic Indicators	0.303	44
1.2	Educational Potential of the Population	0.409	60
1.3	Digitisation Potential	0.228	78

2 S&T POTENTIAL

38

0.382

2.1	R&D Funding	0.351	37
2.2	R&D Personnel	0.366	70
2.3	R&D Output	0.441	21

3 INNOVATIVE ACTIVITY

44

0.239

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.286	39
3.2	Small Innovative Enterprises	0.139	68
3.3	Expenditure on Technological Innovation	0.330	49
3.4	Efficiency of Innovative Activity	0.180	26

4 EXPORT ACTIVITY

63

0.202

4.1	Export of Goods and Services	0.273	48
4.2	Export of Knowledge	0.107	68

5 QUALITY OF INNOVATION POLICY

26

0.392

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.391	2
5.4	Participation in Federal STI Policy	0.299	54

Central Federal District

BRYANSK REGION

1.1	GRP per worker	0.146	70
	Fixed assets renewal coefficient	0.263	43
	Employment in high-tech manufacturing	0.569	19
	Employment in knowledge-intensive activities	0.235	56
1.2	Participation of adult population in higher education	0.141	73
	Higher education enrolment per 10,000 population	0.391	49
	STEM enrolment in higher education programmes	0.366	27
	Participation of employed population in lifelong learning	0.380	56
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.516	58
	STEM enrolment in programmes for mid-career professionals	0.663	40
1.3	Enterprises with broadband top speed access over 100 Mbps	0.410	30
	Enterprises providing ICT related training of staff	0.136	64
	Active Internet users in the adult population	0.137	80
2.1	GERD as a percentage of GRP	0.052	54
	GERD per researcher	0.641	21
	GERD financed by the business enterprise sector	0.160	45
	Average monthly salary of R&D personnel as a percentage of regional average	0.550	21
2.2	R&D personnel employed in the region	0.051	71
	Young researchers	0.787	14
	Researchers with scientific degrees	0.260	59
2.3	Publication activity	0.535	15
	Patent activity	0.298	60
	Development of advanced manufacturing technologies	0.489	17
3.1	Enterprises engaged in technological innovation	0.240	47
	Enterprises engaged in non-technological innovation	0.258	39
	Enterprises having developed in-house technological innovations	0.400	28
	Enterprises participating in joint R&D projects	0.247	44
3.2	Small enterprises engaged in technological innovation	0.139	68
3.3	Expenditure on technological innovation	0.330	49
3.4	Innovative goods and services	0.258	30
	Innovative goods and services new to the market	0.032	33
	Enterprises having reduced material and energy costs through innovation	0.250	23
4.1	Exports of goods	0.237	63
	Non-resource exports	0.282	53
	Exports of services	0.569	16
	Exports of innovative goods and services	0.006	52
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.000	57
	International students in higher education programmes	0.321	30
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.000	61
	Federal appropriations in expenditure on technological innovation	0.620	9
	Regional appropriations in expenditure on technological innovation	0.555	2
5.4	Number of innovative projects supported by federal authorities	0.397	42
	Number of federal development institutions supporting innovative projects	0.533	22
	Federal funding of innovative projects	0.565	19
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.000	69

Central Federal District

VLADIMIR REGION

0.353 COMPOSITE INNOVATION INDEX

35 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

41

0.392

1.1	Basic Macroeconomic Indicators	0.314	37
1.2	Educational Potential of the Population	0.448	50
1.3	Digitisation Potential	0.383	25

2 S&T POTENTIAL

33

0.391

2.1	R&D Funding	0.372	29
2.2	R&D Personnel	0.412	48
2.3	R&D Output	0.394	41

3 INNOVATIVE ACTIVITY

22

0.336

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.403	22
3.2	Small Innovative Enterprises	0.381	20
3.3	Expenditure on Technological Innovation	0.438	41
3.4	Efficiency of Innovative Activity	0.197	22

4 EXPORT ACTIVITY

54

0.245

4.1	Export of Goods and Services	0.299	43
4.2	Export of Knowledge	0.174	59

5 QUALITY OF INNOVATION POLICY

34

0.356

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.162	18
5.4	Participation in Federal STI Policy	0.515	20

Central Federal District

VLADIMIR REGION

1.1	GRP per worker	0.162	60
	Fixed assets renewal coefficient	0.257	46
	Employment in high-tech manufacturing	0.662	16
	Employment in knowledge-intensive activities	0.175	74
1.2	Participation of adult population in higher education	0.215	51
	Higher education enrolment per 10,000 population	0.345	58
	STEM enrolment in higher education programmes	0.349	32
	Participation of employed population in lifelong learning	0.780	17
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.446	68
	STEM enrolment in programmes for mid-career professionals	0.551	57
1.3	Enterprises with broadband top speed access over 100 Mbps	0.410	30
	Enterprises providing ICT related training of staff	0.301	22
	Active Internet users in the adult population	0.437	32
2.1	GERD as a percentage of GRP	0.214	15
	GERD per researcher	0.633	23
	GERD financed by the business enterprise sector	0.134	50
	Average monthly salary of R&D personnel as a percentage of regional average	0.508	29
2.2	R&D personnel employed in the region	0.304	15
	Young researchers	0.750	22
	Researchers with scientific degrees	0.181	74
2.3	Publication activity	0.280	74
	Patent activity	0.508	13
	Development of advanced manufacturing technologies	0.395	35
3.1	Enterprises engaged in technological innovation	0.357	21
	Enterprises engaged in non-technological innovation	0.389	16
	Enterprises having developed in-house technological innovations	0.467	24
	Enterprises participating in joint R&D projects	0.398	17
3.2	Small enterprises engaged in technological innovation	0.381	20
3.3	Expenditure on technological innovation	0.438	41
3.4	Innovative goods and services	0.287	27
	Innovative goods and services new to the market	0.108	11
	Enterprises having reduced material and energy costs through innovation	0.196	39
4.1	Exports of goods	0.304	54
	Non-resource exports	0.383	35
	Exports of services	0.388	41
	Exports of innovative goods and services	0.119	23
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.339	22
	International students in higher education programmes	0.182	59
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	0.000	69
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.020	36
	Federal appropriations in expenditure on technological innovation	0.465	14
	Regional appropriations in expenditure on technological innovation	0.002	44
5.4	Number of innovative projects supported by federal authorities	0.381	47
	Number of federal development institutions supporting innovative projects	0.533	22
	Federal funding of innovative projects	0.834	4
	Number of innovation development territories with federal status	0.325	29
	Number of innovation infrastructure facilities for SMEs	0.500	31

Central Federal District

VORONEZH REGION

0.409 COMPOSITE INNOVATION INDEX

14 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

13

0.446

1.1	Basic Macroeconomic Indicators	0.480	1
1.2	Educational Potential of the Population	0.472	42
1.3	Digitisation Potential	0.350	32

2 S&T POTENTIAL

27

0.405

2.1	R&D Funding	0.352	36
2.2	R&D Personnel	0.446	32
2.3	R&D Output	0.436	26

3 INNOVATIVE ACTIVITY

18

0.374

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.479	13
3.2	Small Innovative Enterprises	0.445	12
3.3	Expenditure on Technological Innovation	0.598	20
3.4	Efficiency of Innovative Activity	0.136	44

4 EXPORT ACTIVITY

41

0.312

4.1	Export of Goods and Services	0.290	45
4.2	Export of Knowledge	0.340	23

5 QUALITY OF INNOVATION POLICY

14

0.463

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	1.000	1
5.3	Public Expenditure on R&D and Innovation	0.218	14
5.4	Participation in Federal STI Policy	0.446	32

Central Federal District

VORONEZH REGION

1.1	GRP per worker	0.229	40
	Fixed assets renewal coefficient	1.000	1
	Employment in high-tech manufacturing	0.505	28
	Employment in knowledge-intensive activities	0.188	70
1.2	Participation of adult population in higher education	0.320	35
	Higher education enrolment per 10,000 population	0.652	8
	STEM enrolment in higher education programmes	0.382	20
	Participation of employed population in lifelong learning	0.369	58
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.451	67
	STEM enrolment in programmes for mid-career professionals	0.657	44
1.3	Enterprises with broadband top speed access over 100 Mbps	0.383	37
	Enterprises providing ICT related training of staff	0.289	24
	Active Internet users in the adult population	0.379	48
2.1	GERD as a percentage of GRP	0.156	23
	GERD per researcher	0.452	69
	GERD financed by the business enterprise sector	0.438	17
	Average monthly salary of R&D personnel as a percentage of regional average	0.361	68
2.2	R&D personnel employed in the region	0.368	10
	Young researchers	0.780	16
	Researchers with scientific degrees	0.188	72
2.3	Publication activity	0.278	76
	Patent activity	0.566	8
	Development of advanced manufacturing technologies	0.463	25
3.1	Enterprises engaged in technological innovation	0.376	17
	Enterprises engaged in non-technological innovation	0.643	4
	Enterprises having developed in-house technological innovations	0.585	15
	Enterprises participating in joint R&D projects	0.313	30
3.2	Small enterprises engaged in technological innovation	0.445	12
3.3	Expenditure on technological innovation	0.598	20
3.4	Innovative goods and services	0.216	35
	Innovative goods and services new to the market	0.026	35
	Enterprises having reduced material and energy costs through innovation	0.167	52
4.1	Exports of goods	0.320	51
	Non-resource exports	0.405	31
	Exports of services	0.409	35
	Exports of innovative goods and services	0.028	38
4.2	Patent activity abroad	0.441	25
	Exports of technologies	0.301	26
	International students in higher education programmes	0.279	40
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.000	61
	Federal appropriations in expenditure on technological innovation	0.653	7
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.406	38
	Number of federal development institutions supporting innovative projects	0.667	14
	Federal funding of innovative projects	0.189	53
	Number of innovation development territories with federal status	0.468	14
	Number of innovation infrastructure facilities for SMEs	0.500	31

IVANOVO REGION

0.323 COMPOSITE INNOVATION INDEX

51 RANK

RANK

LEADING REGION INDEX VALUE

RUSSIA AVERAGE VALUE

INDEX VALUE

NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

78

0.306

1.1	Basic Macroeconomic Indicators	0.153	85
1.2	Educational Potential of the Population	0.449	49
1.3	Digitisation Potential	0.222	80

2 S&T POTENTIAL

7

0.515

2.1	R&D Funding	0.304	49
2.2	R&D Personnel	0.454	25
2.3	R&D Output	0.856	1

3 INNOVATIVE ACTIVITY

71

0.154

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.194	56
3.2	Small Innovative Enterprises	0.295	36
3.3	Expenditure on Technological Innovation	0.139	76
3.4	Efficiency of Innovative Activity	0.060	72

4 EXPORT ACTIVITY

59

0.225

4.1	Export of Goods and Services	0.182	69
4.2	Export of Knowledge	0.283	40

5 QUALITY OF INNOVATION POLICY

31

0.371

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.038	58
5.4	Participation in Federal STI Policy	0.620	11

Central Federal District

IVANOVO REGION

1.1	GRP per worker	0.045	81
	Fixed assets renewal coefficient	0.047	83
	Employment in high-tech manufacturing	0.287	47
	Employment in knowledge-intensive activities	0.235	57
1.2	Participation of adult population in higher education	0.237	48
	Higher education enrolment per 10,000 population	0.455	33
	STEM enrolment in higher education programmes	0.457	5
	Participation of employed population in lifelong learning	0.408	54
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.442	71
	STEM enrolment in programmes for mid-career professionals	0.698	30
1.3	Enterprises with broadband top speed access over 100 Mbps	0.315	58
	Enterprises providing ICT related training of staff	0.081	78
	Active Internet users in the adult population	0.272	65
2.1	GERD as a percentage of GRP	0.052	55
	GERD per researcher	0.466	65
	GERD financed by the business enterprise sector	0.163	44
	Average monthly salary of R&D personnel as a percentage of regional average	0.537	24
2.2	R&D personnel employed in the region	0.048	72
	Young researchers	0.630	47
	Researchers with scientific degrees	0.684	14
2.3	Publication activity	0.994	2
	Patent activity	1.000	1
	Development of advanced manufacturing technologies	0.574	8
3.1	Enterprises engaged in technological innovation	0.154	70
	Enterprises engaged in non-technological innovation	0.120	65
	Enterprises having developed in-house technological innovations	0.304	40
	Enterprises participating in joint R&D projects	0.199	52
3.2	Small enterprises engaged in technological innovation	0.295	36
3.3	Expenditure on technological innovation	0.139	76
3.4	Innovative goods and services	0.006	79
	Innovative goods and services new to the market	0.007	59
	Enterprises having reduced material and energy costs through innovation	0.167	52
4.1	Exports of goods	0.238	62
	Non-resource exports	0.307	50
	Exports of services	0.184	74
	Exports of innovative goods and services	0.000	64
4.2	Patent activity abroad	0.356	41
	Exports of technologies	0.226	37
	International students in higher education programmes	0.268	43
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	0.000	69
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.000	60
	Federal appropriations in expenditure on technological innovation	0.114	41
	Regional appropriations in expenditure on technological innovation	0.001	49
5.4	Number of innovative projects supported by federal authorities	0.519	19
	Number of federal development institutions supporting innovative projects	0.533	22
	Federal funding of innovative projects	0.970	2
	Number of innovation development territories with federal status	0.325	29
	Number of innovation infrastructure facilities for SMEs	0.750	13

Central Federal District

KALUGA REGION

0.421 COMPOSITE INNOVATION INDEX

10 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

26

0.401

1.1	Basic Macroeconomic Indicators	0.424	7
1.2	Educational Potential of the Population	0.419	59
1.3	Digitisation Potential	0.333	39

2 S&T POTENTIAL

16

0.456

2.1	R&D Funding	0.355	34
2.2	R&D Personnel	0.531	9
2.3	R&D Output	0.516	10

3 INNOVATIVE ACTIVITY

27

0.310

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.426	17
3.2	Small Innovative Enterprises	0.338	30
3.3	Expenditure on Technological Innovation	0.482	37
3.4	Efficiency of Innovative Activity	0.088	61

4 EXPORT ACTIVITY

32

0.347

4.1	Export of Goods and Services	0.348	40
4.2	Export of Knowledge	0.346	21

5 QUALITY OF INNOVATION POLICY

5

0.563

5.1	Regulatory Framework for Innovation Policy	1.000	1
5.2	Organisational Support for Innovation Policy	1.000	1
5.3	Public Expenditure on R&D and Innovation	0.128	31
5.4	Participation in Federal STI Policy	0.650	9

Central Federal District

KALUGA REGION

1.1	GRP per worker	0.223	43
	Fixed assets renewal coefficient	0.345	23
	Employment in high-tech manufacturing	0.929	5
	Employment in knowledge-intensive activities	0.200	64
1.2	Participation of adult population in higher education	0.260	43
	Higher education enrolment per 10,000 population	0.321	65
	STEM enrolment in higher education programmes	0.241	66
	Participation of employed population in lifelong learning	0.523	43
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.494	62
	STEM enrolment in programmes for mid-career professionals	0.674	35
1.3	Enterprises with broadband top speed access over 100 Mbps	0.506	14
	Enterprises providing ICT related training of staff	0.253	34
	Active Internet users in the adult population	0.242	69
2.1	GERD as a percentage of GRP	0.241	12
	GERD per researcher	0.545	44
	GERD financed by the business enterprise sector	0.375	21
	Average monthly salary of R&D personnel as a percentage of regional average	0.259	84
2.2	R&D personnel employed in the region	0.739	5
	Young researchers	0.572	62
	Researchers with scientific degrees	0.281	57
2.3	Publication activity	0.242	80
	Patent activity	0.582	7
	Development of advanced manufacturing technologies	0.723	3
3.1	Enterprises engaged in technological innovation	0.342	26
	Enterprises engaged in non-technological innovation	0.395	14
	Enterprises having developed in-house technological innovations	0.491	19
	Enterprises participating in joint R&D projects	0.477	12
3.2	Small enterprises engaged in technological innovation	0.338	30
3.3	Expenditure on technological innovation	0.482	37
3.4	Innovative goods and services	0.095	50
	Innovative goods and services new to the market	0.005	65
	Enterprises having reduced material and energy costs through innovation	0.163	59
4.1	Exports of goods	0.472	25
	Non-resource exports	0.550	16
	Exports of services	0.334	52
	Exports of innovative goods and services	0.035	34
4.2	Patent activity abroad	0.536	11
	Exports of technologies	0.367	18
	International students in higher education programmes	0.136	66
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.036	33
	Federal appropriations in expenditure on technological innovation	0.344	20
	Regional appropriations in expenditure on technological innovation	0.003	39
5.4	Number of innovative projects supported by federal authorities	0.516	20
	Number of federal development institutions supporting innovative projects	0.533	22
	Federal funding of innovative projects	0.684	11
	Number of innovation development territories with federal status	0.514	8
	Number of innovation infrastructure facilities for SMEs	1.000	1

Central Federal District

KOSTROMA REGION

0.274 COMPOSITE INNOVATION INDEX

64 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

61

0.353

1.1	Basic Macroeconomic Indicators	0.222	78
1.2	Educational Potential of the Population	0.448	51
1.3	Digitisation Potential	0.339	37

2 S&T POTENTIAL

40

0.381

2.1	R&D Funding	0.416	20
2.2	R&D Personnel	0.335	80
2.3	R&D Output	0.380	45

3 INNOVATIVE ACTIVITY

75

0.146

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.106	80
3.2	Small Innovative Enterprises	0.164	60
3.3	Expenditure on Technological Innovation	0.198	70
3.4	Efficiency of Innovative Activity	0.177	27

4 EXPORT ACTIVITY

56

0.240

4.1	Export of Goods and Services	0.264	52
4.2	Export of Knowledge	0.209	54

5 QUALITY OF INNOVATION POLICY

68

0.202

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.000	83
5.4	Participation in Federal STI Policy	0.304	53

KOSTROMA REGION

1.1	GRP per worker	0.147	69
	Fixed assets renewal coefficient	0.082	79
	Employment in high-tech manufacturing	0.324	43
	Employment in knowledge-intensive activities	0.334	24
1.2	Participation of adult population in higher education	0.068	81
	Higher education enrolment per 10,000 population	0.295	68
	STEM enrolment in higher education programmes	0.261	59
	Participation of employed population in lifelong learning	0.778	18
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.634	36
	STEM enrolment in programmes for mid-career professionals	0.650	46
1.3	Enterprises with broadband top speed access over 100 Mbps	0.431	25
	Enterprises providing ICT related training of staff	0.127	66
	Active Internet users in the adult population	0.459	27
2.1	GERD as a percentage of GRP	0.013	80
	GERD per researcher	0.591	31
	GERD financed by the business enterprise sector	0.693	5
	Average monthly salary of R&D personnel as a percentage of regional average	0.366	67
2.2	R&D personnel employed in the region	0.015	83
	Young researchers	0.377	81
	Researchers with scientific degrees	0.614	23
2.3	Publication activity	0.803	4
	Patent activity	0.336	50
	Development of advanced manufacturing technologies	0.000	65
3.1	Enterprises engaged in technological innovation	0.116	79
	Enterprises engaged in non-technological innovation	0.046	79
	Enterprises having developed in-house technological innovations	0.211	57
	Enterprises participating in joint R&D projects	0.051	82
3.2	Small enterprises engaged in technological innovation	0.164	60
3.3	Expenditure on technological innovation	0.198	70
3.4	Innovative goods and services	0.348	21
	Innovative goods and services new to the market	0.016	46
	Enterprises having reduced material and energy costs through innovation	0.167	52
4.1	Exports of goods	0.337	48
	Non-resource exports	0.426	29
	Exports of services	0.282	66
	Exports of innovative goods and services	0.011	46
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.176	44
	International students in higher education programmes	0.451	15
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.000	61
	Federal appropriations in expenditure on technological innovation	0.000	70
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.382	46
	Number of federal development institutions supporting innovative projects	0.267	58
	Federal funding of innovative projects	0.621	16
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.250	52

KURSK REGION

0.325 COMPOSITE INNOVATION INDEX

50 RANK

RANK

LEADING REGION INDEX VALUE

RUSSIA AVERAGE VALUE

INDEX VALUE

NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

36

0.396

1.1	Basic Macroeconomic Indicators	0.335	25
1.2	Educational Potential of the Population	0.500	27
1.3	Digitisation Potential	0.271	65

2 S&T POTENTIAL

30

0.399

2.1	R&D Funding	0.474	11
2.2	R&D Personnel	0.346	78
2.3	R&D Output	0.351	51

3 INNOVATIVE ACTIVITY

57

0.198

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.185	61
3.2	Small Innovative Enterprises	0.300	34
3.3	Expenditure on Technological Innovation	0.255	61
3.4	Efficiency of Innovative Activity	0.161	33

4 EXPORT ACTIVITY

45

0.282

4.1	Export of Goods and Services	0.249	57
4.2	Export of Knowledge	0.326	26

5 QUALITY OF INNOVATION POLICY

50

0.304

5.1	Regulatory Framework for Innovation Policy	1.000	1
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.004	78
5.4	Participation in Federal STI Policy	0.405	39

Central Federal District

KURSK REGION

1.1	GRP per worker	0.233	37
	Fixed assets renewal coefficient	0.439	12
	Employment in high-tech manufacturing	0.400	39
	Employment in knowledge-intensive activities	0.268	42
1.2	Participation of adult population in higher education	0.351	30
	Higher education enrolment per 10,000 population	0.644	9
	STEM enrolment in higher education programmes	0.196	76
	Participation of employed population in lifelong learning	0.624	34
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.726	15
	STEM enrolment in programmes for mid-career professionals	0.458	69
1.3	Enterprises with broadband top speed access over 100 Mbps	0.421	28
	Enterprises providing ICT related training of staff	0.126	67
	Active Internet users in the adult population	0.266	66
2.1	GERD as a percentage of GRP	0.253	9
	GERD per researcher	0.952	2
	GERD financed by the business enterprise sector	0.229	31
	Average monthly salary of R&D personnel as a percentage of regional average	0.462	39
2.2	R&D personnel employed in the region	0.203	28
	Young researchers	0.621	50
	Researchers with scientific degrees	0.213	66
2.3	Publication activity	0.470	38
	Patent activity	0.582	6
	Development of advanced manufacturing technologies	0.000	65
3.1	Enterprises engaged in technological innovation	0.164	65
	Enterprises engaged in non-technological innovation	0.226	47
	Enterprises having developed in-house technological innovations	0.274	44
	Enterprises participating in joint R&D projects	0.075	81
3.2	Small enterprises engaged in technological innovation	0.300	34
3.3	Expenditure on technological innovation	0.255	61
3.4	Innovative goods and services	0.296	24
	Innovative goods and services new to the market	0.129	8
	Enterprises having reduced material and energy costs through innovation	0.059	77
4.1	Exports of goods	0.329	50
	Non-resource exports	0.304	51
	Exports of services	0.358	49
	Exports of innovative goods and services	0.006	55
4.2	Patent activity abroad	0.390	34
	Exports of technologies	0.063	55
	International students in higher education programmes	0.526	10
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.000	61
	Federal appropriations in expenditure on technological innovation	0.012	61
	Regional appropriations in expenditure on technological innovation	0.000	58
5.4	Number of innovative projects supported by federal authorities	0.391	43
	Number of federal development institutions supporting innovative projects	0.533	22
	Federal funding of innovative projects	0.527	22
	Number of innovation development territories with federal status	0.325	29
	Number of innovation infrastructure facilities for SMEs	0.250	52

Central Federal District

LIPETSK REGION

0.374 COMPOSITE INNOVATION INDEX

26 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

64

0.348

1.1	Basic Macroeconomic Indicators	0.260	65
1.2	Educational Potential of the Population	0.408	61
1.3	Digitisation Potential	0.344	34

2 S&T POTENTIAL

69

0.321

2.1	R&D Funding	0.288	56
2.2	R&D Personnel	0.444	33
2.3	R&D Output	0.244	73

3 INNOVATIVE ACTIVITY

9

0.453

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.591	7
3.2	Small Innovative Enterprises	0.635	4
3.3	Expenditure on Technological Innovation	0.559	28
3.4	Efficiency of Innovative Activity	0.174	29

4 EXPORT ACTIVITY

10

0.456

4.1	Export of Goods and Services	0.578	4
4.2	Export of Knowledge	0.294	37

5 QUALITY OF INNOVATION POLICY

40

0.331

5.1	Regulatory Framework for Innovation Policy	1.000	1
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.004	77
5.4	Participation in Federal STI Policy	0.460	30

Central Federal District

LIPETSK REGION

1.1	GRP per worker	0.287	23
	Fixed assets renewal coefficient	0.351	22
	Employment in high-tech manufacturing	0.296	46
	Employment in knowledge-intensive activities	0.105	82
1.2	Participation of adult population in higher education	0.267	40
	Higher education enrolment per 10,000 population	0.330	63
	STEM enrolment in higher education programmes	0.277	54
	Participation of employed population in lifelong learning	0.537	39
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.467	66
	STEM enrolment in programmes for mid-career professionals	0.572	55
1.3	Enterprises with broadband top speed access over 100 Mbps	0.576	7
	Enterprises providing ICT related training of staff	0.214	42
	Active Internet users in the adult population	0.242	69
2.1	GERD as a percentage of GRP	0.009	81
	GERD per researcher	0.363	77
	GERD financed by the business enterprise sector	0.492	13
	Average monthly salary of R&D personnel as a percentage of regional average	0.285	77
2.2	R&D personnel employed in the region	0.027	79
	Young researchers	0.496	73
	Researchers with scientific degrees	0.810	8
2.3	Publication activity	0.452	43
	Patent activity	0.280	64
	Development of advanced manufacturing technologies	0.000	65
3.1	Enterprises engaged in technological innovation	0.789	4
	Enterprises engaged in non-technological innovation	0.393	15
	Enterprises having developed in-house technological innovations	0.948	2
	Enterprises participating in joint R&D projects	0.234	47
3.2	Small enterprises engaged in technological innovation	0.635	4
3.3	Expenditure on technological innovation	0.559	28
3.4	Innovative goods and services	0.327	22
	Innovative goods and services new to the market	0.040	26
	Enterprises having reduced material and energy costs through innovation	0.155	60
4.1	Exports of goods	0.795	5
	Non-resource exports	1.000	1
	Exports of services	0.298	62
	Exports of innovative goods and services	0.217	17
4.2	Patent activity abroad	0.439	26
	Exports of technologies	0.335	23
	International students in higher education programmes	0.108	69
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.010	47
	Federal appropriations in expenditure on technological innovation	0.002	67
	Regional appropriations in expenditure on technological innovation	0.001	45
5.4	Number of innovative projects supported by federal authorities	0.301	63
	Number of federal development institutions supporting innovative projects	0.200	63
	Federal funding of innovative projects	0.210	52
	Number of innovation development territories with federal status	0.588	5
	Number of innovation infrastructure facilities for SMEs	1.000	1

Central Federal District

MOSCOW REGION

0.462 COMPOSITE INNOVATION INDEX

6 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

32

0.398

1.1	Basic Macroeconomic Indicators	0.325	29
1.2	Educational Potential of the Population	0.407	62
1.3	Digitisation Potential	0.474	9

2 S&T POTENTIAL

6

0.516

2.1	R&D Funding	0.449	14
2.2	R&D Personnel	0.588	6
2.3	R&D Output	0.535	9

3 INNOVATIVE ACTIVITY

12

0.412

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.442	15
3.2	Small Innovative Enterprises	0.251	45
3.3	Expenditure on Technological Innovation	0.875	2
3.4	Efficiency of Innovative Activity	0.271	14

4 EXPORT ACTIVITY

13

0.449

4.1	Export of Goods and Services	0.426	23
4.2	Export of Knowledge	0.479	9

5 QUALITY OF INNOVATION POLICY

7

0.543

5.1	Regulatory Framework for Innovation Policy	1.000	1
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.353	4
5.4	Participation in Federal STI Policy	0.575	14

Central Federal District

MOSCOW REGION

1.1	GRP per worker	0.278	25
	Fixed assets renewal coefficient	0.345	23
	Employment in high-tech manufacturing	0.479	33
	Employment in knowledge-intensive activities	0.199	65
1.2	Participation of adult population in higher education	0.785	4
	Higher education enrolment per 10,000 population	0.180	81
	STEM enrolment in higher education programmes	0.224	68
	Participation of employed population in lifelong learning	0.449	51
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.147	83
	STEM enrolment in programmes for mid-career professionals	0.660	42
1.3	Enterprises with broadband top speed access over 100 Mbps	0.616	5
	Enterprises providing ICT related training of staff	0.225	40
	Active Internet users in the adult population	0.582	10
2.1	GERD as a percentage of GRP	0.521	3
	GERD per researcher	0.667	16
	GERD financed by the business enterprise sector	0.201	36
	Average monthly salary of R&D personnel as a percentage of regional average	0.407	55
2.2	R&D personnel employed in the region	0.951	2
	Young researchers	0.587	60
	Researchers with scientific degrees	0.226	64
2.3	Publication activity	0.325	64
	Patent activity	0.800	3
	Development of advanced manufacturing technologies	0.480	19
3.1	Enterprises engaged in technological innovation	0.334	28
	Enterprises engaged in non-technological innovation	0.432	11
	Enterprises having developed in-house technological innovations	0.489	20
	Enterprises participating in joint R&D projects	0.515	9
3.2	Small enterprises engaged in technological innovation	0.251	45
3.3	Expenditure on technological innovation	0.875	2
3.4	Innovative goods and services	0.517	9
	Innovative goods and services new to the market	0.166	6
	Enterprises having reduced material and energy costs through innovation	0.130	69
4.1	Exports of goods	0.304	55
	Non-resource exports	0.380	37
	Exports of services	0.596	14
	Exports of innovative goods and services	0.424	11
4.2	Patent activity abroad	0.676	5
	Exports of technologies	0.449	9
	International students in higher education programmes	0.311	33
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.167	18
	Federal appropriations in expenditure on technological innovation	0.729	5
	Regional appropriations in expenditure on technological innovation	0.163	5
5.4	Number of innovative projects supported by federal authorities	0.553	13
	Number of federal development institutions supporting innovative projects	0.733	11
	Federal funding of innovative projects	0.339	39
	Number of innovation development territories with federal status	1.000	1
	Number of innovation infrastructure facilities for SMEs	0.250	52

Central Federal District

OREL REGION

0.292 COMPOSITE INNOVATION INDEX

62 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

23

0.411

1.1	Basic Macroeconomic Indicators	0.321	33
1.2	Educational Potential of the Population	0.555	12
1.3	Digitisation Potential	0.244	71

2 S&T POTENTIAL

47

0.360

2.1	R&D Funding	0.303	51
2.2	R&D Personnel	0.422	45
2.3	R&D Output	0.373	46

3 INNOVATIVE ACTIVITY

54

0.203

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.226	51
3.2	Small Innovative Enterprises	0.355	24
3.3	Expenditure on Technological Innovation	0.336	47
3.4	Efficiency of Innovative Activity	0.079	65

4 EXPORT ACTIVITY

58

0.237

4.1	Export of Goods and Services	0.227	60
4.2	Export of Knowledge	0.249	49

5 QUALITY OF INNOVATION POLICY

70

0.189

5.1	Regulatory Framework for Innovation Policy	0.250	70
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.003	81
5.4	Participation in Federal STI Policy	0.227	66

Central Federal District

OREL REGION

1.1	GRP per worker	0.204	46
	Fixed assets renewal coefficient	0.310	32
	Employment in high-tech manufacturing	0.499	30
	Employment in knowledge-intensive activities	0.272	40
1.2	Participation of adult population in higher education	0.369	25
	Higher education enrolment per 10,000 population	0.724	4
	STEM enrolment in higher education programmes	0.217	70
	Participation of employed population in lifelong learning	0.789	15
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.571	52
	STEM enrolment in programmes for mid-career professionals	0.658	43
1.3	Enterprises with broadband top speed access over 100 Mbps	0.405	32
	Enterprises providing ICT related training of staff	0.140	63
	Active Internet users in the adult population	0.187	75
2.1	GERD as a percentage of GRP	0.075	40
	GERD per researcher	0.644	20
	GERD financed by the business enterprise sector	0.104	57
	Average monthly salary of R&D personnel as a percentage of regional average	0.386	60
2.2	R&D personnel employed in the region	0.098	48
	Young researchers	0.681	37
	Researchers with scientific degrees	0.488	36
2.3	Publication activity	0.480	30
	Patent activity	0.351	43
	Development of advanced manufacturing technologies	0.289	49
3.1	Enterprises engaged in technological innovation	0.208	54
	Enterprises engaged in non-technological innovation	0.226	46
	Enterprises having developed in-house technological innovations	0.343	35
	Enterprises participating in joint R&D projects	0.125	74
3.2	Small enterprises engaged in technological innovation	0.355	24
3.3	Expenditure on technological innovation	0.336	47
3.4	Innovative goods and services	0.038	63
	Innovative goods and services new to the market	0.021	42
	Enterprises having reduced material and energy costs through innovation	0.176	48
4.1	Exports of goods	0.260	57
	Non-resource exports	0.333	44
	Exports of services	0.299	61
	Exports of innovative goods and services	0.018	42
4.2	Patent activity abroad	0.389	35
	Exports of technologies	0.000	57
	International students in higher education programmes	0.359	26
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	0.000	69
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.000	61
	Federal appropriations in expenditure on technological innovation	0.008	64
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.421	34
	Number of federal development institutions supporting innovative projects	0.333	44
	Federal funding of innovative projects	0.131	63
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.250	52

Central Federal District

RYAZAN REGION

0.365 COMPOSITE INNOVATION INDEX

30 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

30

0.400

1.1	Basic Macroeconomic Indicators	0.332	26
1.2	Educational Potential of the Population	0.516	17
1.3	Digitisation Potential	0.256	68

2 S&T POTENTIAL

53

0.349

2.1	R&D Funding	0.265	67
2.2	R&D Personnel	0.384	62
2.3	R&D Output	0.426	29

3 INNOVATIVE ACTIVITY

16

0.377

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.504	9
3.2	Small Innovative Enterprises	0.426	14
3.3	Expenditure on Technological Innovation	0.512	32
3.4	Efficiency of Innovative Activity	0.146	37

4 EXPORT ACTIVITY

42

0.292

4.1	Export of Goods and Services	0.292	44
4.2	Export of Knowledge	0.292	38

5 QUALITY OF INNOVATION POLICY

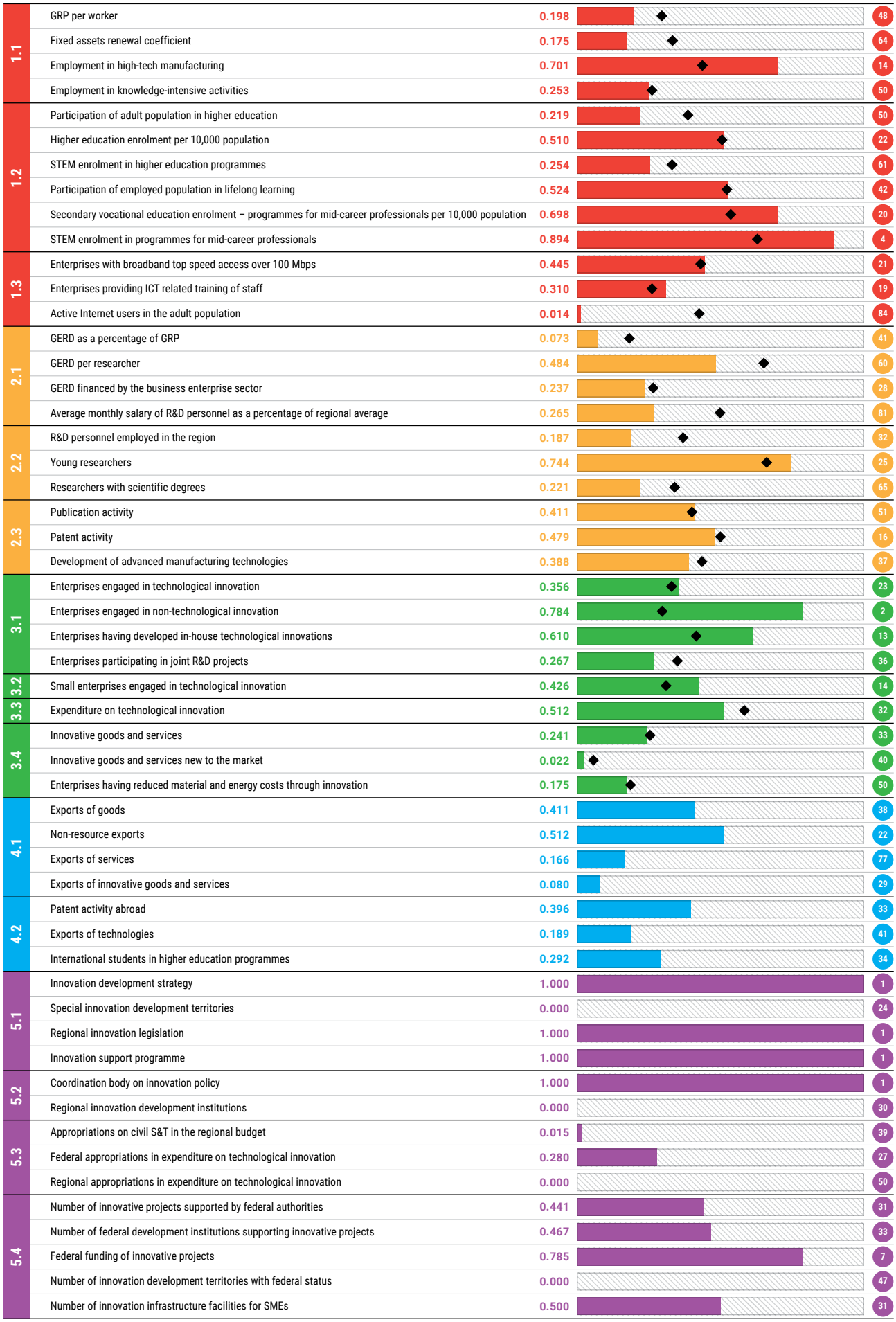
30

0.374

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.098	36
5.4	Participation in Federal STI Policy	0.438	34

Central Federal District

RYAZAN REGION



Central Federal District

SMOLENSK REGION

0.368 COMPOSITE INNOVATION INDEX

29 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

33

0.397

1.1	Basic Macroeconomic Indicators	0.264	63
1.2	Educational Potential of the Population	0.466	45
1.3	Digitisation Potential	0.440	13

2 S&T POTENTIAL

31

0.397

2.1	R&D Funding	0.498	9
2.2	R&D Personnel	0.316	83
2.3	R&D Output	0.343	54

3 INNOVATIVE ACTIVITY

43

0.239

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.251	43
3.2	Small Innovative Enterprises	0.060	76
3.3	Expenditure on Technological Innovation	0.503	34
3.4	Efficiency of Innovative Activity	0.195	25

4 EXPORT ACTIVITY

4

0.522

4.1	Export of Goods and Services	0.511	9
4.2	Export of Knowledge	0.537	7

5 QUALITY OF INNOVATION POLICY

45

0.309

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.339	6
5.4	Participation in Federal STI Policy	0.314	50

Central Federal District

SMOLENSK REGION

1.1	GRP per worker	0.158	63
	Fixed assets renewal coefficient	0.164	66
	Employment in high-tech manufacturing	0.531	25
	Employment in knowledge-intensive activities	0.202	63
1.2	Participation of adult population in higher education	0.349	31
	Higher education enrolment per 10,000 population	0.401	47
	STEM enrolment in higher education programmes	0.140	81
	Participation of employed population in lifelong learning	0.453	50
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.574	50
	STEM enrolment in programmes for mid-career professionals	0.876	5
1.3	Enterprises with broadband top speed access over 100 Mbps	0.566	9
	Enterprises providing ICT related training of staff	0.330	17
	Active Internet users in the adult population	0.423	36
2.1	GERD as a percentage of GRP	0.094	36
	GERD per researcher	0.717	8
	GERD financed by the business enterprise sector	0.233	30
	Average monthly salary of R&D personnel as a percentage of regional average	0.947	2
2.2	R&D personnel employed in the region	0.076	58
	Young researchers	0.726	30
	Researchers with scientific degrees	0.147	77
2.3	Publication activity	0.294	71
	Patent activity	0.266	68
	Development of advanced manufacturing technologies	0.469	21
3.1	Enterprises engaged in technological innovation	0.255	44
	Enterprises engaged in non-technological innovation	0.210	49
	Enterprises having developed in-house technological innovations	0.283	43
	Enterprises participating in joint R&D projects	0.258	41
3.2	Small enterprises engaged in technological innovation	0.060	76
3.3	Expenditure on technological innovation	0.503	34
3.4	Innovative goods and services	0.155	38
	Innovative goods and services new to the market	0.110	10
	Enterprises having reduced material and energy costs through innovation	0.320	12
4.1	Exports of goods	0.523	19
	Non-resource exports	0.644	7
	Exports of services	0.876	3
	Exports of innovative goods and services	0.001	60
4.2	Patent activity abroad	0.302	48
	Exports of technologies	0.673	3
	International students in higher education programmes	0.636	6
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.000	61
	Federal appropriations in expenditure on technological innovation	1.000	1
	Regional appropriations in expenditure on technological innovation	0.018	26
5.4	Number of innovative projects supported by federal authorities	0.315	60
	Number of federal development institutions supporting innovative projects	0.333	44
	Federal funding of innovative projects	0.423	32
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.500	31

Central Federal District

TAMBOV REGION

0.353 COMPOSITE INNOVATION INDEX

34 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

19

0.418

1.1	Basic Macroeconomic Indicators	0.362	16
1.2	Educational Potential of the Population	0.477	38
1.3	Digitisation Potential	0.373	28

2 S&T POTENTIAL

57

0.341

2.1	R&D Funding	0.378	26
2.2	R&D Personnel	0.354	74
2.3	R&D Output	0.280	66

3 INNOVATIVE ACTIVITY

24

0.316

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.338	29
3.2	Small Innovative Enterprises	0.073	75
3.3	Expenditure on Technological Innovation	0.714	10
3.4	Efficiency of Innovative Activity	0.235	17

4 EXPORT ACTIVITY

52

0.253

4.1	Export of Goods and Services	0.204	65
4.2	Export of Knowledge	0.317	28

5 QUALITY OF INNOVATION POLICY

28

0.385

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.161	20
5.4	Participation in Federal STI Policy	0.423	36

Central Federal District

TAMBOV REGION

1.1	GRP per worker	0.184	51
	Fixed assets renewal coefficient	0.333	29
	Employment in high-tech manufacturing	0.692	15
	Employment in knowledge-intensive activities	0.239	55
1.2	Participation of adult population in higher education	0.159	66
	Higher education enrolment per 10,000 population	0.483	29
	STEM enrolment in higher education programmes	0.255	60
	Participation of employed population in lifelong learning	0.455	49
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.638	34
	STEM enrolment in programmes for mid-career professionals	0.875	6
1.3	Enterprises with broadband top speed access over 100 Mbps	0.359	40
	Enterprises providing ICT related training of staff	0.495	4
	Active Internet users in the adult population	0.264	67
2.1	GERD as a percentage of GRP	0.059	49
	GERD per researcher	0.553	42
	GERD financed by the business enterprise sector	0.463	14
	Average monthly salary of R&D personnel as a percentage of regional average	0.436	47
2.2	R&D personnel employed in the region	0.093	52
	Young researchers	0.555	68
	Researchers with scientific degrees	0.414	43
2.3	Publication activity	0.513	23
	Patent activity	0.327	52
	Development of advanced manufacturing technologies	0.000	65
3.1	Enterprises engaged in technological innovation	0.449	13
	Enterprises engaged in non-technological innovation	0.236	44
	Enterprises having developed in-house technological innovations	0.477	23
	Enterprises participating in joint R&D projects	0.190	58
3.2	Small enterprises engaged in technological innovation	0.073	75
3.3	Expenditure on technological innovation	0.714	10
3.4	Innovative goods and services	0.279	28
	Innovative goods and services new to the market	0.193	4
	Enterprises having reduced material and energy costs through innovation	0.234	27
4.1	Exports of goods	0.185	71
	Non-resource exports	0.226	62
	Exports of services	0.405	36
	Exports of innovative goods and services	0.000	64
4.2	Patent activity abroad	0.303	47
	Exports of technologies	0.200	40
	International students in higher education programmes	0.450	16
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.011	46
	Federal appropriations in expenditure on technological innovation	0.045	51
	Regional appropriations in expenditure on technological innovation	0.428	3
5.4	Number of innovative projects supported by federal authorities	0.460	25
	Number of federal development institutions supporting innovative projects	0.333	44
	Federal funding of innovative projects	0.247	47
	Number of innovation development territories with federal status	0.325	29
	Number of innovation infrastructure facilities for SMEs	0.750	13

Central Federal District

TVER REGION

0.328 COMPOSITE INNOVATION INDEX

47 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

73

0.316

1.1	Basic Macroeconomic Indicators	0.260	66
1.2	Educational Potential of the Population	0.387	69
1.3	Digitisation Potential	0.249	70

2 S&T POTENTIAL

28

0.401

2.1	R&D Funding	0.474	12
2.2	R&D Personnel	0.356	73
2.3	R&D Output	0.348	52

3 INNOVATIVE ACTIVITY

25

0.310

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.348	28
3.2	Small Innovative Enterprises	0.155	61
3.3	Expenditure on Technological Innovation	0.814	4
3.4	Efficiency of Innovative Activity	0.144	40

4 EXPORT ACTIVITY

57

0.240

4.1	Export of Goods and Services	0.212	61
4.2	Export of Knowledge	0.277	41

5 QUALITY OF INNOVATION POLICY

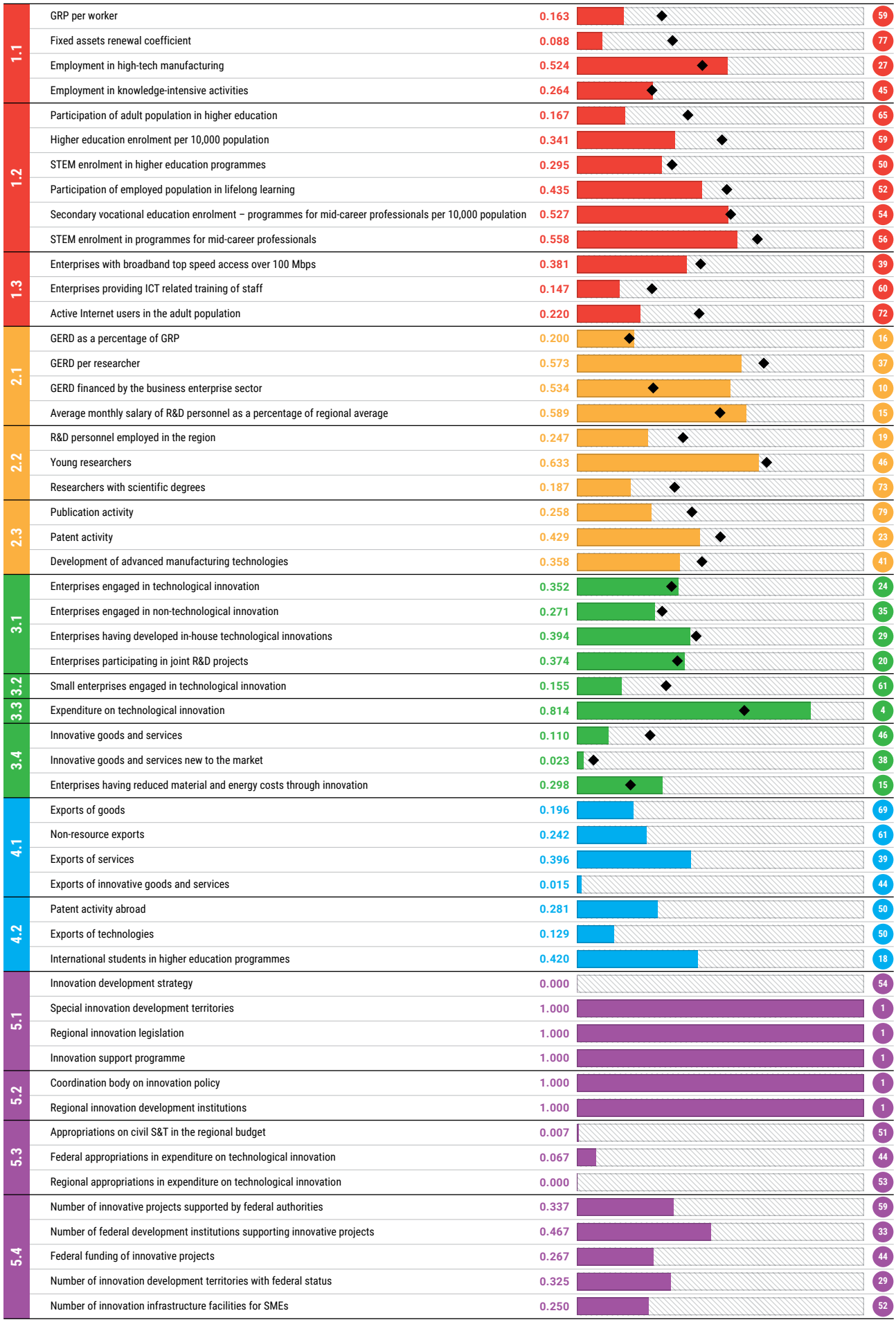
36

0.347

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	1.000	1
5.3	Public Expenditure on R&D and Innovation	0.025	63
5.4	Participation in Federal STI Policy	0.329	48

Central Federal District

TVER REGION



Central Federal District

TULA REGION

0.395 COMPOSITE INNOVATION INDEX

18 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

21

0.416

1.1	Basic Macroeconomic Indicators	0.324	30
1.2	Educational Potential of the Population	0.477	40
1.3	Digitisation Potential	0.416	16

2 S&T POTENTIAL

66

0.326

2.1	R&D Funding	0.405	22
2.2	R&D Personnel	0.344	79
2.3	R&D Output	0.203	80

3 INNOVATIVE ACTIVITY

20

0.354

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.401	23
3.2	Small Innovative Enterprises	0.279	37
3.3	Expenditure on Technological Innovation	0.595	21
3.4	Efficiency of Innovative Activity	0.236	16

4 EXPORT ACTIVITY

5

0.512

4.1	Export of Goods and Services	0.540	6
4.2	Export of Knowledge	0.475	10

5 QUALITY OF INNOVATION POLICY

25

0.394

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.211	16
5.4	Participation in Federal STI Policy	0.461	29

Central Federal District

TULA REGION

1.1	GRP per worker	0.224	42
	Fixed assets renewal coefficient	0.251	48
	Employment in high-tech manufacturing	0.638	18
	Employment in knowledge-intensive activities	0.182	71
1.2	Participation of adult population in higher education	0.259	44
	Higher education enrolment per 10,000 population	0.381	51
	STEM enrolment in higher education programmes	0.315	40
	Participation of employed population in lifelong learning	0.720	24
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.396	74
	STEM enrolment in programmes for mid-career professionals	0.787	15
1.3	Enterprises with broadband top speed access over 100 Mbps	0.527	11
	Enterprises providing ICT related training of staff	0.264	29
	Active Internet users in the adult population	0.456	28
2.1	GERD as a percentage of GRP	0.178	19
	GERD per researcher	0.546	43
	GERD financed by the business enterprise sector	0.222	33
	Average monthly salary of R&D personnel as a percentage of regional average	0.675	8
2.2	R&D personnel employed in the region	0.209	27
	Young researchers	0.738	27
	Researchers with scientific degrees	0.086	84
2.3	Publication activity	0.216	82
	Patent activity	0.394	32
	Development of advanced manufacturing technologies	0.000	65
3.1	Enterprises engaged in technological innovation	0.356	22
	Enterprises engaged in non-technological innovation	0.337	25
	Enterprises having developed in-house technological innovations	0.454	26
	Enterprises participating in joint R&D projects	0.455	14
3.2	Small enterprises engaged in technological innovation	0.279	37
3.3	Expenditure on technological innovation	0.595	21
3.4	Innovative goods and services	0.448	13
	Innovative goods and services new to the market	0.052	23
	Enterprises having reduced material and energy costs through innovation	0.209	36
4.1	Exports of goods	0.509	20
	Non-resource exports	0.644	8
	Exports of services	0.463	27
	Exports of innovative goods and services	0.543	5
4.2	Patent activity abroad	0.536	12
	Exports of technologies	0.573	5
	International students in higher education programmes	0.317	32
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.018	37
	Federal appropriations in expenditure on technological innovation	0.616	10
	Regional appropriations in expenditure on technological innovation	0.000	56
5.4	Number of innovative projects supported by federal authorities	0.377	50
	Number of federal development institutions supporting innovative projects	0.600	16
	Federal funding of innovative projects	0.669	12
	Number of innovation development territories with federal status	0.409	21
	Number of innovation infrastructure facilities for SMEs	0.250	52

Central Federal District

YAROSLAVL REGION

0.385 COMPOSITE INNOVATION INDEX

21 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

18

0.422

1.1	Basic Macroeconomic Indicators	0.399	8
1.2	Educational Potential of the Population	0.485	36
1.3	Digitisation Potential	0.326	44

2 S&T POTENTIAL

21

0.419

2.1	R&D Funding	0.359	33
2.2	R&D Personnel	0.466	19
2.3	R&D Output	0.453	15

3 INNOVATIVE ACTIVITY

19

0.366

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.431	16
3.2	Small Innovative Enterprises	0.345	27
3.3	Expenditure on Technological Innovation	0.448	39
3.4	Efficiency of Innovative Activity	0.258	15

4 EXPORT ACTIVITY

28

0.367

4.1	Export of Goods and Services	0.380	33
4.2	Export of Knowledge	0.350	20

5 QUALITY OF INNOVATION POLICY

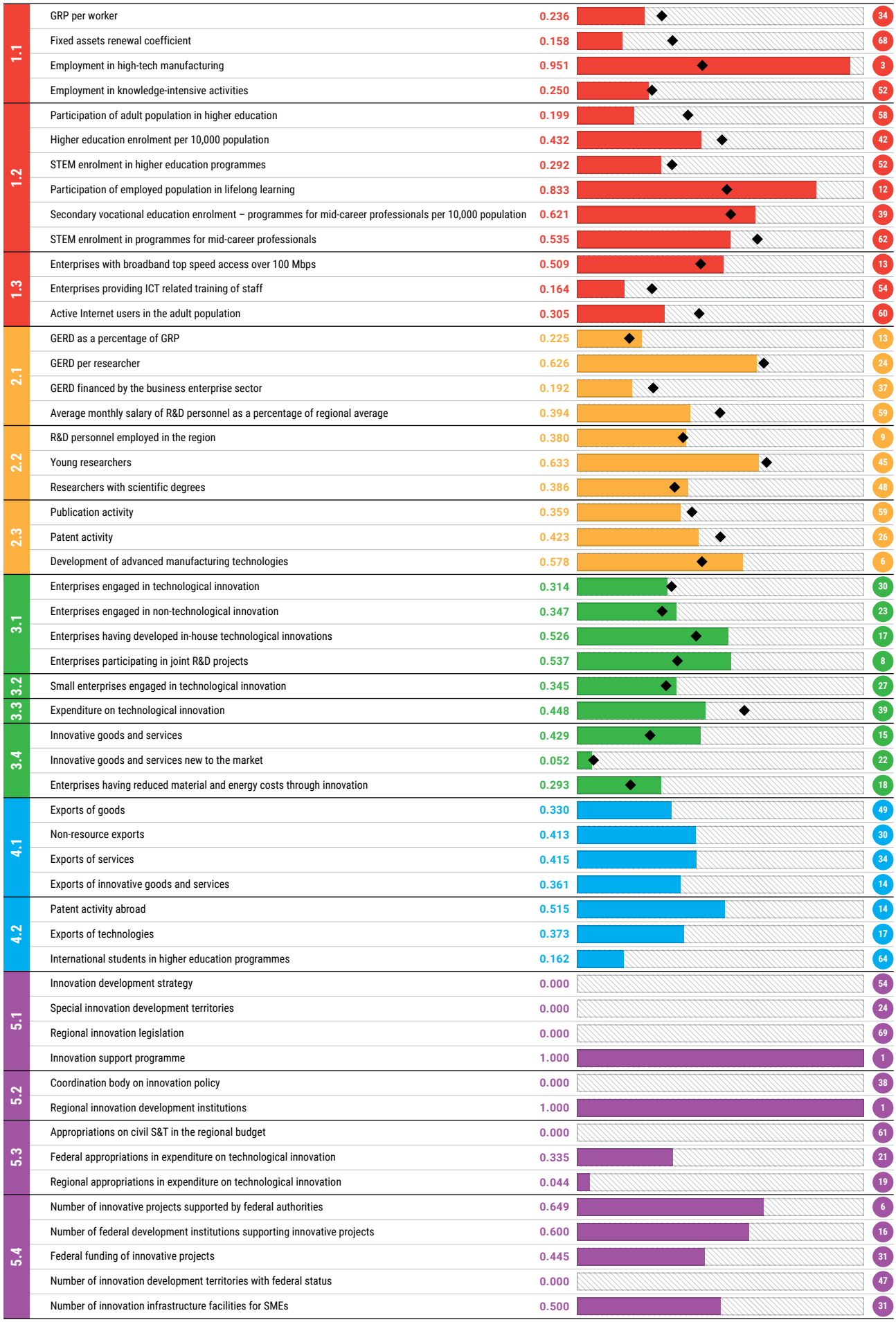
39

0.332

5.1	Regulatory Framework for Innovation Policy	0.250	70
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.126	32
5.4	Participation in Federal STI Policy	0.439	33

Central Federal District

YAROSLAVL REGION



Central Federal District

MOSCOW

0.538 COMPOSITE INNOVATION INDEX

1 RANK

RANK

LEADING REGION INDEX VALUE

RUSSIA AVERAGE VALUE

INDEX VALUE

NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

1

0.552

1.1	Basic Macroeconomic Indicators	0.382	11
1.2	Educational Potential of the Population	0.513	20
1.3	Digitisation Potential	0.857	1

2 S&T POTENTIAL

5

0.524

2.1	R&D Funding	0.379	25
2.2	R&D Personnel	0.672	1
2.3	R&D Output	0.568	6

3 INNOVATIVE ACTIVITY

7

0.479

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.697	4
3.2	Small Innovative Enterprises	0.662	3
3.3	Expenditure on Technological Innovation	0.605	19
3.4	Efficiency of Innovative Activity	0.084	63

4 EXPORT ACTIVITY

2

0.539

4.1	Export of Goods and Services	0.479	13
4.2	Export of Knowledge	0.619	3

5 QUALITY OF INNOVATION POLICY

2

0.586

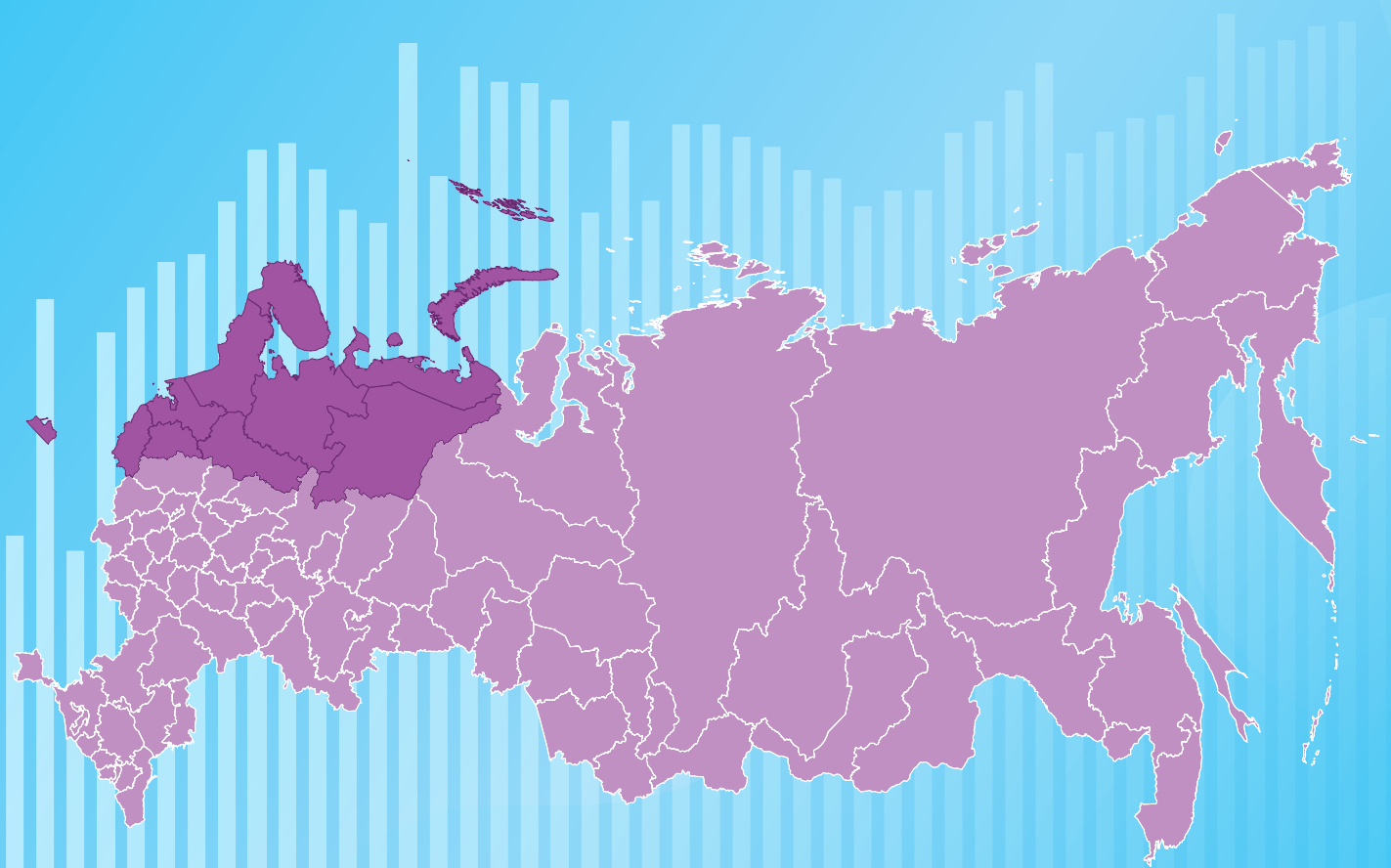
5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.353	5
5.4	Participation in Federal STI Policy	0.761	5

Central Federal District

MOSCOW

1.1	GRP per worker	0.352	11
	Fixed assets renewal coefficient	0.585	3
	Employment in high-tech manufacturing	0.270	51
	Employment in knowledge-intensive activities	0.320	28
1.2	Participation of adult population in higher education	1.000	1
	Higher education enrolment per 10,000 population	1.000	1
	STEM enrolment in higher education programmes	0.304	45
	Participation of employed population in lifelong learning	0.193	72
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.108	84
	STEM enrolment in programmes for mid-career professionals	0.471	67
1.3	Enterprises with broadband top speed access over 100 Mbps	1.000	1
	Enterprises providing ICT related training of staff	1.000	1
	Active Internet users in the adult population	0.571	12
2.1	GERD as a percentage of GRP	0.377	6
	GERD per researcher	0.667	15
	GERD financed by the business enterprise sector	0.178	42
	Average monthly salary of R&D personnel as a percentage of regional average	0.294	76
2.2	R&D personnel employed in the region	1.000	1
	Young researchers	0.608	52
	Researchers with scientific degrees	0.406	45
2.3	Publication activity	0.435	46
	Patent activity	0.803	2
	Development of advanced manufacturing technologies	0.468	23
3.1	Enterprises engaged in technological innovation	0.607	6
	Enterprises engaged in non-technological innovation	0.475	9
	Enterprises having developed in-house technological innovations	0.757	8
	Enterprises participating in joint R&D projects	0.949	2
3.2	Small enterprises engaged in technological innovation	0.662	3
3.3	Expenditure on technological innovation	0.605	19
3.4	Innovative goods and services	0.118	43
	Innovative goods and services new to the market	0.034	29
	Enterprises having reduced material and energy costs through innovation	0.101	76
4.1	Exports of goods	0.696	7
	Non-resource exports	0.370	41
	Exports of services	0.784	7
	Exports of innovative goods and services	0.067	31
4.2	Patent activity abroad	1.000	1
	Exports of technologies	0.389	16
	International students in higher education programmes	0.467	14
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	1.000	1
	Regional innovation legislation	0.000	69
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.177	17
	Federal appropriations in expenditure on technological innovation	0.744	3
	Regional appropriations in expenditure on technological innovation	0.138	7
5.4	Number of innovative projects supported by federal authorities	0.924	2
	Number of federal development institutions supporting innovative projects	1.000	1
	Federal funding of innovative projects	0.518	23
	Number of innovation development territories with federal status	0.860	2
	Number of innovation infrastructure facilities for SMEs	0.500	31

NORTH-WESTERN FEDERAL DISTRICT



North-Western Federal District

REPUBLIC OF KARELIA

0.294 COMPOSITE INNOVATION INDEX

60 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

65

0.345

1.1	Basic Macroeconomic Indicators	0.189	83
1.2	Educational Potential of the Population	0.395	66
1.3	Digitisation Potential	0.452	11

2 S&T POTENTIAL

25

0.409

2.1	R&D Funding	0.281	64
2.2	R&D Personnel	0.510	10
2.3	R&D Output	0.478	14

3 INNOVATIVE ACTIVITY

59

0.184

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.252	42
3.2	Small Innovative Enterprises	0.053	77
3.3	Expenditure on Technological Innovation	0.199	69
3.4	Efficiency of Innovative Activity	0.133	45

4 EXPORT ACTIVITY

50

0.258

4.1	Export of Goods and Services	0.409	26
4.2	Export of Knowledge	0.056	75

5 QUALITY OF INNOVATION POLICY

58

0.238

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.003	80
5.4	Participation in Federal STI Policy	0.325	49

North-Western Federal District

REPUBLIC OF KARELIA

1.1	GRP per worker	0.235	35
	Fixed assets renewal coefficient	0.140	74
	Employment in high-tech manufacturing	0.081	69
	Employment in knowledge-intensive activities	0.302	33
1.2	Participation of adult population in higher education	0.134	74
	Higher education enrolment per 10,000 population	0.327	64
	STEM enrolment in higher education programmes	0.249	62
	Participation of employed population in lifelong learning	0.338	60
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.546	53
	STEM enrolment in programmes for mid-career professionals	0.775	17
1.3	Enterprises with broadband top speed access over 100 Mbps	0.358	41
	Enterprises providing ICT related training of staff	0.348	14
	Active Internet users in the adult population	0.651	6
2.1	GERD as a percentage of GRP	0.062	48
	GERD per researcher	0.505	52
	GERD financed by the business enterprise sector	0.088	63
	Average monthly salary of R&D personnel as a percentage of regional average	0.470	37
2.2	R&D personnel employed in the region	0.137	41
	Young researchers	0.617	51
	Researchers with scientific degrees	0.778	9
2.3	Publication activity	0.619	10
	Patent activity	0.294	61
	Development of advanced manufacturing technologies	0.520	12
3.1	Enterprises engaged in technological innovation	0.206	55
	Enterprises engaged in non-technological innovation	0.256	41
	Enterprises having developed in-house technological innovations	0.222	55
	Enterprises participating in joint R&D projects	0.323	28
3.2	Small enterprises engaged in technological innovation	0.053	77
3.3	Expenditure on technological innovation	0.199	69
3.4	Innovative goods and services	0.012	75
	Innovative goods and services new to the market	0.003	71
	Enterprises having reduced material and energy costs through innovation	0.385	5
4.1	Exports of goods	0.564	15
	Non-resource exports	0.514	21
	Exports of services	0.511	22
	Exports of innovative goods and services	0.048	32
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.000	57
	International students in higher education programmes	0.169	62
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.004	54
	Federal appropriations in expenditure on technological innovation	0.003	66
	Regional appropriations in expenditure on technological innovation	0.002	43
5.4	Number of innovative projects supported by federal authorities	0.532	17
	Number of federal development institutions supporting innovative projects	0.333	44
	Federal funding of innovative projects	0.258	46
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.500	31

North-Western Federal District

KOMI REPUBLIC

0.305 COMPOSITE INNOVATION INDEX

57 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

55

0.361

1.1	Basic Macroeconomic Indicators	0.220	79
1.2	Educational Potential of the Population	0.447	52
1.3	Digitisation Potential	0.374	27

2 S&T POTENTIAL

14

0.463

2.1	R&D Funding	0.565	6
2.2	R&D Personnel	0.478	16
2.3	R&D Output	0.312	58

3 INNOVATIVE ACTIVITY

79

0.115

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.130	73
3.2	Small Innovative Enterprises	0.110	71
3.3	Expenditure on Technological Innovation	0.215	67
3.4	Efficiency of Innovative Activity	0.065	71

4 EXPORT ACTIVITY

44

0.287

4.1	Export of Goods and Services	0.253	55
4.2	Export of Knowledge	0.332	24

5 QUALITY OF INNOVATION POLICY

56

0.256

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.025	64
5.4	Participation in Federal STI Policy	0.247	62

North-Western Federal District

KOMI REPUBLIC

North-Western Federal District

ARKHANGELSK REGION

0.329 COMPOSITE INNOVATION INDEX

45 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

29

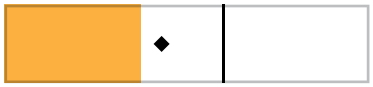
0.400

1.1	Basic Macroeconomic Indicators	0.440	4
1.2	Educational Potential of the Population	0.434	55
1.3	Digitisation Potential	0.277	60

2 S&T POTENTIAL

43

0.375



2.1	R&D Funding	0.423	18
2.2	R&D Personnel	0.388	60
2.3	R&D Output	0.297	63

3 INNOVATIVE ACTIVITY

14

0.390

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.192	57
3.2	Small Innovative Enterprises	0.143	64
3.3	Expenditure on Technological Innovation	0.242	62
3.4	Efficiency of Innovative Activity	0.784	1

4 EXPORT ACTIVITY

46

0.278

4.1	Export of Goods and Services	0.403	30
4.2	Export of Knowledge	0.112	66

5 QUALITY OF INNOVATION POLICY

71

0.172

5.1	Regulatory Framework for Innovation Policy	0.250	70
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.059	50
5.4	Participation in Federal STI Policy	0.260	60

North-Western Federal District

ARKHANGELSK REGION

1.1	GRP per worker	0.230	39
	Fixed assets renewal coefficient	0.257	46
	Employment in high-tech manufacturing	0.943	4
	Employment in knowledge-intensive activities	0.330	25
1.2	Participation of adult population in higher education	0.085	76
	Higher education enrolment per 10,000 population	0.298	67
	STEM enrolment in higher education programmes	0.321	37
	Participation of employed population in lifelong learning	0.726	22
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.519	56
	STEM enrolment in programmes for mid-career professionals	0.657	45
1.3	Enterprises with broadband top speed access over 100 Mbps	0.289	69
	Enterprises providing ICT related training of staff	0.130	65
	Active Internet users in the adult population	0.412	40
2.1	GERD as a percentage of GRP	0.054	52
	GERD per researcher	0.574	34
	GERD financed by the business enterprise sector	0.313	25
	Average monthly salary of R&D personnel as a percentage of regional average	0.753	4
2.2	R&D personnel employed in the region	0.073	62
	Young researchers	0.769	17
	Researchers with scientific degrees	0.321	51
2.3	Publication activity	0.476	32
	Patent activity	0.000	82
	Development of advanced manufacturing technologies	0.415	32
3.1	Enterprises engaged in technological innovation	0.159	67
	Enterprises engaged in non-technological innovation	0.175	56
	Enterprises having developed in-house technological innovations	0.243	53
	Enterprises participating in joint R&D projects	0.193	56
3.2	Small enterprises engaged in technological innovation	0.143	64
3.3	Expenditure on technological innovation	0.242	62
3.4	Innovative goods and services	1.000	1
	Innovative goods and services new to the market	1.000	1
	Enterprises having reduced material and energy costs through innovation	0.353	7
4.1	Exports of goods	0.618	11
	Non-resource exports	0.473	24
	Exports of services	0.515	21
	Exports of innovative goods and services	0.006	51
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.000	57
	International students in higher education programmes	0.335	28
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	0.000	69
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.010	48
	Federal appropriations in expenditure on technological innovation	0.139	38
	Regional appropriations in expenditure on technological innovation	0.027	24
5.4	Number of innovative projects supported by federal authorities	0.368	54
	Number of federal development institutions supporting innovative projects	0.333	44
	Federal funding of innovative projects	0.596	17
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.000	69

NENETS AUTONOMOUS REGION

0.162 COMPOSITE INNOVATION INDEX

84 RANK

RANK · LEADING REGION INDEX VALUE · INDEX VALUE · RUSSIA AVERAGE VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

84 — 0.258

1.1	Basic Macroeconomic Indicators	0.380	12
1.2	Educational Potential of the Population	0.193	85
1.3	Digitisation Potential	0.225	79

2 S&T POTENTIAL

84 — 0.181

2.1	R&D Funding	0.179	82
2.2	R&D Personnel	0.324	82
2.3	R&D Output	0.040	84

3 INNOVATIVE ACTIVITY

69 — 0.160

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.107	79
3.2	Small Innovative Enterprises	1.000	1
3.3	Expenditure on Technological Innovation	0.010	84
3.4	Efficiency of Innovative Activity	0.000	85

4 EXPORT ACTIVITY

72 — 0.148

4.1	Export of Goods and Services	0.260	54
4.2	Export of Knowledge	0.000	85

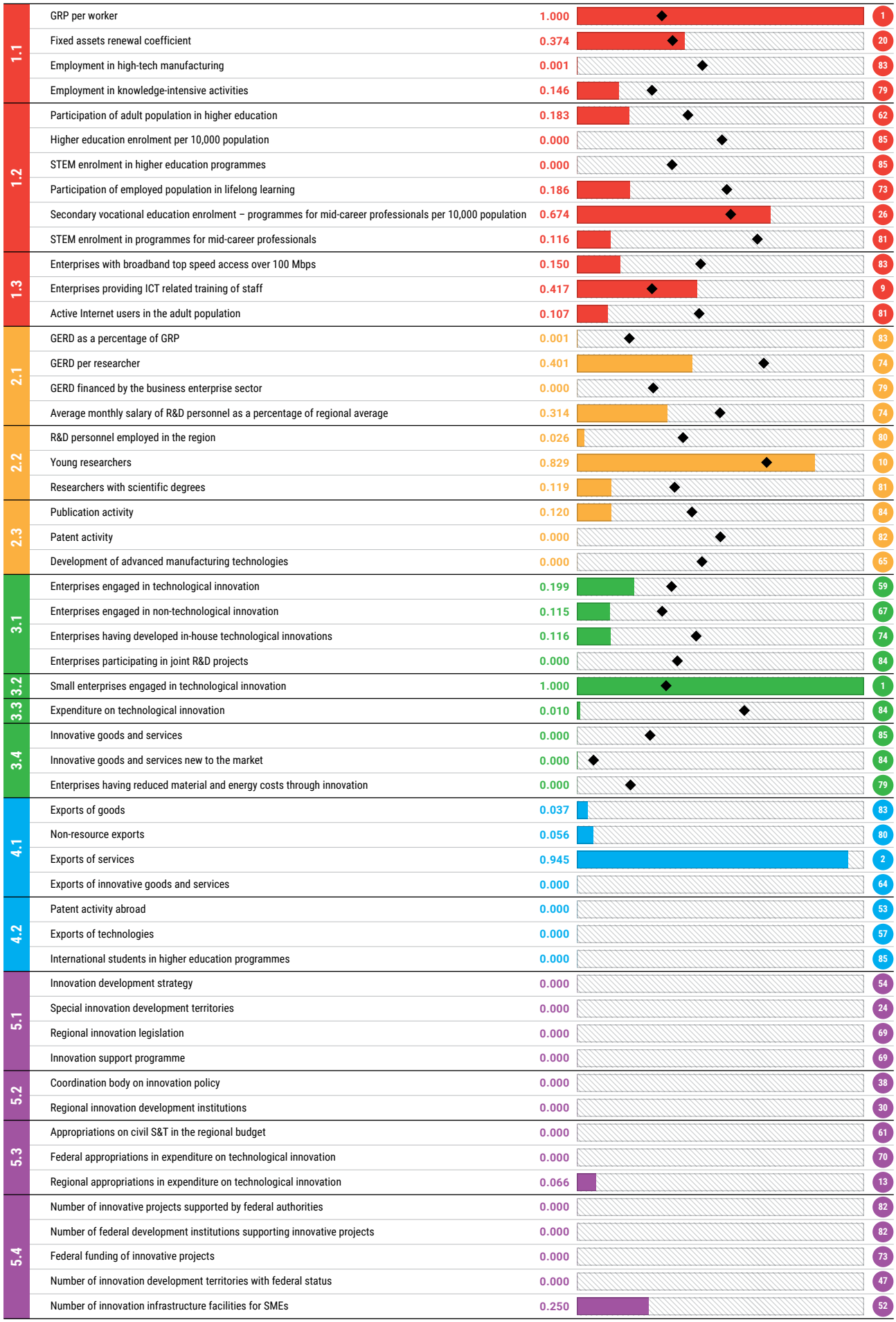
5 QUALITY OF INNOVATION POLICY

84 — 0.032

5.1	Regulatory Framework for Innovation Policy	0.000	83
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.022	66
5.4	Participation in Federal STI Policy	0.050	82

North-Western Federal District

NENETS AUTONOMOUS REGION



VOLOGDA REGION

0.335 COMPOSITE INNOVATION INDEX

41 RANK

RANK · LEADING REGION INDEX VALUE · INDEX VALUE · RUSSIA AVERAGE VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

43

0.386

1.1	Basic Macroeconomic Indicators	0.270	57
1.2	Educational Potential of the Population	0.486	35
1.3	Digitisation Potential	0.340	36

2 S&T POTENTIAL

44

0.374

2.1	R&D Funding	0.286	59
2.2	R&D Personnel	0.444	34
2.3	R&D Output	0.419	32

3 INNOVATIVE ACTIVITY

64

0.166

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.200	55
3.2	Small Innovative Enterprises	0.241	48
3.3	Expenditure on Technological Innovation	0.128	78
3.4	Efficiency of Innovative Activity	0.109	53

4 EXPORT ACTIVITY

19

0.407

4.1	Export of Goods and Services	0.515	8
4.2	Export of Knowledge	0.262	46

5 QUALITY OF INNOVATION POLICY

41

0.331

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.013	73
5.4	Participation in Federal STI Policy	0.403	40

North-Western Federal District

VOLOGDA REGION

1.1	GRP per worker	0.258	28
	Fixed assets renewal coefficient	0.409	14
	Employment in high-tech manufacturing	0.218	54
	Employment in knowledge-intensive activities	0.195	67
1.2	Participation of adult population in higher education	0.070	80
	Higher education enrolment per 10,000 population	0.284	70
	STEM enrolment in higher education programmes	0.378	22
	Participation of employed population in lifelong learning	0.907	6
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.576	49
	STEM enrolment in programmes for mid-career professionals	0.703	28
1.3	Enterprises with broadband top speed access over 100 Mbps	0.383	37
	Enterprises providing ICT related training of staff	0.226	39
	Active Internet users in the adult population	0.409	42
2.1	GERD as a percentage of GRP	0.015	78
	GERD per researcher	0.460	68
	GERD financed by the business enterprise sector	0.131	51
	Average monthly salary of R&D personnel as a percentage of regional average	0.538	23
2.2	R&D personnel employed in the region	0.032	78
	Young researchers	1.000	1
	Researchers with scientific degrees	0.301	53
2.3	Publication activity	0.519	18
	Patent activity	0.344	47
	Development of advanced manufacturing technologies	0.395	36
3.1	Enterprises engaged in technological innovation	0.215	52
	Enterprises engaged in non-technological innovation	0.150	59
	Enterprises having developed in-house technological innovations	0.174	67
	Enterprises participating in joint R&D projects	0.261	40
3.2	Small enterprises engaged in technological innovation	0.241	48
3.3	Expenditure on technological innovation	0.128	78
3.4	Innovative goods and services	0.103	47
	Innovative goods and services new to the market	0.006	61
	Enterprises having reduced material and energy costs through innovation	0.217	33
4.1	Exports of goods	0.697	6
	Non-resource exports	0.871	3
	Exports of services	0.394	40
	Exports of innovative goods and services	0.099	27
4.2	Patent activity abroad	0.436	27
	Exports of technologies	0.294	27
	International students in higher education programmes	0.055	78
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.003	58
	Federal appropriations in expenditure on technological innovation	0.034	53
	Regional appropriations in expenditure on technological innovation	0.003	40
5.4	Number of innovative projects supported by federal authorities	0.488	22
	Number of federal development institutions supporting innovative projects	0.533	22
	Federal funding of innovative projects	0.245	48
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.750	13

North-Western Federal District

KALININGRAD REGION

0.350 COMPOSITE INNOVATION INDEX

39 RANK

RANK · LEADING REGION INDEX VALUE · INDEX VALUE · RUSSIA AVERAGE VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

20

0.416

1.1	Basic Macroeconomic Indicators	0.304	43
1.2	Educational Potential of the Population	0.499	29
1.3	Digitisation Potential	0.398	21

2 S&T POTENTIAL

60

0.340

2.1	R&D Funding	0.283	62
2.2	R&D Personnel	0.368	68
2.3	R&D Output	0.387	42

3 INNOVATIVE ACTIVITY

70

0.158

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.173	64
3.2	Small Innovative Enterprises	0.177	58
3.3	Expenditure on Technological Innovation	0.177	73
3.4	Efficiency of Innovative Activity	0.127	49

4 EXPORT ACTIVITY

14

0.446

4.1	Export of Goods and Services	0.508	10
4.2	Export of Knowledge	0.363	18

5 QUALITY OF INNOVATION POLICY

29

0.380

5.1	Regulatory Framework for Innovation Policy	0.250	70
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.220	13
5.4	Participation in Federal STI Policy	0.478	25

North-Western Federal District

KALININGRAD REGION

1.1	GRP per worker	0.234	36
	Fixed assets renewal coefficient	0.491	8
	Employment in high-tech manufacturing	0.298	45
	Employment in knowledge-intensive activities	0.193	68
1.2	Participation of adult population in higher education	0.405	21
	Higher education enrolment per 10,000 population	0.416	44
	STEM enrolment in higher education programmes	0.330	35
	Participation of employed population in lifelong learning	0.376	57
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.634	37
	STEM enrolment in programmes for mid-career professionals	0.833	11
1.3	Enterprises with broadband top speed access over 100 Mbps	0.405	32
	Enterprises providing ICT related training of staff	0.266	28
	Active Internet users in the adult population	0.522	17
2.1	GERD as a percentage of GRP	0.043	60
	GERD per researcher	0.486	59
	GERD financed by the business enterprise sector	0.248	27
	Average monthly salary of R&D personnel as a percentage of regional average	0.355	71
2.2	R&D personnel employed in the region	0.140	40
	Young researchers	0.685	36
	Researchers with scientific degrees	0.279	58
2.3	Publication activity	0.600	11
	Patent activity	0.354	42
	Development of advanced manufacturing technologies	0.207	61
3.1	Enterprises engaged in technological innovation	0.150	71
	Enterprises engaged in non-technological innovation	0.204	50
	Enterprises having developed in-house technological innovations	0.112	75
	Enterprises participating in joint R&D projects	0.225	50
3.2	Small enterprises engaged in technological innovation	0.177	58
3.3	Expenditure on technological innovation	0.177	73
3.4	Innovative goods and services	0.009	77
	Innovative goods and services new to the market	0.003	69
	Enterprises having reduced material and energy costs through innovation	0.368	6
4.1	Exports of goods	0.468	28
	Non-resource exports	0.557	14
	Exports of services	0.690	10
	Exports of innovative goods and services	0.317	15
4.2	Patent activity abroad	0.452	22
	Exports of technologies	0.349	20
	International students in higher education programmes	0.289	36
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	0.000	69
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.013	42
	Federal appropriations in expenditure on technological innovation	0.594	11
	Regional appropriations in expenditure on technological innovation	0.053	16
5.4	Number of innovative projects supported by federal authorities	0.532	18
	Number of federal development institutions supporting innovative projects	0.533	22
	Federal funding of innovative projects	0.498	25
	Number of innovation development territories with federal status	0.325	29
	Number of innovation infrastructure facilities for SMEs	0.500	31

North-Western Federal District

LENINGRAD REGION

0.327 COMPOSITE INNOVATION INDEX

48 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

80

0.290

1.1	Basic Macroeconomic Indicators	0.290	50
1.2	Educational Potential of the Population	0.279	82
1.3	Digitisation Potential	0.313	47

2 S&T POTENTIAL

61

0.337

2.1	R&D Funding	0.301	52
2.2	R&D Personnel	0.367	69
2.3	R&D Output	0.357	49

3 INNOVATIVE ACTIVITY

26

0.310

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.361	26
3.2	Small Innovative Enterprises	0.275	40
3.3	Expenditure on Technological Innovation	0.770	8
3.4	Efficiency of Innovative Activity	0.100	57

4 EXPORT ACTIVITY

8

0.461

4.1	Export of Goods and Services	0.419	25
4.2	Export of Knowledge	0.518	8

5 QUALITY OF INNOVATION POLICY

52

0.283

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.028	62
5.4	Participation in Federal STI Policy	0.350	43

North-Western Federal District

LENINGRAD REGION

1.1	GRP per worker	0.334	13
	Fixed assets renewal coefficient	0.298	35
	Employment in high-tech manufacturing	0.528	26
	Employment in knowledge-intensive activities	0.000	85
1.2	Participation of adult population in higher education	0.242	47
	Higher education enrolment per 10,000 population	0.077	82
	STEM enrolment in higher education programmes	0.035	84
	Participation of employed population in lifelong learning	0.503	46
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.000	85
	STEM enrolment in programmes for mid-career professionals	0.820	12
1.3	Enterprises with broadband top speed access over 100 Mbps	0.501	16
	Enterprises providing ICT related training of staff	0.281	25
	Active Internet users in the adult population	0.157	78
2.1	GERD as a percentage of GRP	0.117	30
	GERD per researcher	0.606	29
	GERD financed by the business enterprise sector	0.038	71
	Average monthly salary of R&D personnel as a percentage of regional average	0.443	45
2.2	R&D personnel employed in the region	0.347	11
	Young researchers	0.499	72
	Researchers with scientific degrees	0.254	61
2.3	Publication activity	0.379	52
	Patent activity	0.258	69
	Development of advanced manufacturing technologies	0.434	27
3.1	Enterprises engaged in technological innovation	0.365	20
	Enterprises engaged in non-technological innovation	0.286	30
	Enterprises having developed in-house technological innovations	0.435	27
	Enterprises participating in joint R&D projects	0.356	22
3.2	Small enterprises engaged in technological innovation	0.275	40
3.3	Expenditure on technological innovation	0.770	8
3.4	Innovative goods and services	0.079	53
	Innovative goods and services new to the market	0.003	67
	Enterprises having reduced material and energy costs through innovation	0.217	33
4.1	Exports of goods	0.649	9
	Non-resource exports	0.516	20
	Exports of services	0.376	47
	Exports of innovative goods and services	0.135	21
4.2	Patent activity abroad	0.473	20
	Exports of technologies	0.276	31
	International students in higher education programmes	0.805	5
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	0.000	69
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.055	28
	Federal appropriations in expenditure on technological innovation	0.026	57
	Regional appropriations in expenditure on technological innovation	0.003	37
5.4	Number of innovative projects supported by federal authorities	0.403	40
	Number of federal development institutions supporting innovative projects	0.467	33
	Federal funding of innovative projects	0.556	20
	Number of innovation development territories with federal status	0.325	29
	Number of innovation infrastructure facilities for SMEs	0.000	69

North-Western Federal District

MURMANSK REGION

0.352 COMPOSITE INNOVATION INDEX

36 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

37

0.396

1.1	Basic Macroeconomic Indicators	0.234	75
1.2	Educational Potential of the Population	0.464	47
1.3	Digitisation Potential	0.477	8

2 S&T POTENTIAL

63

0.335

2.1	R&D Funding	0.310	47
2.2	R&D Personnel	0.466	18
2.3	R&D Output	0.237	75

3 INNOVATIVE ACTIVITY

38

0.269

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.410	20
3.2	Small Innovative Enterprises	0.181	56
3.3	Expenditure on Technological Innovation	0.220	66
3.4	Efficiency of Innovative Activity	0.128	48

4 EXPORT ACTIVITY

6

0.465

4.1	Export of Goods and Services	0.584	3
4.2	Export of Knowledge	0.306	32

5 QUALITY OF INNOVATION POLICY

46

0.308

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.104	35
5.4	Participation in Federal STI Policy	0.304	52

North-Western Federal District

MURMANSK REGION

1.1	GRP per worker	0.286	24
	Fixed assets renewal coefficient	0.292	37
	Employment in high-tech manufacturing	0.033	73
	Employment in knowledge-intensive activities	0.324	26
1.2	Participation of adult population in higher education	0.393	23
	Higher education enrolment per 10,000 population	0.204	80
	STEM enrolment in higher education programmes	0.446	6
	Participation of employed population in lifelong learning	0.305	62
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.639	33
	STEM enrolment in programmes for mid-career professionals	0.795	14
1.3	Enterprises with broadband top speed access over 100 Mbps	0.430	26
	Enterprises providing ICT related training of staff	0.207	46
	Active Internet users in the adult population	0.794	3
2.1	GERD as a percentage of GRP	0.084	37
	GERD per researcher	0.607	28
	GERD financed by the business enterprise sector	0.122	54
	Average monthly salary of R&D personnel as a percentage of regional average	0.424	51
2.2	R&D personnel employed in the region	0.228	22
	Young researchers	0.566	63
	Researchers with scientific degrees	0.605	25
2.3	Publication activity	0.472	37
	Patent activity	0.239	71
	Development of advanced manufacturing technologies	0.000	65
3.1	Enterprises engaged in technological innovation	0.300	34
	Enterprises engaged in non-technological innovation	0.255	42
	Enterprises having developed in-house technological innovations	0.803	5
	Enterprises participating in joint R&D projects	0.282	35
3.2	Small enterprises engaged in technological innovation	0.181	56
3.3	Expenditure on technological innovation	0.220	66
3.4	Innovative goods and services	0.044	61
	Innovative goods and services new to the market	0.005	62
	Enterprises having reduced material and energy costs through innovation	0.333	9
4.1	Exports of goods	0.803	4
	Non-resource exports	0.936	2
	Exports of services	0.595	15
	Exports of innovative goods and services	0.000	62
4.2	Patent activity abroad	0.444	23
	Exports of technologies	0.408	13
	International students in higher education programmes	0.066	77
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.181	16
	Federal appropriations in expenditure on technological innovation	0.125	40
	Regional appropriations in expenditure on technological innovation	0.004	34
5.4	Number of innovative projects supported by federal authorities	0.418	35
	Number of federal development institutions supporting innovative projects	0.200	63
	Federal funding of innovative projects	0.153	59
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.750	13

North-Western Federal District

NOVGOROD REGION

0.352 COMPOSITE INNOVATION INDEX

37 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

74

0.315

1.1	Basic Macroeconomic Indicators	0.258	67
1.2	Educational Potential of the Population	0.356	75
1.3	Digitisation Potential	0.310	49

2 S&T POTENTIAL

9

0.497

2.1	R&D Funding	0.627	3
2.2	R&D Personnel	0.369	67
2.3	R&D Output	0.451	16

3 INNOVATIVE ACTIVITY

34

0.289

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.374	24
3.2	Small Innovative Enterprises	0.405	16
3.3	Expenditure on Technological Innovation	0.303	52
3.4	Efficiency of Innovative Activity	0.132	46

4 EXPORT ACTIVITY

37

0.314

4.1	Export of Goods and Services	0.393	32
4.2	Export of Knowledge	0.209	55

5 QUALITY OF INNOVATION POLICY

38

0.337

5.1	Regulatory Framework for Innovation Policy	0.250	70
5.2	Organisational Support for Innovation Policy	1.000	1
5.3	Public Expenditure on R&D and Innovation	0.151	23
5.4	Participation in Federal STI Policy	0.333	47

North-Western Federal District

NOVGOROD REGION

1.1	GRP per worker	0.291	22
	Fixed assets renewal coefficient	0.094	75
	Employment in high-tech manufacturing	0.481	32
	Employment in knowledge-intensive activities	0.165	77
1.2	Participation of adult population in higher education	0.082	78
	Higher education enrolment per 10,000 population	0.233	78
	STEM enrolment in higher education programmes	0.186	78
	Participation of employed population in lifelong learning	0.527	41
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.589	46
	STEM enrolment in programmes for mid-career professionals	0.519	63
1.3	Enterprises with broadband top speed access over 100 Mbps	0.502	15
	Enterprises providing ICT related training of staff	0.208	45
	Active Internet users in the adult population	0.220	72
2.1	GERD as a percentage of GRP	0.169	21
	GERD per researcher	0.720	6
	GERD financed by the business enterprise sector	0.981	3
	Average monthly salary of R&D personnel as a percentage of regional average	0.638	10
2.2	R&D personnel employed in the region	0.218	25
	Young researchers	0.800	13
	Researchers with scientific degrees	0.088	83
2.3	Publication activity	0.263	77
	Patent activity	0.357	41
	Development of advanced manufacturing technologies	0.732	2
3.1	Enterprises engaged in technological innovation	0.330	29
	Enterprises engaged in non-technological innovation	0.271	34
	Enterprises having developed in-house technological innovations	0.481	22
	Enterprises participating in joint R&D projects	0.412	15
3.2	Small enterprises engaged in technological innovation	0.405	16
3.3	Expenditure on technological innovation	0.303	52
3.4	Innovative goods and services	0.142	39
	Innovative goods and services new to the market	0.072	17
	Enterprises having reduced material and energy costs through innovation	0.182	45
4.1	Exports of goods	0.528	18
	Non-resource exports	0.661	5
	Exports of services	0.381	44
	Exports of innovative goods and services	0.003	57
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.345	21
	International students in higher education programmes	0.281	39
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	0.000	69
	Innovation support programme	0.000	69
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.012	44
	Federal appropriations in expenditure on technological innovation	0.442	15
	Regional appropriations in expenditure on technological innovation	0.000	60
5.4	Number of innovative projects supported by federal authorities	0.587	9
	Number of federal development institutions supporting innovative projects	0.333	44
	Federal funding of innovative projects	0.245	49
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.500	31

North-Western Federal District

PSKOV REGION

0.270 COMPOSITE INNOVATION INDEX

66 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

62

0.349

1.1	Basic Macroeconomic Indicators	0.290	51
1.2	Educational Potential of the Population	0.392	67
1.3	Digitisation Potential	0.343	35

2 S&T POTENTIAL

64

0.332

2.1	R&D Funding	0.306	48
2.2	R&D Personnel	0.400	53
2.3	R&D Output	0.300	61

3 INNOVATIVE ACTIVITY

63

0.170

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.241	45
3.2	Small Innovative Enterprises	0.212	50
3.3	Expenditure on Technological Innovation	0.232	63
3.4	Efficiency of Innovative Activity	0.041	78

4 EXPORT ACTIVITY

34

0.336

4.1	Export of Goods and Services	0.273	50
4.2	Export of Knowledge	0.420	13

5 QUALITY OF INNOVATION POLICY

79

0.147

5.1	Regulatory Framework for Innovation Policy	0.250	70
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.001	82
5.4	Participation in Federal STI Policy	0.244	64

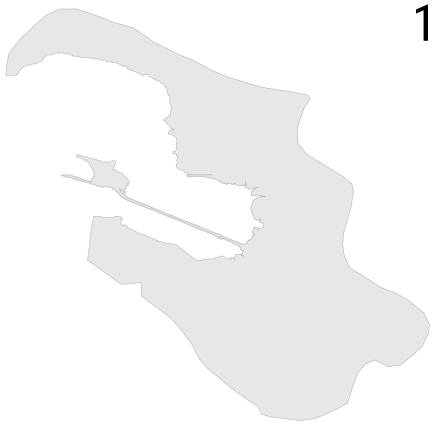
North-Western Federal District

PSKOV REGION

1.1	GRP per worker	0.118	74
	Fixed assets renewal coefficient	0.409	14
	Employment in high-tech manufacturing	0.463	34
	Employment in knowledge-intensive activities	0.167	75
1.2	Participation of adult population in higher education	0.037	83
	Higher education enrolment per 10,000 population	0.341	60
	STEM enrolment in higher education programmes	0.265	57
	Participation of employed population in lifelong learning	0.662	30
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.347	78
	STEM enrolment in programmes for mid-career professionals	0.699	29
1.3	Enterprises with broadband top speed access over 100 Mbps	0.440	23
	Enterprises providing ICT related training of staff	0.154	59
	Active Internet users in the adult population	0.434	33
2.1	GERD as a percentage of GRP	0.048	56
	GERD per researcher	0.648	18
	GERD financed by the business enterprise sector	0.092	60
	Average monthly salary of R&D personnel as a percentage of regional average	0.437	46
2.2	R&D personnel employed in the region	0.033	77
	Young researchers	0.763	19
	Researchers with scientific degrees	0.403	46
2.3	Publication activity	0.336	63
	Patent activity	0.320	57
	Development of advanced manufacturing technologies	0.243	57
3.1	Enterprises engaged in technological innovation	0.299	36
	Enterprises engaged in non-technological innovation	0.161	58
	Enterprises having developed in-house technological innovations	0.327	38
	Enterprises participating in joint R&D projects	0.178	60
3.2	Small enterprises engaged in technological innovation	0.212	50
3.3	Expenditure on technological innovation	0.232	63
3.4	Innovative goods and services	0.073	54
	Innovative goods and services new to the market	0.001	78
	Enterprises having reduced material and energy costs through innovation	0.048	78
4.1	Exports of goods	0.307	53
	Non-resource exports	0.258	57
	Exports of services	0.516	20
	Exports of innovative goods and services	0.009	48
4.2	Patent activity abroad	0.403	31
	Exports of technologies	0.309	25
	International students in higher education programmes	0.548	9
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	0.000	69
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.000	61
	Federal appropriations in expenditure on technological innovation	0.002	68
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.186	80
	Number of federal development institutions supporting innovative projects	0.067	75
	Federal funding of innovative projects	0.000	73
	Number of innovation development territories with federal status	0.468	14
	Number of innovation infrastructure facilities for SMEs	0.500	31

North-Western Federal District

ST PETERSBURG



0.536 COMPOSITE INNOVATION INDEX

3 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

3

0.519

1.1	Basic Macroeconomic Indicators	0.352	18
1.2	Educational Potential of the Population	0.572	7
1.3	Digitisation Potential	0.635	2

2 S&T POTENTIAL

3

0.569

2.1	R&D Funding	0.536	7
2.2	R&D Personnel	0.611	3
2.3	R&D Output	0.572	5

3 INNOVATIVE ACTIVITY

3

0.513

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.740	3
3.2	Small Innovative Enterprises	0.533	8
3.3	Expenditure on Technological Innovation	0.624	17
3.4	Efficiency of Innovative Activity	0.165	31

4 EXPORT ACTIVITY

1

0.563

4.1	Export of Goods and Services	0.473	15
4.2	Export of Knowledge	0.683	2

5 QUALITY OF INNOVATION POLICY

9

0.525

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.134	26
5.4	Participation in Federal STI Policy	0.769	4

North-Western Federal District

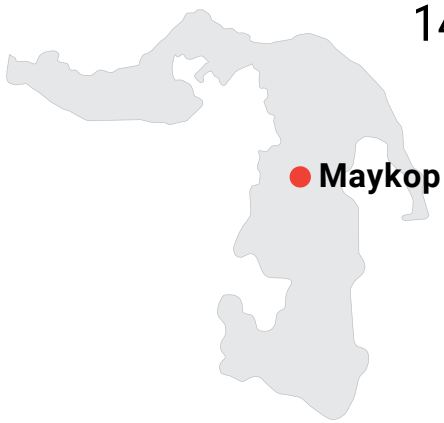
ST PETERSBURG

1.1	GRP per worker	0.314	16
	Fixed assets renewal coefficient	0.281	39
	Employment in high-tech manufacturing	0.543	23
	Employment in knowledge-intensive activities	0.272	41
1.2	Participation of adult population in higher education	0.809	3
	Higher education enrolment per 10,000 population	0.959	3
	STEM enrolment in higher education programmes	0.405	14
	Participation of employed population in lifelong learning	0.368	59
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.431	73
	STEM enrolment in programmes for mid-career professionals	0.461	68
1.3	Enterprises with broadband top speed access over 100 Mbps	0.648	4
	Enterprises providing ICT related training of staff	0.686	2
	Active Internet users in the adult population	0.571	12
2.1	GERD as a percentage of GRP	0.517	4
	GERD per researcher	0.669	14
	GERD financed by the business enterprise sector	0.510	11
	Average monthly salary of R&D personnel as a percentage of regional average	0.448	42
2.2	R&D personnel employed in the region	0.877	4
	Young researchers	0.672	39
	Researchers with scientific degrees	0.284	55
2.3	Publication activity	0.473	35
	Patent activity	0.669	5
	Development of advanced manufacturing technologies	0.575	7
3.1	Enterprises engaged in technological innovation	0.651	5
	Enterprises engaged in non-technological innovation	0.633	5
	Enterprises having developed in-house technological innovations	0.842	3
	Enterprises participating in joint R&D projects	0.835	3
3.2	Small enterprises engaged in technological innovation	0.533	8
3.3	Expenditure on technological innovation	0.624	17
3.4	Innovative goods and services	0.321	23
	Innovative goods and services new to the market	0.033	31
	Enterprises having reduced material and energy costs through innovation	0.142	66
4.1	Exports of goods	0.629	10
	Non-resource exports	0.450	26
	Exports of services	0.695	9
	Exports of innovative goods and services	0.116	24
4.2	Patent activity abroad	0.851	2
	Exports of technologies	0.687	2
	International students in higher education programmes	0.511	11
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	0.000	69
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.042	32
	Federal appropriations in expenditure on technological innovation	0.322	22
	Regional appropriations in expenditure on technological innovation	0.039	20
5.4	Number of innovative projects supported by federal authorities	0.816	4
	Number of federal development institutions supporting innovative projects	1.000	1
	Federal funding of innovative projects	0.726	9
	Number of innovation development territories with federal status	0.554	6
	Number of innovation infrastructure facilities for SMEs	0.750	13

SOUTHERN FEDERAL DISTRICT

Southern Federal District

REPUBLIC OF ADYGEA



0.258 COMPOSITE INNOVATION INDEX

69 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

77

0.309

1.1	Basic Macroeconomic Indicators	0.239	72
1.2	Educational Potential of the Population	0.355	77
1.3	Digitisation Potential	0.311	48

2 S&T POTENTIAL

82

0.258

2.1	R&D Funding	0.292	54
2.2	R&D Personnel	0.330	81
2.3	R&D Output	0.141	81

3 INNOVATIVE ACTIVITY

41

0.248

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.169	66
3.2	Small Innovative Enterprises	0.327	32
3.3	Expenditure on Technological Innovation	0.193	71
3.4	Efficiency of Innovative Activity	0.344	7

4 EXPORT ACTIVITY

61

0.213

4.1	Export of Goods and Services	0.150	71
4.2	Export of Knowledge	0.298	35

5 QUALITY OF INNOVATION POLICY

59

0.230

5.1	Regulatory Framework for Innovation Policy	0.250	70
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.069	46
5.4	Participation in Federal STI Policy	0.269	58

Southern Federal District

REPUBLIC OF ADYGEA

1.1	GRP per worker	0.182	52
	Fixed assets renewal coefficient	0.193	60
	Employment in high-tech manufacturing	0.107	66
	Employment in knowledge-intensive activities	0.473	13
1.2	Participation of adult population in higher education	0.421	18
	Higher education enrolment per 10,000 population	0.480	30
	STEM enrolment in higher education programmes	0.313	42
	Participation of employed population in lifelong learning	0.261	67
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.362	75
	STEM enrolment in programmes for mid-career professionals	0.294	77
1.3	Enterprises with broadband top speed access over 100 Mbps	0.352	43
	Enterprises providing ICT related training of staff	0.161	56
	Active Internet users in the adult population	0.420	37
2.1	GERD as a percentage of GRP	0.040	63
	GERD per researcher	0.501	54
	GERD financed by the business enterprise sector	0.123	53
	Average monthly salary of R&D personnel as a percentage of regional average	0.505	30
2.2	R&D personnel employed in the region	0.073	61
	Young researchers	0.356	83
	Researchers with scientific degrees	0.560	30
2.3	Publication activity	0.280	75
	Patent activity	0.144	79
	Development of advanced manufacturing technologies	0.000	65
3.1	Enterprises engaged in technological innovation	0.116	80
	Enterprises engaged in non-technological innovation	0.416	12
	Enterprises having developed in-house technological innovations	0.070	79
	Enterprises participating in joint R&D projects	0.077	79
3.2	Small enterprises engaged in technological innovation	0.327	32
3.3	Expenditure on technological innovation	0.193	71
3.4	Innovative goods and services	0.270	29
	Innovative goods and services new to the market	0.013	51
	Enterprises having reduced material and energy costs through innovation	0.750	2
4.1	Exports of goods	0.151	76
	Non-resource exports	0.194	68
	Exports of services	0.228	71
	Exports of innovative goods and services	0.025	39
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.000	57
	International students in higher education programmes	0.893	4
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	0.000	69
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.208	12
	Federal appropriations in expenditure on technological innovation	0.000	70
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.312	61
	Number of federal development institutions supporting innovative projects	0.200	63
	Federal funding of innovative projects	0.834	5
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.000	69

Southern Federal District

REPUBLIC OF KALMYKIA

0.211 COMPOSITE INNOVATION INDEX

80 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE

RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

75

0.314

1.1	Basic Macroeconomic Indicators	0.244	70
1.2	Educational Potential of the Population	0.400	63
1.3	Digitisation Potential	0.236	75

2 S&T POTENTIAL

41

0.380

2.1	R&D Funding	0.181	81
2.2	R&D Personnel	0.437	40
2.3	R&D Output	0.589	4

3 INNOVATIVE ACTIVITY

83

0.037

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.049	84
3.2	Small Innovative Enterprises	0.000	79
3.3	Expenditure on Technological Innovation	0.083	80
3.4	Efficiency of Innovative Activity	0.017	79

4 EXPORT ACTIVITY

82

0.056

4.1	Export of Goods and Services	0.002	85
4.2	Export of Knowledge	0.128	62

5 QUALITY OF INNOVATION POLICY

72

0.171

5.1	Regulatory Framework for Innovation Policy	0.250	70
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.098	37
5.4	Participation in Federal STI Policy	0.134	76

Southern Federal District

REPUBLIC OF KALMYKIA

1.1	GRP per worker	0.158	64
	Fixed assets renewal coefficient	0.000	85
	Employment in high-tech manufacturing	0.058	70
	Employment in knowledge-intensive activities	0.763	6
1.2	Participation of adult population in higher education	0.422	17
	Higher education enrolment per 10,000 population	0.523	20
	STEM enrolment in higher education programmes	0.144	80
	Participation of employed population in lifelong learning	0.143	78
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.891	2
	STEM enrolment in programmes for mid-career professionals	0.274	78
1.3	Enterprises with broadband top speed access over 100 Mbps	0.298	66
	Enterprises providing ICT related training of staff	0.109	72
	Active Internet users in the adult population	0.302	61
2.1	GERD as a percentage of GRP	0.017	77
	GERD per researcher	0.305	81
	GERD financed by the business enterprise sector	0.000	79
	Average monthly salary of R&D personnel as a percentage of regional average	0.402	57
2.2	R&D personnel employed in the region	0.054	70
	Young researchers	0.650	42
	Researchers with scientific degrees	0.609	24
2.3	Publication activity	0.469	39
	Patent activity	0.299	59
	Development of advanced manufacturing technologies	1.000	1
3.1	Enterprises engaged in technological innovation	0.103	81
	Enterprises engaged in non-technological innovation	0.000	82
	Enterprises having developed in-house technological innovations	0.000	82
	Enterprises participating in joint R&D projects	0.092	76
3.2	Small enterprises engaged in technological innovation	0.000	79
3.3	Expenditure on technological innovation	0.083	80
3.4	Innovative goods and services	0.025	68
	Innovative goods and services new to the market	0.026	36
	Enterprises having reduced material and energy costs through innovation	0.000	79
4.1	Exports of goods	0.000	85
	Non-resource exports	0.009	84
	Exports of services	0.000	81
	Exports of innovative goods and services	0.000	64
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.000	57
	International students in higher education programmes	0.383	21
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	0.000	69
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.293	6
	Federal appropriations in expenditure on technological innovation	0.000	70
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.351	56
	Number of federal development institutions supporting innovative projects	0.133	71
	Federal funding of innovative projects	0.184	55
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.000	69

Southern Federal District

REPUBLIC OF CRIMEA

0.262 COMPOSITE INNOVATION INDEX

67 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

66

0.343

1.1	Basic Macroeconomic Indicators	0.326	28
1.2	Educational Potential of the Population	0.321	79
1.3	Digitisation Potential	0.409	17

2 S&T POTENTIAL

77

0.293

2.1	R&D Funding	0.247	70
2.2	R&D Personnel	0.393	55
2.3	R&D Output	0.254	71

3 INNOVATIVE ACTIVITY

65

0.166

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.141	72
3.2	Small Innovative Enterprises	0.431	13
3.3	Expenditure on Technological Innovation	0.268	57
3.4	Efficiency of Innovative Activity	0.075	68

4 EXPORT ACTIVITY

76

0.127

4.1	Export of Goods and Services	0.131	75
4.2	Export of Knowledge	0.123	63

5 QUALITY OF INNOVATION POLICY

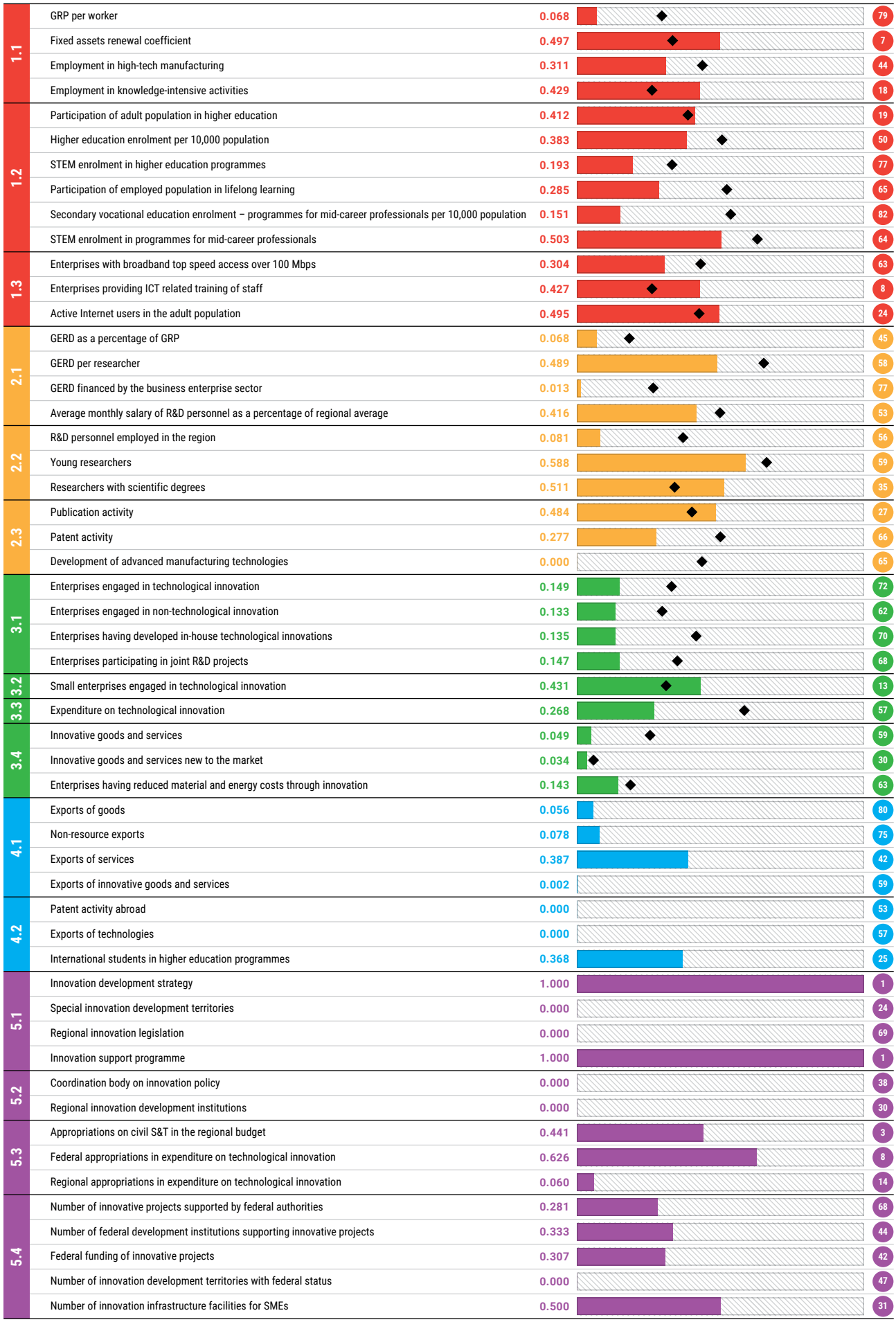
48

0.305

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.376	3
5.4	Participation in Federal STI Policy	0.284	56

Southern Federal District

REPUBLIC OF CRIMEA



Southern Federal District

KRASNODAR REGION

0.372 COMPOSITE INNOVATION INDEX

27 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

56

0.360

1.1	Basic Macroeconomic Indicators	0.205	82
1.2	Educational Potential of the Population	0.477	39
1.3	Digitisation Potential	0.331	41

2 S&T POTENTIAL

45

0.371

2.1	R&D Funding	0.336	41
2.2	R&D Personnel	0.444	35
2.3	R&D Output	0.346	53

3 INNOVATIVE ACTIVITY

10

0.427

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.414	19
3.2	Small Innovative Enterprises	0.297	35
3.3	Expenditure on Technological Innovation	0.757	9
3.4	Efficiency of Innovative Activity	0.377	5

4 EXPORT ACTIVITY

23

0.390

4.1	Export of Goods and Services	0.439	20
4.2	Export of Knowledge	0.324	27

5 QUALITY OF INNOVATION POLICY

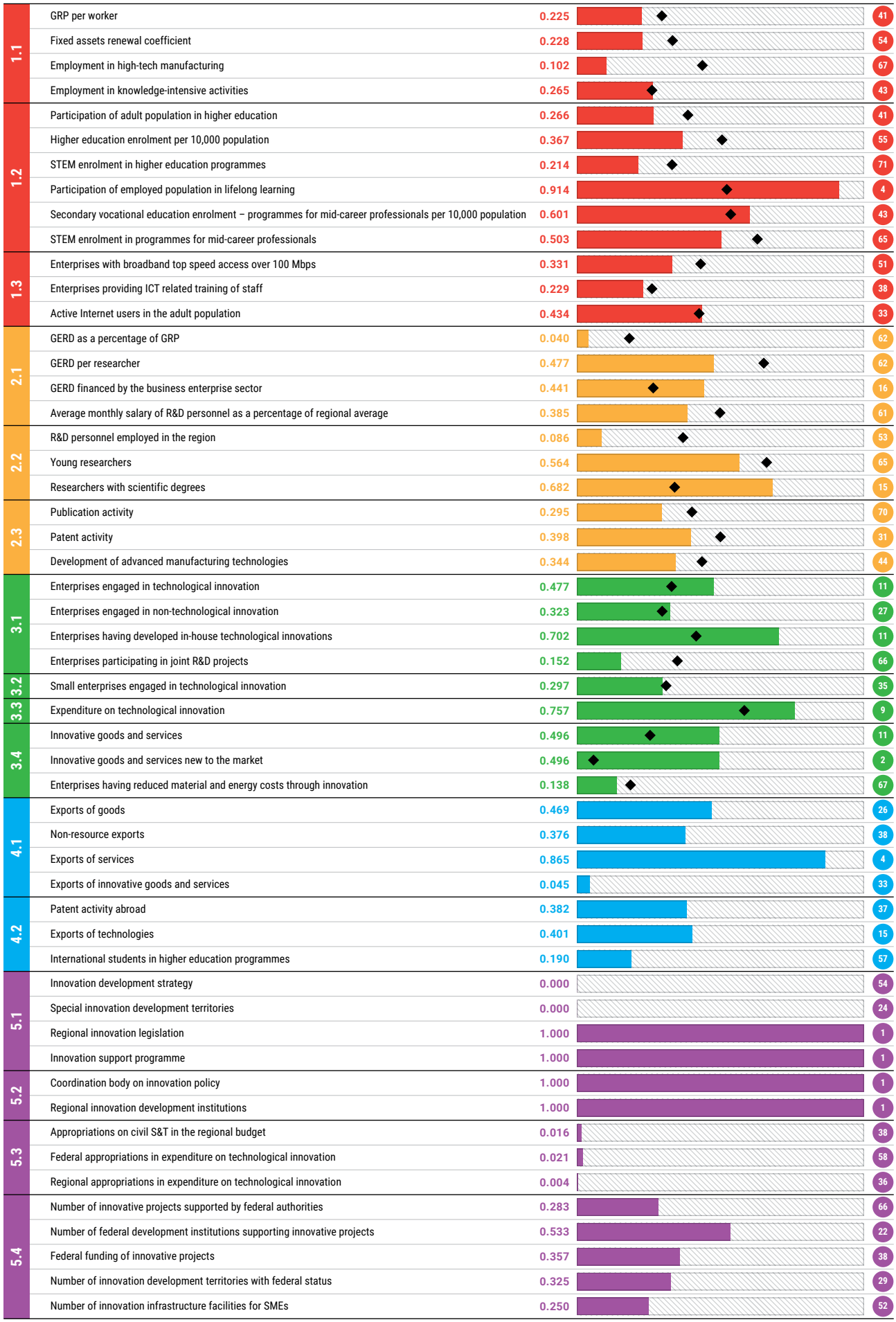
42

0.329

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	1.000	1
5.3	Public Expenditure on R&D and Innovation	0.013	72
5.4	Participation in Federal STI Policy	0.350	44

Southern Federal District

KRASNODAR REGION



Southern Federal District

ASTRAKHAN REGION

0.327 COMPOSITE INNOVATION INDEX

49 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

16

0.434

1.1	Basic Macroeconomic Indicators	0.365	14
1.2	Educational Potential of the Population	0.496	31
1.3	Digitisation Potential	0.400	20

2 S&T POTENTIAL

72

0.310

2.1	R&D Funding	0.194	79
2.2	R&D Personnel	0.390	57
2.3	R&D Output	0.383	43

3 INNOVATIVE ACTIVITY

60

0.179

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.228	50
3.2	Small Innovative Enterprises	0.380	21
3.3	Expenditure on Technological Innovation	0.187	72
3.4	Efficiency of Innovative Activity	0.045	77

4 EXPORT ACTIVITY

40

0.313

4.1	Export of Goods and Services	0.263	53
4.2	Export of Knowledge	0.380	17

5 QUALITY OF INNOVATION POLICY

37

0.346

5.1	Regulatory Framework for Innovation Policy	0.250	70
5.2	Organisational Support for Innovation Policy	1.000	1
5.3	Public Expenditure on R&D and Innovation	0.020	67
5.4	Participation in Federal STI Policy	0.430	35

Southern Federal District

ASTRAKHAN REGION

1.1	GRP per worker	0.264	27
	Fixed assets renewal coefficient	0.532	5
	Employment in high-tech manufacturing	0.166	59
	Employment in knowledge-intensive activities	0.497	11
1.2	Participation of adult population in higher education	0.423	16
	Higher education enrolment per 10,000 population	0.505	25
	STEM enrolment in higher education programmes	0.361	29
	Participation of employed population in lifelong learning	0.182	74
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.803	8
	STEM enrolment in programmes for mid-career professionals	0.703	27
1.3	Enterprises with broadband top speed access over 100 Mbps	0.434	24
	Enterprises providing ICT related training of staff	0.359	12
	Active Internet users in the adult population	0.407	44
2.1	GERD as a percentage of GRP	0.021	73
	GERD per researcher	0.426	72
	GERD financed by the business enterprise sector	0.048	70
	Average monthly salary of R&D personnel as a percentage of regional average	0.281	78
2.2	R&D personnel employed in the region	0.055	68
	Young researchers	0.593	57
	Researchers with scientific degrees	0.522	32
2.3	Publication activity	0.415	50
	Patent activity	0.364	40
	Development of advanced manufacturing technologies	0.370	40
3.1	Enterprises engaged in technological innovation	0.300	34
	Enterprises engaged in non-technological innovation	0.198	51
	Enterprises having developed in-house technological innovations	0.258	49
	Enterprises participating in joint R&D projects	0.157	64
3.2	Small enterprises engaged in technological innovation	0.380	21
3.3	Expenditure on technological innovation	0.187	72
3.4	Innovative goods and services	0.008	78
	Innovative goods and services new to the market	0.001	79
	Enterprises having reduced material and energy costs through innovation	0.125	70
4.1	Exports of goods	0.231	64
	Non-resource exports	0.252	60
	Exports of services	0.568	17
	Exports of innovative goods and services	0.000	64
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.140	48
	International students in higher education programmes	1.000	1
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	0.000	69
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.043	31
	Federal appropriations in expenditure on technological innovation	0.008	65
	Regional appropriations in expenditure on technological innovation	0.009	29
5.4	Number of innovative projects supported by federal authorities	0.408	36
	Number of federal development institutions supporting innovative projects	0.333	44
	Federal funding of innovative projects	0.086	65
	Number of innovation development territories with federal status	0.325	29
	Number of innovation infrastructure facilities for SMEs	1.000	1

Southern Federal District

VOLGOGRAD REGION

0.306 COMPOSITE INNOVATION INDEX

56 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

35

0.397

1.1	Basic Macroeconomic Indicators	0.278	53
1.2	Educational Potential of the Population	0.531	16
1.3	Digitisation Potential	0.287	54

2 S&T POTENTIAL

62

0.336

2.1	R&D Funding	0.328	43
2.2	R&D Personnel	0.376	65
2.3	R&D Output	0.305	60

3 INNOVATIVE ACTIVITY

62

0.175

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.181	62
3.2	Small Innovative Enterprises	0.256	44
3.3	Expenditure on Technological Innovation	0.293	54
3.4	Efficiency of Innovative Activity	0.101	56

4 EXPORT ACTIVITY

47

0.266

4.1	Export of Goods and Services	0.285	46
4.2	Export of Knowledge	0.240	50

5 QUALITY OF INNOVATION POLICY

47

0.306

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.028	61
5.4	Participation in Federal STI Policy	0.346	45

Southern Federal District

VOLGOGRAD REGION

1.1	GRP per worker	0.199	47
	Fixed assets renewal coefficient	0.263	43
	Employment in high-tech manufacturing	0.357	41
	Employment in knowledge-intensive activities	0.291	36
1.2	Participation of adult population in higher education	0.297	36
	Higher education enrolment per 10,000 population	0.435	40
	STEM enrolment in higher education programmes	0.319	38
	Participation of employed population in lifelong learning	0.894	7
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.627	38
	STEM enrolment in programmes for mid-career professionals	0.615	50
1.3	Enterprises with broadband top speed access over 100 Mbps	0.332	50
	Enterprises providing ICT related training of staff	0.110	71
	Active Internet users in the adult population	0.418	39
2.1	GERD as a percentage of GRP	0.076	39
	GERD per researcher	0.519	48
	GERD financed by the business enterprise sector	0.209	35
	Average monthly salary of R&D personnel as a percentage of regional average	0.508	28
2.2	R&D personnel employed in the region	0.129	42
	Young researchers	0.741	26
	Researchers with scientific degrees	0.258	60
2.3	Publication activity	0.473	34
	Patent activity	0.443	21
	Development of advanced manufacturing technologies	0.000	65
3.1	Enterprises engaged in technological innovation	0.181	61
	Enterprises engaged in non-technological innovation	0.117	66
	Enterprises having developed in-house technological innovations	0.271	46
	Enterprises participating in joint R&D projects	0.155	65
3.2	Small enterprises engaged in technological innovation	0.256	44
3.3	Expenditure on technological innovation	0.293	54
3.4	Innovative goods and services	0.125	42
	Innovative goods and services new to the market	0.012	54
	Enterprises having reduced material and energy costs through innovation	0.167	52
4.1	Exports of goods	0.371	41
	Non-resource exports	0.382	36
	Exports of services	0.378	46
	Exports of innovative goods and services	0.009	49
4.2	Patent activity abroad	0.286	49
	Exports of technologies	0.171	45
	International students in higher education programmes	0.261	45
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.022	35
	Federal appropriations in expenditure on technological innovation	0.063	45
	Regional appropriations in expenditure on technological innovation	0.000	57
5.4	Number of innovative projects supported by federal authorities	0.374	52
	Number of federal development institutions supporting innovative projects	0.467	33
	Federal funding of innovative projects	0.388	36
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.500	31

Southern Federal District

ROSTOV REGION

0.394 COMPOSITE INNOVATION INDEX

19 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

31

0.398

1.1	Basic Macroeconomic Indicators	0.313	38
1.2	Educational Potential of the Population	0.460	48
1.3	Digitisation Potential	0.388	22

2 S&T POTENTIAL

23

0.416

2.1	R&D Funding	0.432	17
2.2	R&D Personnel	0.415	46
2.3	R&D Output	0.396	40

3 INNOVATIVE ACTIVITY

30

0.305

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.332	31
3.2	Small Innovative Enterprises	0.152	63
3.3	Expenditure on Technological Innovation	0.637	16
3.4	Efficiency of Innovative Activity	0.208	19

4 EXPORT ACTIVITY

11

0.454

4.1	Export of Goods and Services	0.570	5
4.2	Export of Knowledge	0.300	34

5 QUALITY OF INNOVATION POLICY

22

0.406

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.095	38
5.4	Participation in Federal STI Policy	0.504	22

Southern Federal District

ROSTOV REGION

1.1	GRP per worker	0.179	53
	Fixed assets renewal coefficient	0.386	18
	Employment in high-tech manufacturing	0.437	36
	Employment in knowledge-intensive activities	0.252	51
1.2	Participation of adult population in higher education	0.246	46
	Higher education enrolment per 10,000 population	0.557	15
	STEM enrolment in higher education programmes	0.415	10
	Participation of employed population in lifelong learning	0.248	68
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.619	40
	STEM enrolment in programmes for mid-career professionals	0.675	34
1.3	Enterprises with broadband top speed access over 100 Mbps	0.348	44
	Enterprises providing ICT related training of staff	0.320	18
	Active Internet users in the adult population	0.497	23
2.1	GERD as a percentage of GRP	0.161	22
	GERD per researcher	0.574	35
	GERD financed by the business enterprise sector	0.445	15
	Average monthly salary of R&D personnel as a percentage of regional average	0.547	22
2.2	R&D personnel employed in the region	0.225	23
	Young researchers	0.737	28
	Researchers with scientific degrees	0.283	56
2.3	Publication activity	0.443	45
	Patent activity	0.429	22
	Development of advanced manufacturing technologies	0.317	46
3.1	Enterprises engaged in technological innovation	0.340	27
	Enterprises engaged in non-technological innovation	0.137	60
	Enterprises having developed in-house technological innovations	0.509	18
	Enterprises participating in joint R&D projects	0.344	26
3.2	Small enterprises engaged in technological innovation	0.152	63
3.3	Expenditure on technological innovation	0.637	16
3.4	Innovative goods and services	0.374	18
	Innovative goods and services new to the market	0.059	20
	Enterprises having reduced material and energy costs through innovation	0.190	42
4.1	Exports of goods	0.603	14
	Non-resource exports	0.660	6
	Exports of services	0.502	23
	Exports of innovative goods and services	0.516	6
4.2	Patent activity abroad	0.388	36
	Exports of technologies	0.230	36
	International students in higher education programmes	0.281	38
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.000	61
	Federal appropriations in expenditure on technological innovation	0.286	24
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.479	24
	Number of federal development institutions supporting innovative projects	0.733	11
	Federal funding of innovative projects	0.400	34
	Number of innovation development territories with federal status	0.409	21
	Number of innovation infrastructure facilities for SMEs	0.500	31

Southern Federal District

SEVASTOPOL

0.294 COMPOSITE INNOVATION INDEX

61 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

59

0.355

1.1	Basic Macroeconomic Indicators	0.226	77
1.2	Educational Potential of the Population	0.464	46
1.3	Digitisation Potential	0.308	51

2 S&T POTENTIAL

39

0.382

2.1	R&D Funding	0.332	42
2.2	R&D Personnel	0.399	54
2.3	R&D Output	0.430	28

3 INNOVATIVE ACTIVITY

56

0.198

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.175	63
3.2	Small Innovative Enterprises	0.400	17
3.3	Expenditure on Technological Innovation	0.177	74
3.4	Efficiency of Innovative Activity	0.170	30

4 EXPORT ACTIVITY

67

0.180

4.1	Export of Goods and Services	0.115	76
4.2	Export of Knowledge	0.266	44

5 QUALITY OF INNOVATION POLICY

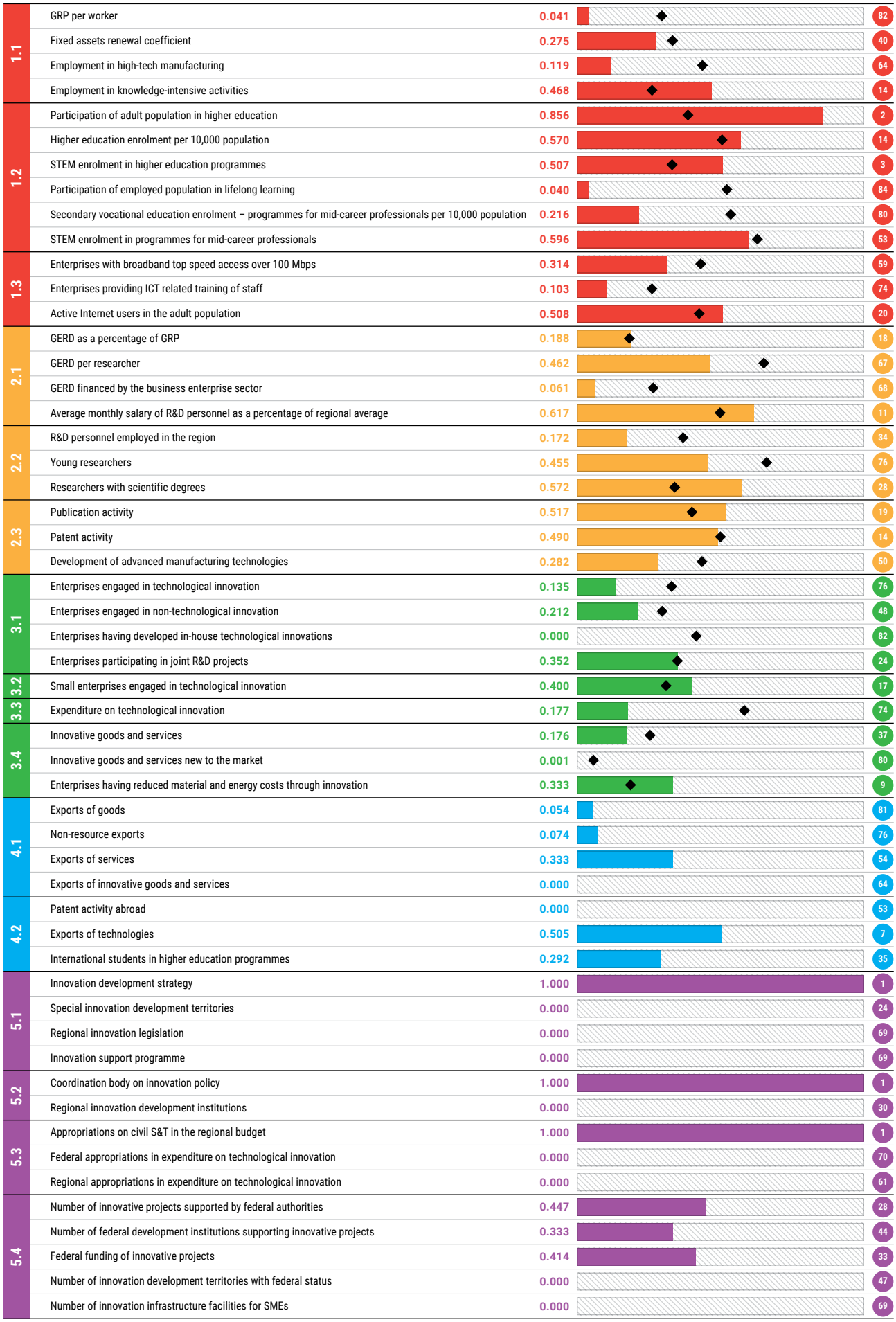
51

0.294

5.1	Regulatory Framework for Innovation Policy	0.250	70
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.333	7
5.4	Participation in Federal STI Policy	0.239	65

Southern Federal District

SEVASTOPOL



NORTH CAUCASIAN FEDERAL DISTRICT

North Caucasian Federal District

REPUBLIC OF DAGESTAN

0.190 COMPOSITE INNOVATION INDEX

82 RANK

RANK
LEADING REGION INDEX VALUE
RUSSIA AVERAGE VALUE
INDEX VALUE
NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

85

0.241

1.1	Basic Macroeconomic Indicators	0.311	39
1.2	Educational Potential of the Population	0.211	83
1.3	Digitisation Potential	0.206	81

2 S&T POTENTIAL

56

0.342

2.1	R&D Funding	0.242	74
2.2	R&D Personnel	0.451	28
2.3	R&D Output	0.364	48

3 INNOVATIVE ACTIVITY

80

0.097

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.187	58
3.2	Small Innovative Enterprises	0.079	73
3.3	Expenditure on Technological Innovation	0.027	83
3.4	Efficiency of Innovative Activity	0.006	81

4 EXPORT ACTIVITY

81

0.089

4.1	Export of Goods and Services	0.032	83
4.2	Export of Knowledge	0.165	60

5 QUALITY OF INNOVATION POLICY

80

0.130

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.015	71
5.4	Participation in Federal STI Policy	0.150	72

North Caucasian Federal District

REPUBLIC OF DAGESTAN

1.1	GRP per worker	0.154	65
	Fixed assets renewal coefficient	0.094	75
	Employment in high-tech manufacturing	0.132	63
	Employment in knowledge-intensive activities	0.865	4
1.2	Participation of adult population in higher education	0.202	55
	Higher education enrolment per 10,000 population	0.316	66
	STEM enrolment in higher education programmes	0.176	79
	Participation of employed population in lifelong learning	0.083	82
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.470	65
	STEM enrolment in programmes for mid-career professionals	0.020	83
1.3	Enterprises with broadband top speed access over 100 Mbps	0.211	80
	Enterprises providing ICT related training of staff	0.008	84
	Active Internet users in the adult population	0.398	45
2.1	GERD as a percentage of GRP	0.024	70
	GERD per researcher	0.342	79
	GERD financed by the business enterprise sector	0.128	52
	Average monthly salary of R&D personnel as a percentage of regional average	0.475	35
2.2	R&D personnel employed in the region	0.057	66
	Young researchers	0.482	74
	Researchers with scientific degrees	0.815	7
2.3	Publication activity	0.367	56
	Patent activity	0.427	24
	Development of advanced manufacturing technologies	0.299	48
3.1	Enterprises engaged in technological innovation	0.041	84
	Enterprises engaged in non-technological innovation	0.170	57
	Enterprises having developed in-house technological innovations	0.287	42
	Enterprises participating in joint R&D projects	0.251	43
3.2	Small enterprises engaged in technological innovation	0.079	73
3.3	Expenditure on technological innovation	0.027	83
3.4	Innovative goods and services	0.012	76
	Innovative goods and services new to the market	0.007	58
	Enterprises having reduced material and energy costs through innovation	0.000	79
4.1	Exports of goods	0.059	79
	Non-resource exports	0.069	79
	Exports of services	0.000	81
	Exports of innovative goods and services	0.000	64
4.2	Patent activity abroad	0.241	52
	Exports of technologies	0.000	57
	International students in higher education programmes	0.253	47
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.046	30
	Federal appropriations in expenditure on technological innovation	0.000	70
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.196	79
	Number of federal development institutions supporting innovative projects	0.267	58
	Federal funding of innovative projects	0.037	71
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.250	52

North Caucasian Federal District

REPUBLIC OF INGUSHETIA

0.165 COMPOSITE INNOVATION INDEX

83 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

69

0.327

1.1	Basic Macroeconomic Indicators	0.474	2
1.2	Educational Potential of the Population	0.200	84
1.3	Digitisation Potential	0.384	24

2 S&T POTENTIAL

83

0.217

2.1	R&D Funding	0.128	84
2.2	R&D Personnel	0.454	24
2.3	R&D Output	0.097	83

3 INNOVATIVE ACTIVITY

85

0.027

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.052	83
3.2	Small Innovative Enterprises	0.000	79
3.3	Expenditure on Technological Innovation	0.000	85
3.4	Efficiency of Innovative Activity	0.013	80

4 EXPORT ACTIVITY

85

0.020

4.1	Export of Goods and Services	0.030	84
4.2	Export of Knowledge	0.006	84

5 QUALITY OF INNOVATION POLICY

81

0.127

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.000	83
5.4	Participation in Federal STI Policy	0.104	79

North Caucasian Federal District

REPUBLIC OF INGUSHETIA

North Caucasian Federal District

KABARDIA-BALKAR REPUBLIC

0.252 COMPOSITE INNOVATION INDEX

71 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

57

0.358

1.1	Basic Macroeconomic Indicators	0.315	35
1.2	Educational Potential of the Population	0.291	81
1.3	Digitisation Potential	0.550	3

2 S&T POTENTIAL

67

0.325

2.1	R&D Funding	0.234	76
2.2	R&D Personnel	0.461	21
2.3	R&D Output	0.311	59

3 INNOVATIVE ACTIVITY

40

0.253

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.236	48
3.2	Small Innovative Enterprises	0.610	5
3.3	Expenditure on Technological Innovation	0.324	51
3.4	Efficiency of Innovative Activity	0.132	47

4 EXPORT ACTIVITY

79

0.094

4.1	Export of Goods and Services	0.098	80
4.2	Export of Knowledge	0.089	72

5 QUALITY OF INNOVATION POLICY

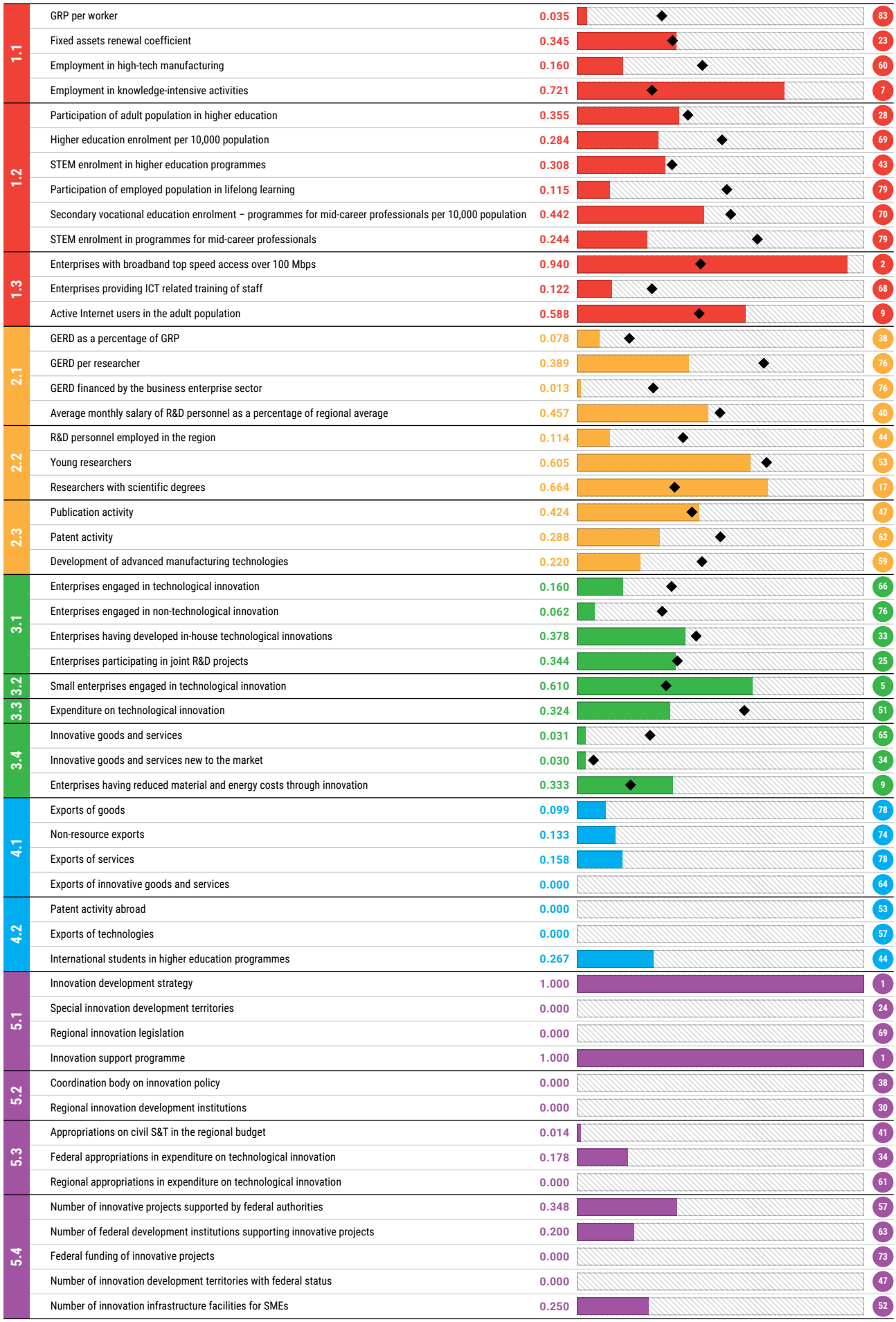
77

0.149

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.064	47
5.4	Participation in Federal STI Policy	0.160	70

North Caucasian Federal District

KABARDIA-BALKAR REPUBLIC



North Caucasian Federal District

KARACHAY-CHERKESS REPUBLIC

0.250 COMPOSITE INNOVATION INDEX

72 RANK

RANK
LEADING REGION INDEX VALUE
RUSSIA AVERAGE VALUE
INDEX VALUE
NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

51

0.367

1.1	Basic Macroeconomic Indicators	0.276	56
1.2	Educational Potential of the Population	0.429	57
1.3	Digitisation Potential	0.364	30

2 S&T POTENTIAL

42

0.376

2.1	R&D Funding	0.323	44
2.2	R&D Personnel	0.425	44
2.3	R&D Output	0.398	39

3 INNOVATIVE ACTIVITY

82

0.054

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.111	78
3.2	Small Innovative Enterprises	0.000	79
3.3	Expenditure on Technological Innovation	0.041	82
3.4	Efficiency of Innovative Activity	0.002	84

4 EXPORT ACTIVITY

73

0.144

4.1	Export of Goods and Services	0.105	78
4.2	Export of Knowledge	0.197	57

5 QUALITY OF INNOVATION POLICY

61

0.221

5.1	Regulatory Framework for Innovation Policy	0.250	70
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.062	49
5.4	Participation in Federal STI Policy	0.354	42

North Caucasian Federal District

KARACHAY-CHERKESS REPUBLIC

1.1	GRP per worker	0.063	80
	Fixed assets renewal coefficient	0.228	54
	Employment in high-tech manufacturing	0.209	55
	Employment in knowledge-intensive activities	0.602	9
1.2	Participation of adult population in higher education	0.559	10
	Higher education enrolment per 10,000 population	0.402	46
	STEM enrolment in higher education programmes	0.221	69
	Participation of employed population in lifelong learning	0.509	44
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.514	59
	STEM enrolment in programmes for mid-career professionals	0.368	73
1.3	Enterprises with broadband top speed access over 100 Mbps	0.250	76
	Enterprises providing ICT related training of staff	0.259	32
	Active Internet users in the adult population	0.582	10
2.1	GERD as a percentage of GRP	0.113	32
	GERD per researcher	0.517	49
	GERD financed by the business enterprise sector	0.074	67
	Average monthly salary of R&D personnel as a percentage of regional average	0.589	14
2.2	R&D personnel employed in the region	0.141	39
	Young researchers	0.453	77
	Researchers with scientific degrees	0.680	16
2.3	Publication activity	0.715	5
	Patent activity	0.200	76
	Development of advanced manufacturing technologies	0.279	53
3.1	Enterprises engaged in technological innovation	0.070	83
	Enterprises engaged in non-technological innovation	0.000	82
	Enterprises having developed in-house technological innovations	0.179	65
	Enterprises participating in joint R&D projects	0.195	55
3.2	Small enterprises engaged in technological innovation	0.000	79
3.3	Expenditure on technological innovation	0.041	82
3.4	Innovative goods and services	0.003	83
	Innovative goods and services new to the market	0.003	70
	Enterprises having reduced material and energy costs through innovation	0.000	79
4.1	Exports of goods	0.108	77
	Non-resource exports	0.134	73
	Exports of services	0.177	75
	Exports of innovative goods and services	0.000	64
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.000	57
	International students in higher education programmes	0.591	8
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	0.000	69
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.187	15
	Federal appropriations in expenditure on technological innovation	0.000	70
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.425	33
	Number of federal development institutions supporting innovative projects	0.333	44
	Federal funding of innovative projects	0.688	10
	Number of innovation development territories with federal status	0.325	29
	Number of innovation infrastructure facilities for SMEs	0.000	69

North Caucasian Federal District

REPUBLIC OF NORTH OSSETIA – ALANIA

0.238 COMPOSITE INNOVATION INDEX

76 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

54

0.362

1.1	Basic Macroeconomic Indicators	0.237	74
1.2	Educational Potential of the Population	0.437	54
1.3	Digitisation Potential	0.380	26

2 S&T POTENTIAL

59

0.340

2.1	R&D Funding	0.225	77
2.2	R&D Personnel	0.388	59
2.3	R&D Output	0.446	18

3 INNOVATIVE ACTIVITY

81

0.088

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.117	76
3.2	Small Innovative Enterprises	0.200	54
3.3	Expenditure on Technological Innovation	0.119	79
3.4	Efficiency of Innovative Activity	0.002	83

4 EXPORT ACTIVITY

78

0.103

4.1	Export of Goods and Services	0.139	73
4.2	Export of Knowledge	0.056	76

5 QUALITY OF INNOVATION POLICY

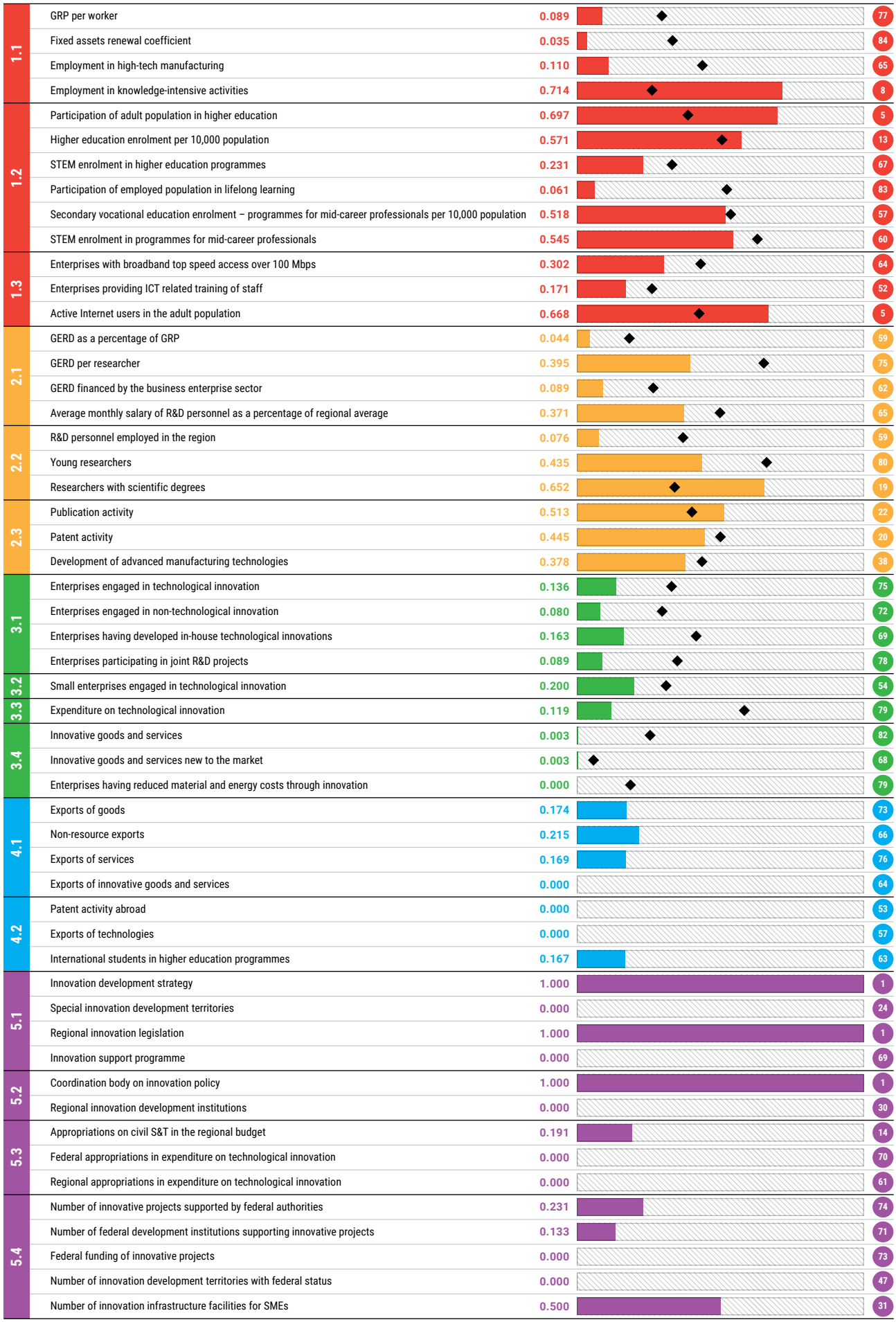
66

0.206

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.064	48
5.4	Participation in Federal STI Policy	0.173	67

North Caucasian Federal District

REPUBLIC OF NORTH OSSETIA – ALANIA



North Caucasian Federal District

CHECHEN REPUBLIC

0.218 COMPOSITE INNOVATION INDEX

79 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

83

0.272

1.1	Basic Macroeconomic Indicators	0.269	58
1.2	Educational Potential of the Population	0.371	72
1.3	Digitisation Potential	0.078	85

2 S&T POTENTIAL

68

0.322

2.1	R&D Funding	0.283	63
2.2	R&D Personnel	0.434	42
2.3	R&D Output	0.262	70

3 INNOVATIVE ACTIVITY

72

0.154

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.018	85
3.2	Small Innovative Enterprises	0.000	79
3.3	Expenditure on Technological Innovation	0.200	68
3.4	Efficiency of Innovative Activity	0.371	6

4 EXPORT ACTIVITY

83

0.048

4.1	Export of Goods and Services	0.078	81
4.2	Export of Knowledge	0.008	82

5 QUALITY OF INNOVATION POLICY

62

0.220

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.162	19
5.4	Participation in Federal STI Policy	0.093	80

North Caucasian Federal District

CHECHEN REPUBLIC

1.1	GRP per worker	0.000	85
	Fixed assets renewal coefficient	0.152	72
	Employment in high-tech manufacturing	0.015	77
	Employment in knowledge-intensive activities	0.909	3
1.2	Participation of adult population in higher education	0.540	11
	Higher education enrolment per 10,000 population	0.420	43
	STEM enrolment in higher education programmes	0.246	65
	Participation of employed population in lifelong learning	0.179	75
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.842	6
	STEM enrolment in programmes for mid-career professionals	0.000	85
1.3	Enterprises with broadband top speed access over 100 Mbps	0.135	84
	Enterprises providing ICT related training of staff	0.072	80
	Active Internet users in the adult population	0.027	83
2.1	GERD as a percentage of GRP	0.025	69
	GERD per researcher	0.337	80
	GERD financed by the business enterprise sector	0.342	23
	Average monthly salary of R&D personnel as a percentage of regional average	0.428	49
2.2	R&D personnel employed in the region	0.037	76
	Young researchers	0.293	84
	Researchers with scientific degrees	0.972	2
2.3	Publication activity	0.301	69
	Patent activity	0.204	75
	Development of advanced manufacturing technologies	0.280	51
3.1	Enterprises engaged in technological innovation	0.000	85
	Enterprises engaged in non-technological innovation	0.023	81
	Enterprises having developed in-house technological innovations	0.023	81
	Enterprises participating in joint R&D projects	0.026	83
3.2	Small enterprises engaged in technological innovation	0.000	79
3.3	Expenditure on technological innovation	0.200	68
3.4	Innovative goods and services	0.100	49
	Innovative goods and services new to the market	0.012	52
	Enterprises having reduced material and energy costs through innovation	1.000	1
4.1	Exports of goods	0.006	84
	Non-resource exports	0.016	82
	Exports of services	0.292	65
	Exports of innovative goods and services	0.000	64
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.000	57
	International students in higher education programmes	0.025	82
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.247	9
	Federal appropriations in expenditure on technological innovation	0.237	28
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.149	81
	Number of federal development institutions supporting innovative projects	0.067	75
	Federal funding of innovative projects	0.000	73
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.250	52

North Caucasian Federal District

STAVROPOL REGION

0.332 COMPOSITE INNOVATION INDEX

42 RANK

RANK · LEADING REGION INDEX VALUE · RUSSIA AVERAGE VALUE · INDEX VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

60

0.354

1.1	Basic Macroeconomic Indicators	0.213	80
1.2	Educational Potential of the Population	0.441	53
1.3	Digitisation Potential	0.369	29

2 S&T POTENTIAL

48

0.359

2.1	R&D Funding	0.284	61
2.2	R&D Personnel	0.492	13
2.3	R&D Output	0.325	56

3 INNOVATIVE ACTIVITY

51

0.209

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.168	67
3.2	Small Innovative Enterprises	0.141	65
3.3	Expenditure on Technological Innovation	0.539	29
3.4	Efficiency of Innovative Activity	0.176	28

4 EXPORT ACTIVITY

29

0.366

4.1	Export of Goods and Services	0.408	27
4.2	Export of Knowledge	0.311	30

5 QUALITY OF INNOVATION POLICY

33

0.362

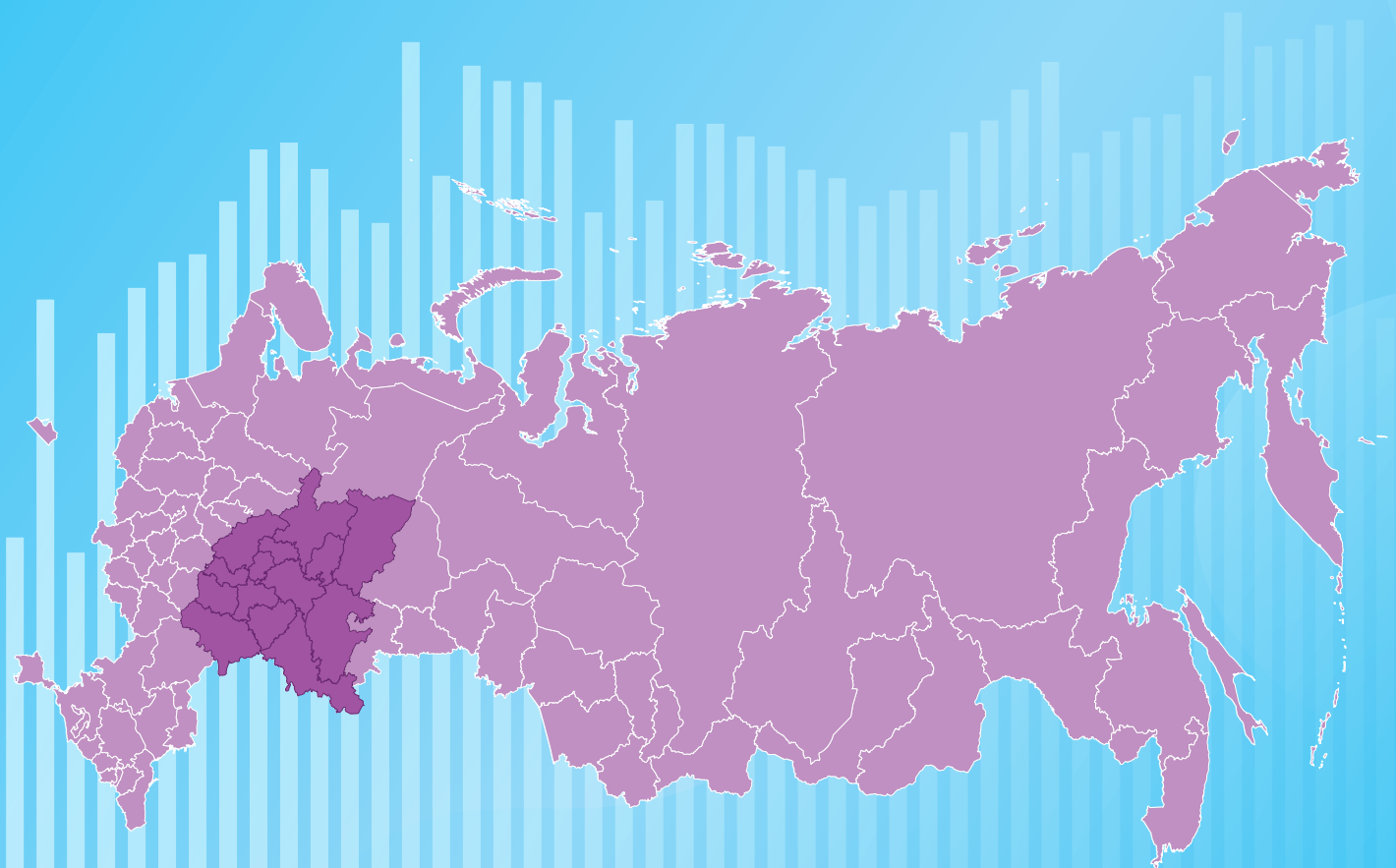
5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.089	40
5.4	Participation in Federal STI Policy	0.422	38

North Caucasian Federal District

STAVROPOL REGION

1.1	GRP per worker	0.115	76
	Fixed assets renewal coefficient	0.158	68
	Employment in high-tech manufacturing	0.276	48
	Employment in knowledge-intensive activities	0.303	32
1.2	Participation of adult population in higher education	0.427	15
	Higher education enrolment per 10,000 population	0.452	34
	STEM enrolment in higher education programmes	0.212	73
	Participation of employed population in lifelong learning	0.483	48
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.640	32
	STEM enrolment in programmes for mid-career professionals	0.431	72
1.3	Enterprises with broadband top speed access over 100 Mbps	0.341	45
	Enterprises providing ICT related training of staff	0.260	31
	Active Internet users in the adult population	0.505	21
2.1	GERD as a percentage of GRP	0.046	58
	GERD per researcher	0.422	73
	GERD financed by the business enterprise sector	0.343	22
	Average monthly salary of R&D personnel as a percentage of regional average	0.326	73
2.2	R&D personnel employed in the region	0.072	63
	Young researchers	0.558	66
	Researchers with scientific degrees	0.847	6
2.3	Publication activity	0.377	53
	Patent activity	0.326	53
	Development of advanced manufacturing technologies	0.272	55
3.1	Enterprises engaged in technological innovation	0.212	53
	Enterprises engaged in non-technological innovation	0.092	69
	Enterprises having developed in-house technological innovations	0.201	59
	Enterprises participating in joint R&D projects	0.169	63
3.2	Small enterprises engaged in technological innovation	0.141	65
3.3	Expenditure on technological innovation	0.539	29
3.4	Innovative goods and services	0.294	25
	Innovative goods and services new to the market	0.014	49
	Enterprises having reduced material and energy costs through innovation	0.219	32
4.1	Exports of goods	0.317	52
	Non-resource exports	0.397	32
	Exports of services	0.432	31
	Exports of innovative goods and services	0.485	8
4.2	Patent activity abroad	0.443	24
	Exports of technologies	0.170	46
	International students in higher education programmes	0.321	29
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.085	25
	Federal appropriations in expenditure on technological innovation	0.181	33
	Regional appropriations in expenditure on technological innovation	0.000	51
5.4	Number of innovative projects supported by federal authorities	0.255	70
	Number of federal development institutions supporting innovative projects	0.333	44
	Federal funding of innovative projects	0.052	69
	Number of innovation development territories with federal status	0.468	14
	Number of innovation infrastructure facilities for SMEs	1.000	1

VOLGA
FEDERAL DISTRICT



Volga Federal District

REPUBLIC OF BASHKORTOSTAN

0.412 COMPOSITE INNOVATION INDEX

13 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

17

0.427

1.1	Basic Macroeconomic Indicators	0.341	20
1.2	Educational Potential of the Population	0.484	37
1.3	Digitisation Potential	0.425	15

2 S&T POTENTIAL

12

0.486

2.1	R&D Funding	0.569	5
2.2	R&D Personnel	0.450	29
2.3	R&D Output	0.412	34

3 INNOVATIVE ACTIVITY

36

0.285

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.320	32
3.2	Small Innovative Enterprises	0.347	26
3.3	Expenditure on Technological Innovation	0.510	33
3.4	Efficiency of Innovative Activity	0.144	39

4 EXPORT ACTIVITY

26

0.372

4.1	Export of Goods and Services	0.436	21
4.2	Export of Knowledge	0.287	39

5 QUALITY OF INNOVATION POLICY

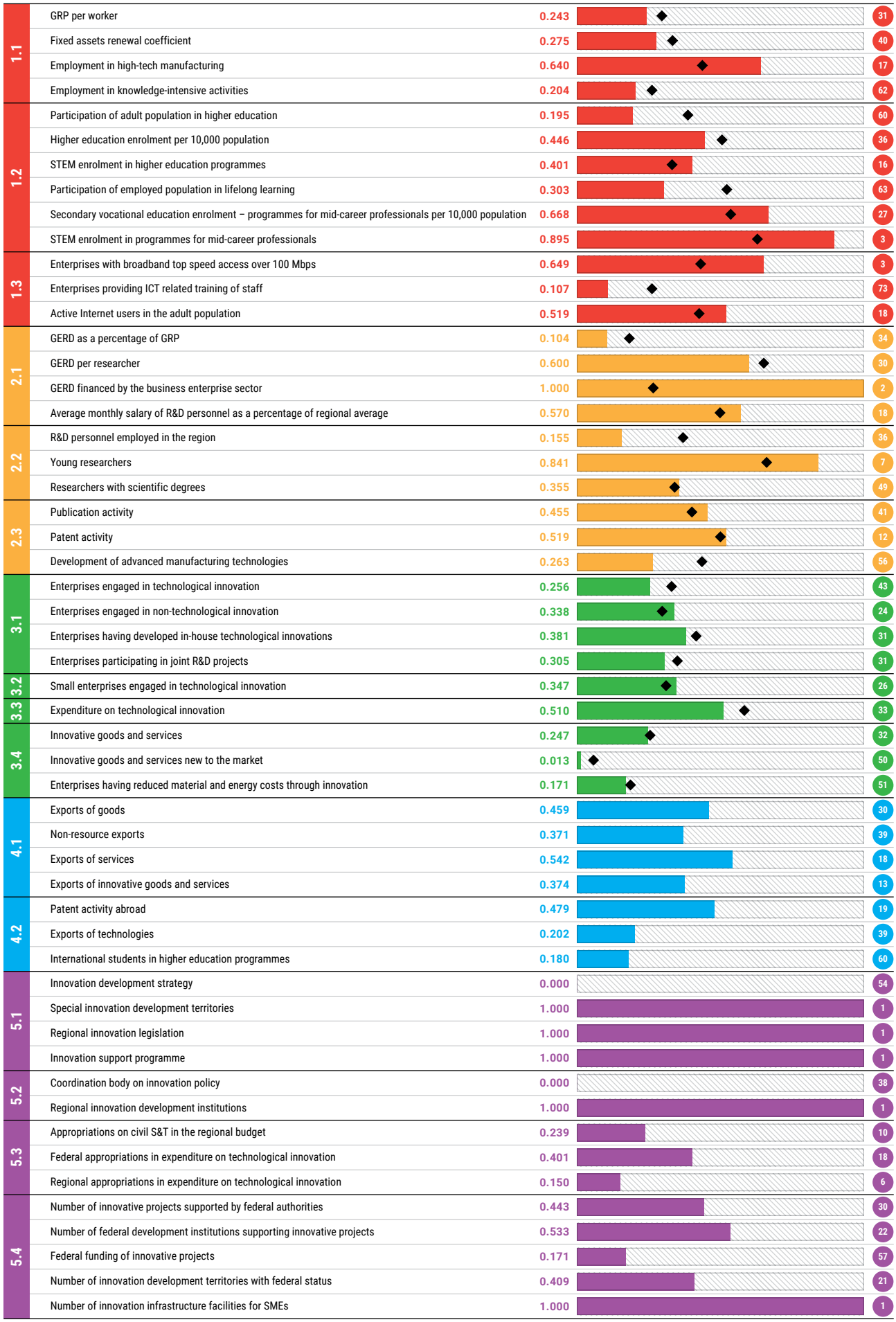
15

0.460

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.263	10
5.4	Participation in Federal STI Policy	0.511	21

Volga Federal District

REPUBLIC OF BASHKORTOSTAN



Volga Federal District

MARI EL REPUBLIC

0.328 COMPOSITE INNOVATION INDEX

46 RANK

RANK · LEADING REGION INDEX VALUE · RUSSIA AVERAGE VALUE · INDEX VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

42

0.390

1.1	Basic Macroeconomic Indicators	0.338	22
1.2	Educational Potential of the Population	0.504	23
1.3	Digitisation Potential	0.232	77

2 S&T POTENTIAL

15

0.460

2.1	R&D Funding	0.316	46
2.2	R&D Personnel	0.490	14
2.3	R&D Output	0.622	3

3 INNOVATIVE ACTIVITY

35

0.288

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.211	53
3.2	Small Innovative Enterprises	0.187	55
3.3	Expenditure on Technological Innovation	0.368	46
3.4	Efficiency of Innovative Activity	0.399	4

4 EXPORT ACTIVITY

55

0.241

4.1	Export of Goods and Services	0.273	49
4.2	Export of Knowledge	0.198	56

5 QUALITY OF INNOVATION POLICY

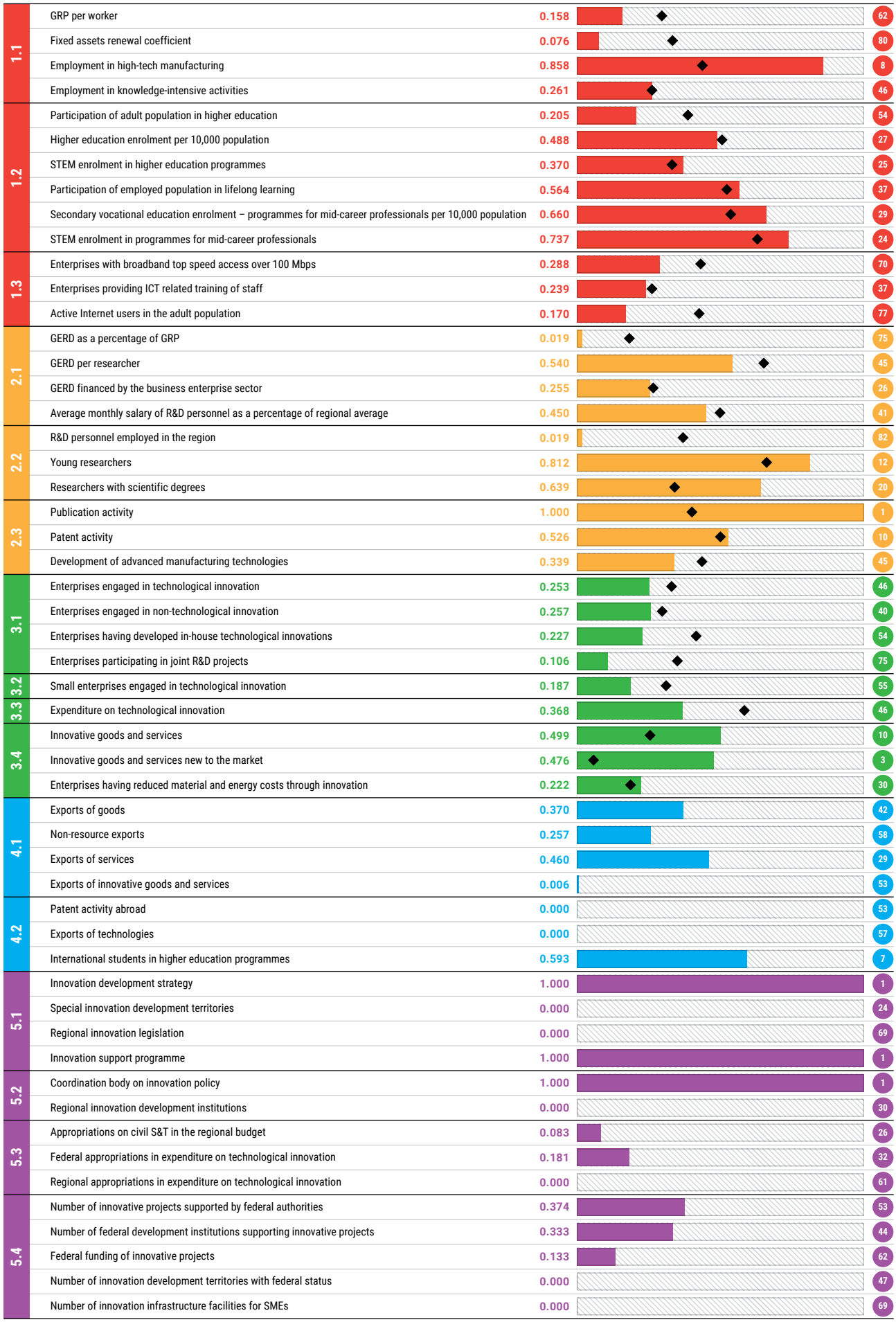
64

0.211

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.088	41
5.4	Participation in Federal STI Policy	0.168	68

Volga Federal District

MARI EL REPUBLIC



Volga Federal District

REPUBLIC OF MORDOVIA

0.385 COMPOSITE INNOVATION INDEX

22 RANK

RANK · LEADING REGION INDEX VALUE · RUSSIA AVERAGE VALUE · INDEX VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

70 — 0.324

1.1	Basic Macroeconomic Indicators	0.318	34
1.2	Educational Potential of the Population	0.398	64
1.3	Digitisation Potential	0.184	82

2 S&T POTENTIAL

58 — 0.341

2.1	R&D Funding	0.292	55
2.2	R&D Personnel	0.311	84
2.3	R&D Output	0.438	25

3 INNOVATIVE ACTIVITY

5 — 0.500

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.546	8
3.2	Small Innovative Enterprises	0.461	11
3.3	Expenditure on Technological Innovation	0.530	30
3.4	Efficiency of Innovative Activity	0.441	2

4 EXPORT ACTIVITY

65 — 0.191

4.1	Export of Goods and Services	0.246	59
4.2	Export of Knowledge	0.118	64

5 QUALITY OF INNOVATION POLICY

8 — 0.539

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	1.000	1
5.3	Public Expenditure on R&D and Innovation	0.171	17
5.4	Participation in Federal STI Policy	0.625	10

Volga Federal District

REPUBLIC OF MORDOVIA

1.1	GRP per worker	0.153	66
	Fixed assets renewal coefficient	0.070	81
	Employment in high-tech manufacturing	0.732	13
	Employment in knowledge-intensive activities	0.316	30
1.2	Participation of adult population in higher education	0.397	22
	Higher education enrolment per 10,000 population	0.604	12
	STEM enrolment in higher education programmes	0.208	74
	Participation of employed population in lifelong learning	0.149	77
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.574	51
	STEM enrolment in programmes for mid-career professionals	0.456	70
1.3	Enterprises with broadband top speed access over 100 Mbps	0.320	54
	Enterprises providing ICT related training of staff	0.144	62
	Active Internet users in the adult population	0.088	82
2.1	GERD as a percentage of GRP	0.064	47
	GERD per researcher	0.497	56
	GERD financed by the business enterprise sector	0.236	29
	Average monthly salary of R&D personnel as a percentage of regional average	0.369	66
2.2	R&D personnel employed in the region	0.084	54
	Young researchers	0.639	43
	Researchers with scientific degrees	0.210	67
2.3	Publication activity	0.522	17
	Patent activity	0.322	54
	Development of advanced manufacturing technologies	0.469	22
3.1	Enterprises engaged in technological innovation	0.547	8
	Enterprises engaged in non-technological innovation	0.532	8
	Enterprises having developed in-house technological innovations	0.753	9
	Enterprises participating in joint R&D projects	0.353	23
3.2	Small enterprises engaged in technological innovation	0.461	11
3.3	Expenditure on technological innovation	0.530	30
3.4	Innovative goods and services	0.971	2
	Innovative goods and services new to the market	0.091	14
	Enterprises having reduced material and energy costs through innovation	0.261	20
4.1	Exports of goods	0.256	58
	Non-resource exports	0.325	45
	Exports of services	0.326	58
	Exports of innovative goods and services	0.078	30
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.000	57
	International students in higher education programmes	0.353	27
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.434	4
	Federal appropriations in expenditure on technological innovation	0.046	50
	Regional appropriations in expenditure on technological innovation	0.033	22
5.4	Number of innovative projects supported by federal authorities	0.480	23
	Number of federal development institutions supporting innovative projects	0.600	16
	Federal funding of innovative projects	0.829	6
	Number of innovation development territories with federal status	0.468	14
	Number of innovation infrastructure facilities for SMEs	0.750	13

Volga Federal District

REPUBLIC OF TATARSTAN

0.537 COMPOSITE INNOVATION INDEX

2 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

2 — 0.523

1.1	Basic Macroeconomic Indicators	0.455	3
1.2	Educational Potential of the Population	0.593	6
1.3	Digitisation Potential	0.474	10

2 S&T POTENTIAL

13 — 0.475

2.1	R&D Funding	0.438	16
2.2	R&D Personnel	0.456	22
2.3	R&D Output	0.543	8

3 INNOVATIVE ACTIVITY

1 — 0.570

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.768	2
3.2	Small Innovative Enterprises	0.343	28
3.3	Expenditure on Technological Innovation	0.713	11
3.4	Efficiency of Innovative Activity	0.335	8

4 EXPORT ACTIVITY

9 — 0.461

4.1	Export of Goods and Services	0.477	14
4.2	Export of Knowledge	0.440	11

5 QUALITY OF INNOVATION POLICY

1 — 0.642

5.1	Regulatory Framework for Innovation Policy	1.000	1
5.2	Organisational Support for Innovation Policy	1.000	1
5.3	Public Expenditure on R&D and Innovation	0.133	28
5.4	Participation in Federal STI Policy	0.805	2

Volga Federal District

REPUBLIC OF TATARSTAN

1.1	GRP per worker	0.354	10
	Fixed assets renewal coefficient	0.485	9
	Employment in high-tech manufacturing	0.822	9
	Employment in knowledge-intensive activities	0.160	78
1.2	Participation of adult population in higher education	0.444	13
	Higher education enrolment per 10,000 population	0.673	7
	STEM enrolment in higher education programmes	0.406	13
	Participation of employed population in lifelong learning	0.636	32
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.714	17
	STEM enrolment in programmes for mid-career professionals	0.689	32
1.3	Enterprises with broadband top speed access over 100 Mbps	0.571	8
	Enterprises providing ICT related training of staff	0.291	23
	Active Internet users in the adult population	0.560	14
2.1	GERD as a percentage of GRP	0.127	28
	GERD per researcher	0.583	32
	GERD financed by the business enterprise sector	0.597	8
	Average monthly salary of R&D personnel as a percentage of regional average	0.446	44
2.2	R&D personnel employed in the region	0.230	21
	Young researchers	0.841	8
	Researchers with scientific degrees	0.298	54
2.3	Publication activity	0.597	12
	Patent activity	0.531	9
	Development of advanced manufacturing technologies	0.500	13
3.1	Enterprises engaged in technological innovation	0.913	2
	Enterprises engaged in non-technological innovation	0.702	3
	Enterprises having developed in-house technological innovations	0.724	10
	Enterprises participating in joint R&D projects	0.732	4
3.2	Small enterprises engaged in technological innovation	0.343	28
3.3	Expenditure on technological innovation	0.713	11
3.4	Innovative goods and services	0.693	4
	Innovative goods and services new to the market	0.089	15
	Enterprises having reduced material and energy costs through innovation	0.222	30
4.1	Exports of goods	0.658	8
	Non-resource exports	0.390	34
	Exports of services	0.419	33
	Exports of innovative goods and services	0.439	10
4.2	Patent activity abroad	0.499	17
	Exports of technologies	0.442	10
	International students in higher education programmes	0.380	22
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.365	5
	Federal appropriations in expenditure on technological innovation	0.028	55
	Regional appropriations in expenditure on technological innovation	0.007	30
5.4	Number of innovative projects supported by federal authorities	0.634	7
	Number of federal development institutions supporting innovative projects	1.000	1
	Federal funding of innovative projects	0.594	18
	Number of innovation development territories with federal status	0.796	3
	Number of innovation infrastructure facilities for SMEs	1.000	1

Volga Federal District

UDMURT REPUBLIC

0.320 COMPOSITE INNOVATION INDEX

52 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

50

0.374

1.1	Basic Macroeconomic Indicators	0.309	40
1.2	Educational Potential of the Population	0.466	44
1.3	Digitisation Potential	0.275	61

2 S&T POTENTIAL

65

0.328

2.1	R&D Funding	0.246	72
2.2	R&D Personnel	0.347	77
2.3	R&D Output	0.420	31

3 INNOVATIVE ACTIVITY

32

0.292

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.305	35
3.2	Small Innovative Enterprises	0.384	19
3.3	Expenditure on Technological Innovation	0.400	42
3.4	Efficiency of Innovative Activity	0.207	20

4 EXPORT ACTIVITY

64

0.199

4.1	Export of Goods and Services	0.147	72
4.2	Export of Knowledge	0.268	43

5 QUALITY OF INNOVATION POLICY

35

0.351

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.081	44
5.4	Participation in Federal STI Policy	0.503	23

Volga Federal District

UDMURT REPUBLIC

1.1	GRP per worker	0.238	33
	Fixed assets renewal coefficient	0.222	58
	Employment in high-tech manufacturing	0.558	21
	Employment in knowledge-intensive activities	0.219	59
1.2	Participation of adult population in higher education	0.082	79
	Higher education enrolment per 10,000 population	0.528	19
	STEM enrolment in higher education programmes	0.368	26
	Participation of employed population in lifelong learning	0.501	47
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.710	18
	STEM enrolment in programmes for mid-career professionals	0.607	52
1.3	Enterprises with broadband top speed access over 100 Mbps	0.294	67
	Enterprises providing ICT related training of staff	0.303	21
	Active Internet users in the adult population	0.228	71
2.1	GERD as a percentage of GRP	0.052	53
	GERD per researcher	0.464	66
	GERD financed by the business enterprise sector	0.091	61
	Average monthly salary of R&D personnel as a percentage of regional average	0.377	64
2.2	R&D personnel employed in the region	0.101	47
	Young researchers	0.695	35
	Researchers with scientific degrees	0.245	63
2.3	Publication activity	0.424	48
	Patent activity	0.344	46
	Development of advanced manufacturing technologies	0.492	15
3.1	Enterprises engaged in technological innovation	0.279	39
	Enterprises engaged in non-technological innovation	0.277	33
	Enterprises having developed in-house technological innovations	0.379	32
	Enterprises participating in joint R&D projects	0.288	33
3.2	Small enterprises engaged in technological innovation	0.384	19
3.3	Expenditure on technological innovation	0.400	42
3.4	Innovative goods and services	0.381	17
	Innovative goods and services new to the market	0.036	28
	Enterprises having reduced material and energy costs through innovation	0.205	37
4.1	Exports of goods	0.174	72
	Non-resource exports	0.159	70
	Exports of services	0.249	68
	Exports of innovative goods and services	0.005	56
4.2	Patent activity abroad	0.514	15
	Exports of technologies	0.184	43
	International students in higher education programmes	0.107	70
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.000	61
	Federal appropriations in expenditure on technological innovation	0.233	29
	Regional appropriations in expenditure on technological innovation	0.011	28
5.4	Number of innovative projects supported by federal authorities	0.459	26
	Number of federal development institutions supporting innovative projects	0.467	33
	Federal funding of innovative projects	0.323	41
	Number of innovation development territories with federal status	0.514	8
	Number of innovation infrastructure facilities for SMEs	0.750	13

Volga Federal District

CHUVASH REPUBLIC

0.375 COMPOSITE INNOVATION INDEX

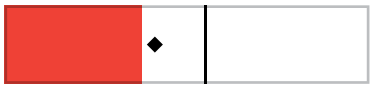
24 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

49

0.377

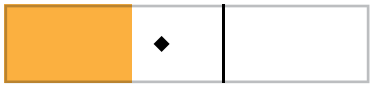


1.1	Basic Macroeconomic Indicators	0.363	15
1.2	Educational Potential of the Population	0.419	58
1.3	Digitisation Potential	0.310	50

2 S&T POTENTIAL

52

0.350



2.1	R&D Funding	0.365	32
2.2	R&D Personnel	0.366	71
2.3	R&D Output	0.314	57

3 INNOVATIVE ACTIVITY

2

0.544

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.832	1
3.2	Small Innovative Enterprises	0.278	39
3.3	Expenditure on Technological Innovation	0.593	22
3.4	Efficiency of Innovative Activity	0.232	18

4 EXPORT ACTIVITY

71

0.156

4.1	Export of Goods and Services	0.202	67
4.2	Export of Knowledge	0.095	69

5 QUALITY OF INNOVATION POLICY

24

0.399

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.132	30
5.4	Participation in Federal STI Policy	0.569	15

Volga Federal District

CHUVASH REPUBLIC

1.1	GRP per worker	0.134		71
	Fixed assets renewal coefficient	0.152		72
	Employment in high-tech manufacturing	0.910		6
	Employment in knowledge-intensive activities	0.258		48
1.2	Participation of adult population in higher education	0.294		37
	Higher education enrolment per 10,000 population	0.503		26
	STEM enrolment in higher education programmes	0.275		55
	Participation of employed population in lifelong learning	0.110		80
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.599		44
	STEM enrolment in programmes for mid-career professionals	0.734		26
1.3	Enterprises with broadband top speed access over 100 Mbps	0.444		22
	Enterprises providing ICT related training of staff	0.211		44
	Active Internet users in the adult population	0.275		63
2.1	GERD as a percentage of GRP	0.124		29
	GERD per researcher	0.511		50
	GERD financed by the business enterprise sector	0.113		56
	Average monthly salary of R&D personnel as a percentage of regional average	0.711		7
2.2	R&D personnel employed in the region	0.095		50
	Young researchers	0.875		4
	Researchers with scientific degrees	0.128		80
2.3	Publication activity	0.262		78
	Patent activity	0.402		29
	Development of advanced manufacturing technologies	0.279		52
3.1	Enterprises engaged in technological innovation	1.000		1
	Enterprises engaged in non-technological innovation	1.000		1
	Enterprises having developed in-house technological innovations	0.820		4
	Enterprises participating in joint R&D projects	0.508		10
3.2	Small enterprises engaged in technological innovation	0.278		39
3.3	Expenditure on technological innovation	0.593		22
3.4	Innovative goods and services	0.430		14
	Innovative goods and services new to the market	0.156		7
	Enterprises having reduced material and energy costs through innovation	0.110		75
4.1	Exports of goods	0.200		67
	Non-resource exports	0.259		56
	Exports of services	0.333		55
	Exports of innovative goods and services	0.015		43
4.2	Patent activity abroad	0.000		53
	Exports of technologies	0.000		57
	International students in higher education programmes	0.285		37
5.1	Innovation development strategy	1.000		1
	Special innovation development territories	0.000		24
	Regional innovation legislation	1.000		1
	Innovation support programme	1.000		1
5.2	Coordination body on innovation policy	0.000		38
	Regional innovation development institutions	0.000		30
5.3	Appropriations on civil S&T in the regional budget	0.107		22
	Federal appropriations in expenditure on technological innovation	0.190		31
	Regional appropriations in expenditure on technological innovation	0.099		10
5.4	Number of innovative projects supported by federal authorities	0.387		44
	Number of federal development institutions supporting innovative projects	0.600		16
	Federal funding of innovative projects	0.783		8
	Number of innovation development territories with federal status	0.325		29
	Number of innovation infrastructure facilities for SMEs	0.750		13

Volga Federal District

PERM REGION

0.397 COMPOSITE INNOVATION INDEX

17 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

45

0.384

1.1	Basic Macroeconomic Indicators	0.384	10
1.2	Educational Potential of the Population	0.430	56
1.3	Digitisation Potential	0.292	53

2 S&T POTENTIAL

20

0.420

2.1	R&D Funding	0.381	24
2.2	R&D Personnel	0.447	31
2.3	R&D Output	0.444	20

3 INNOVATIVE ACTIVITY

23

0.334

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.302	37
3.2	Small Innovative Enterprises	0.339	29
3.3	Expenditure on Technological Innovation	0.580	24
3.4	Efficiency of Innovative Activity	0.293	11

4 EXPORT ACTIVITY

21

0.398

4.1	Export of Goods and Services	0.498	11
4.2	Export of Knowledge	0.265	45

5 QUALITY OF INNOVATION POLICY

17

0.447

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.154	22
5.4	Participation in Federal STI Policy	0.552	17

Volga Federal District

PERM REGION

1.1	GRP per worker	0.309	17
	Fixed assets renewal coefficient	0.240	51
	Employment in high-tech manufacturing	0.777	10
	Employment in knowledge-intensive activities	0.211	60
1.2	Participation of adult population in higher education	0.094	75
	Higher education enrolment per 10,000 population	0.377	54
	STEM enrolment in higher education programmes	0.392	18
	Participation of employed population in lifelong learning	0.159	76
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.811	7
	STEM enrolment in programmes for mid-career professionals	0.747	23
1.3	Enterprises with broadband top speed access over 100 Mbps	0.478	17
	Enterprises providing ICT related training of staff	0.222	41
	Active Internet users in the adult population	0.176	76
2.1	GERD as a percentage of GRP	0.199	17
	GERD per researcher	0.672	13
	GERD financed by the business enterprise sector	0.143	48
	Average monthly salary of R&D personnel as a percentage of regional average	0.510	26
2.2	R&D personnel employed in the region	0.327	12
	Young researchers	0.825	11
	Researchers with scientific degrees	0.191	69
2.3	Publication activity	0.365	57
	Patent activity	0.481	15
	Development of advanced manufacturing technologies	0.487	18
3.1	Enterprises engaged in technological innovation	0.240	48
	Enterprises engaged in non-technological innovation	0.279	32
	Enterprises having developed in-house technological innovations	0.301	41
	Enterprises participating in joint R&D projects	0.388	19
3.2	Small enterprises engaged in technological innovation	0.339	29
3.3	Expenditure on technological innovation	0.580	24
3.4	Innovative goods and services	0.563	6
	Innovative goods and services new to the market	0.022	41
	Enterprises having reduced material and energy costs through innovation	0.295	16
4.1	Exports of goods	0.544	16
	Non-resource exports	0.591	12
	Exports of services	0.309	59
	Exports of innovative goods and services	0.549	4
4.2	Patent activity abroad	0.405	30
	Exports of technologies	0.294	29
	International students in higher education programmes	0.095	71
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.057	27
	Federal appropriations in expenditure on technological innovation	0.404	17
	Regional appropriations in expenditure on technological innovation	0.000	59
5.4	Number of innovative projects supported by federal authorities	0.536	16
	Number of federal development institutions supporting innovative projects	0.667	14
	Federal funding of innovative projects	0.503	24
	Number of innovation development territories with federal status	0.554	6
	Number of innovation infrastructure facilities for SMEs	0.500	31

Volga Federal District

KIROV REGION

0.317 COMPOSITE INNOVATION INDEX

54 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

76

0.314

1.1	Basic Macroeconomic Indicators	0.262	64
1.2	Educational Potential of the Population	0.364	73
1.3	Digitisation Potential	0.284	56

2 S&T POTENTIAL

35

0.387

2.1	R&D Funding	0.416	19
2.2	R&D Personnel	0.404	49
2.3	R&D Output	0.333	55

3 INNOVATIVE ACTIVITY

31

0.301

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.310	34
3.2	Small Innovative Enterprises	0.350	25
3.3	Expenditure on Technological Innovation	0.661	13
3.4	Efficiency of Innovative Activity	0.154	35

4 EXPORT ACTIVITY

35

0.327

4.1	Export of Goods and Services	0.405	29
4.2	Export of Knowledge	0.223	51

5 QUALITY OF INNOVATION POLICY

55

0.256

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.094	39
5.4	Participation in Federal STI Policy	0.256	61

Volga Federal District

KIROV REGION

1.1	GRP per worker	0.121		72
	Fixed assets renewal coefficient	0.205		59
	Employment in high-tech manufacturing	0.503		29
	Employment in knowledge-intensive activities	0.220		58
1.2	Participation of adult population in higher education	0.067		82
	Higher education enrolment per 10,000 population	0.448		35
	STEM enrolment in higher education programmes	0.265		56
	Participation of employed population in lifelong learning	0.272		66
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.586		48
	STEM enrolment in programmes for mid-career professionals	0.545		59
1.3	Enterprises with broadband top speed access over 100 Mbps	0.212		79
	Enterprises providing ICT related training of staff	0.263		30
	Active Internet users in the adult population	0.376		49
2.1	GERD as a percentage of GRP	0.116		31
	GERD per researcher	0.697		9
	GERD financed by the business enterprise sector	0.182		40
	Average monthly salary of R&D personnel as a percentage of regional average	0.670		9
2.2	R&D personnel employed in the region	0.116		43
	Young researchers	0.698		33
	Researchers with scientific degrees	0.398		47
2.3	Publication activity	0.420		49
	Patent activity	0.388		33
	Development of advanced manufacturing technologies	0.190		62
3.1	Enterprises engaged in technological innovation	0.366		19
	Enterprises engaged in non-technological innovation	0.268		37
	Enterprises having developed in-house technological innovations	0.376		34
	Enterprises participating in joint R&D projects	0.228		48
3.2	Small enterprises engaged in technological innovation	0.350		25
3.3	Expenditure on technological innovation	0.661		13
3.4	Innovative goods and services	0.219		34
	Innovative goods and services new to the market	0.092		13
	Enterprises having reduced material and energy costs through innovation	0.150		61
4.1	Exports of goods	0.424		36
	Non-resource exports	0.530		18
	Exports of services	0.205		72
	Exports of innovative goods and services	0.464		9
4.2	Patent activity abroad	0.492		18
	Exports of technologies	0.102		53
	International students in higher education programmes	0.074		76
5.1	Innovation development strategy	0.000		54
	Special innovation development territories	0.000		24
	Regional innovation legislation	1.000		1
	Innovation support programme	1.000		1
5.2	Coordination body on innovation policy	0.000		38
	Regional innovation development institutions	1.000		1
5.3	Appropriations on civil S&T in the regional budget	0.000		61
	Federal appropriations in expenditure on technological innovation	0.283		26
	Regional appropriations in expenditure on technological innovation	0.000		54
5.4	Number of innovative projects supported by federal authorities	0.209		77
	Number of federal development institutions supporting innovative projects	0.200		63
	Federal funding of innovative projects	0.043		70
	Number of innovation development territories with federal status	0.325		29
	Number of innovation infrastructure facilities for SMEs	0.500		31

Volga Federal District

NIZHNY NOVGOROD REGION

0.496 COMPOSITE INNOVATION INDEX

5 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

34

0.397

1.1	Basic Macroeconomic Indicators	0.322	32
1.2	Educational Potential of the Population	0.492	34
1.3	Digitisation Potential	0.308	52

2 S&T POTENTIAL

4

0.560

2.1	R&D Funding	0.657	2
2.2	R&D Personnel	0.610	4
2.3	R&D Output	0.380	44

3 INNOVATIVE ACTIVITY

8

0.470

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.501	11
3.2	Small Innovative Enterprises	0.379	22
3.3	Expenditure on Technological Innovation	1.000	1
3.4	Efficiency of Innovative Activity	0.282	12

4 EXPORT ACTIVITY

3

0.533

4.1	Export of Goods and Services	0.490	12
4.2	Export of Knowledge	0.590	4

5 QUALITY OF INNOVATION POLICY

6

0.557

5.1	Regulatory Framework for Innovation Policy	1.000	1
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.243	11
5.4	Participation in Federal STI Policy	0.667	6

Volga Federal District

NIZHNY NOVGOROD REGION

1.1	GRP per worker	0.207	45
	Fixed assets renewal coefficient	0.170	65
	Employment in high-tech manufacturing	0.734	12
	Employment in knowledge-intensive activities	0.176	73
1.2	Participation of adult population in higher education	0.333	33
	Higher education enrolment per 10,000 population	0.477	31
	STEM enrolment in higher education programmes	0.357	30
	Participation of employed population in lifelong learning	0.508	45
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.590	45
	STEM enrolment in programmes for mid-career professionals	0.687	33
1.3	Enterprises with broadband top speed access over 100 Mbps	0.415	29
	Enterprises providing ICT related training of staff	0.307	20
	Active Internet users in the adult population	0.201	74
2.1	GERD as a percentage of GRP	1.000	1
	GERD per researcher	0.790	4
	GERD financed by the business enterprise sector	0.116	55
	Average monthly salary of R&D personnel as a percentage of regional average	0.722	5
2.2	R&D personnel employed in the region	0.924	3
	Young researchers	0.759	21
	Researchers with scientific degrees	0.147	79
2.3	Publication activity	0.305	66
	Patent activity	0.412	27
	Development of advanced manufacturing technologies	0.424	30
3.1	Enterprises engaged in technological innovation	0.441	14
	Enterprises engaged in non-technological innovation	0.402	13
	Enterprises having developed in-house technological innovations	0.595	14
	Enterprises participating in joint R&D projects	0.568	5
3.2	Small enterprises engaged in technological innovation	0.379	22
3.3	Expenditure on technological innovation	1.000	1
3.4	Innovative goods and services	0.544	8
	Innovative goods and services new to the market	0.086	16
	Enterprises having reduced material and energy costs through innovation	0.217	35
4.1	Exports of goods	0.452	32
	Non-resource exports	0.496	23
	Exports of services	0.861	5
	Exports of innovative goods and services	0.152	20
4.2	Patent activity abroad	0.585	9
	Exports of technologies	1.000	1
	International students in higher education programmes	0.185	58
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.000	61
	Federal appropriations in expenditure on technological innovation	0.729	4
	Regional appropriations in expenditure on technological innovation	0.000	55
5.4	Number of innovative projects supported by federal authorities	0.688	5
	Number of federal development institutions supporting innovative projects	1.000	1
	Federal funding of innovative projects	0.634	15
	Number of innovation development territories with federal status	0.514	8
	Number of innovation infrastructure facilities for SMEs	0.500	31

Volga Federal District

ORENBURG REGION

0.289 COMPOSITE INNOVATION INDEX

63 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

53

0.364

1.1	Basic Macroeconomic Indicators	0.238	73
1.2	Educational Potential of the Population	0.493	33
1.3	Digitisation Potential	0.274	63

2 S&T POTENTIAL

73

0.309

2.1	R&D Funding	0.287	58
2.2	R&D Personnel	0.353	75
2.3	R&D Output	0.293	64

3 INNOVATIVE ACTIVITY

45

0.239

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.240	46
3.2	Small Innovative Enterprises	0.154	62
3.3	Expenditure on Technological Innovation	0.670	12
3.4	Efficiency of Innovative Activity	0.121	50

4 EXPORT ACTIVITY

30

0.363

4.1	Export of Goods and Services	0.378	35
4.2	Export of Knowledge	0.343	22

5 QUALITY OF INNOVATION POLICY

74

0.164

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.051	54
5.4	Participation in Federal STI Policy	0.148	73

Volga Federal District

ORENBURG REGION

1.1	GRP per worker	0.297	21
	Fixed assets renewal coefficient	0.228	54
	Employment in high-tech manufacturing	0.246	52
	Employment in knowledge-intensive activities	0.181	72
1.2	Participation of adult population in higher education	0.151	69
	Higher education enrolment per 10,000 population	0.410	45
	STEM enrolment in higher education programmes	0.285	53
	Participation of employed population in lifelong learning	0.684	26
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.766	11
	STEM enrolment in programmes for mid-career professionals	0.664	39
1.3	Enterprises with broadband top speed access over 100 Mbps	0.404	35
	Enterprises providing ICT related training of staff	0.086	77
	Active Internet users in the adult population	0.332	56
2.1	GERD as a percentage of GRP	0.021	74
	GERD per researcher	0.469	63
	GERD financed by the business enterprise sector	0.184	39
	Average monthly salary of R&D personnel as a percentage of regional average	0.474	36
2.2	R&D personnel employed in the region	0.060	65
	Young researchers	0.590	58
	Researchers with scientific degrees	0.410	44
2.3	Publication activity	0.375	54
	Patent activity	0.336	49
	Development of advanced manufacturing technologies	0.166	64
3.1	Enterprises engaged in technological innovation	0.227	51
	Enterprises engaged in non-technological innovation	0.261	38
	Enterprises having developed in-house technological innovations	0.245	52
	Enterprises participating in joint R&D projects	0.227	49
3.2	Small enterprises engaged in technological innovation	0.154	62
3.3	Expenditure on technological innovation	0.670	12
3.4	Innovative goods and services	0.112	45
	Innovative goods and services new to the market	0.003	72
	Enterprises having reduced material and energy costs through innovation	0.250	23
4.1	Exports of goods	0.442	34
	Non-resource exports	0.390	33
	Exports of services	0.660	12
	Exports of innovative goods and services	0.019	41
4.2	Patent activity abroad	0.257	51
	Exports of technologies	0.277	30
	International students in higher education programmes	0.495	13
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.094	24
	Federal appropriations in expenditure on technological innovation	0.059	46
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.305	62
	Number of federal development institutions supporting innovative projects	0.333	44
	Federal funding of innovative projects	0.103	64
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.000	69

Volga Federal District

PENZA REGION

0.382 COMPOSITE INNOVATION INDEX

23 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

48

0.377

1.1	Basic Macroeconomic Indicators	0.277	54
1.2	Educational Potential of the Population	0.495	32
1.3	Digitisation Potential	0.275	62

2 S&T POTENTIAL

51

0.354

2.1	R&D Funding	0.377	27
2.2	R&D Personnel	0.402	51
2.3	R&D Output	0.275	68

3 INNOVATIVE ACTIVITY

6

0.481

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.682	6
3.2	Small Innovative Enterprises	0.243	46
3.3	Expenditure on Technological Innovation	0.773	7
3.4	Efficiency of Innovative Activity	0.195	24

4 EXPORT ACTIVITY

53

0.247

4.1	Export of Goods and Services	0.203	66
4.2	Export of Knowledge	0.304	33

5 QUALITY OF INNOVATION POLICY

19

0.423

5.1	Regulatory Framework for Innovation Policy	1.000	1
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.161	21
5.4	Participation in Federal STI Policy	0.450	31

Volga Federal District

PENZA REGION

1.1	GRP per worker	0.172		57
	Fixed assets renewal coefficient	0.234		53
	Employment in high-tech manufacturing	0.556		22
	Employment in knowledge-intensive activities	0.146		80
1.2	Participation of adult population in higher education	0.211		53
	Higher education enrolment per 10,000 population	0.442		39
	STEM enrolment in higher education programmes	0.378		23
	Participation of employed population in lifelong learning	0.696		25
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.487		64
	STEM enrolment in programmes for mid-career professionals	0.754		21
1.3	Enterprises with broadband top speed access over 100 Mbps	0.330		52
	Enterprises providing ICT related training of staff	0.113		69
	Active Internet users in the adult population	0.382		47
2.1	GERD as a percentage of GRP	0.247		11
	GERD per researcher	0.534		46
	GERD financed by the business enterprise sector	0.010		78
	Average monthly salary of R&D personnel as a percentage of regional average	0.717		6
2.2	R&D personnel employed in the region	0.254		17
	Young researchers	0.784		15
	Researchers with scientific degrees	0.168		75
2.3	Publication activity	0.241		81
	Patent activity	0.345		45
	Development of advanced manufacturing technologies	0.239		58
3.1	Enterprises engaged in technological innovation	0.833		3
	Enterprises engaged in non-technological innovation	0.539		7
	Enterprises having developed in-house technological innovations	1.000		1
	Enterprises participating in joint R&D projects	0.357		21
3.2	Small enterprises engaged in technological innovation	0.243		46
3.3	Expenditure on technological innovation	0.773		7
3.4	Innovative goods and services	0.357		20
	Innovative goods and services new to the market	0.094		12
	Enterprises having reduced material and energy costs through innovation	0.136		68
4.1	Exports of goods	0.200		68
	Non-resource exports	0.257		59
	Exports of services	0.326		57
	Exports of innovative goods and services	0.032		35
4.2	Patent activity abroad	0.421		29
	Exports of technologies	0.095		54
	International students in higher education programmes	0.396		20
5.1	Innovation development strategy	1.000		1
	Special innovation development territories	1.000		1
	Regional innovation legislation	1.000		1
	Innovation support programme	1.000		1
5.2	Coordination body on innovation policy	0.000		38
	Regional innovation development institutions	1.000		1
5.3	Appropriations on civil S&T in the regional budget	0.000		61
	Federal appropriations in expenditure on technological innovation	0.480		13
	Regional appropriations in expenditure on technological innovation	0.002		42
5.4	Number of innovative projects supported by federal authorities	0.398		41
	Number of federal development institutions supporting innovative projects	0.467		33
	Federal funding of innovative projects	0.167		58
	Number of innovation development territories with federal status	0.468		14
	Number of innovation infrastructure facilities for SMEs	0.750		13

Volga Federal District

SAMARA REGION

0.417 COMPOSITE INNOVATION INDEX

11 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

5

0.490

1.1	Basic Macroeconomic Indicators	0.434	5
1.2	Educational Potential of the Population	0.639	3
1.3	Digitisation Potential	0.269	66

2 S&T POTENTIAL

37

0.383

2.1	R&D Funding	0.352	35
2.2	R&D Personnel	0.393	56
2.3	R&D Output	0.415	33

3 INNOVATIVE ACTIVITY

39

0.268

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.170	65
3.2	Small Innovative Enterprises	0.241	47
3.3	Expenditure on Technological Innovation	0.568	27
3.4	Efficiency of Innovative Activity	0.309	9

4 EXPORT ACTIVITY

25

0.375

4.1	Export of Goods and Services	0.360	36
4.2	Export of Knowledge	0.395	14

5 QUALITY OF INNOVATION POLICY

10

0.518

5.1	Regulatory Framework for Innovation Policy	1.000	1
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.141	24
5.4	Participation in Federal STI Policy	0.650	8

Volga Federal District

SAMARA REGION

1.1	GRP per worker	0.240	32
	Fixed assets renewal coefficient	0.345	23
	Employment in high-tech manufacturing	0.955	2
	Employment in knowledge-intensive activities	0.196	66
1.2	Participation of adult population in higher education	0.563	9
	Higher education enrolment per 10,000 population	0.547	17
	STEM enrolment in higher education programmes	0.423	9
	Participation of employed population in lifelong learning	0.829	13
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.705	19
	STEM enrolment in programmes for mid-career professionals	0.766	19
1.3	Enterprises with broadband top speed access over 100 Mbps	0.319	56
	Enterprises providing ICT related training of staff	0.170	53
	Active Internet users in the adult population	0.319	58
2.1	GERD as a percentage of GRP	0.174	20
	GERD per researcher	0.571	38
	GERD financed by the business enterprise sector	0.097	59
	Average monthly salary of R&D personnel as a percentage of regional average	0.567	19
2.2	R&D personnel employed in the region	0.250	18
	Young researchers	0.836	9
	Researchers with scientific degrees	0.093	82
2.3	Publication activity	0.374	55
	Patent activity	0.467	18
	Development of advanced manufacturing technologies	0.403	34
3.1	Enterprises engaged in technological innovation	0.179	62
	Enterprises engaged in non-technological innovation	0.123	63
	Enterprises having developed in-house technological innovations	0.187	63
	Enterprises participating in joint R&D projects	0.192	57
3.2	Small enterprises engaged in technological innovation	0.241	47
3.3	Expenditure on technological innovation	0.568	27
3.4	Innovative goods and services	0.550	7
	Innovative goods and services new to the market	0.117	9
	Enterprises having reduced material and energy costs through innovation	0.259	21
4.1	Exports of goods	0.465	29
	Non-resource exports	0.429	28
	Exports of services	0.434	30
	Exports of innovative goods and services	0.110	25
4.2	Patent activity abroad	0.532	13
	Exports of technologies	0.437	11
	International students in higher education programmes	0.215	51
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.007	50
	Federal appropriations in expenditure on technological innovation	0.417	16
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.444	29
	Number of federal development institutions supporting innovative projects	0.933	5
	Federal funding of innovative projects	0.359	37
	Number of innovation development territories with federal status	0.514	8
	Number of innovation infrastructure facilities for SMEs	1.000	1

Volga Federal District

SARATOV REGION

0.357 COMPOSITE INNOVATION INDEX

32 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

25

0.406

1.1	Basic Macroeconomic Indicators	0.315	36
1.2	Educational Potential of the Population	0.538	15
1.3	Digitisation Potential	0.262	67

2 S&T POTENTIAL

36

0.384

2.1	R&D Funding	0.341	40
2.2	R&D Personnel	0.428	43
2.3	R&D Output	0.398	38

3 INNOVATIVE ACTIVITY

48

0.223

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.205	54
3.2	Small Innovative Enterprises	0.359	23
3.3	Expenditure on Technological Innovation	0.482	36
3.4	Efficiency of Innovative Activity	0.116	51

4 EXPORT ACTIVITY

38

0.314

4.1	Export of Goods and Services	0.304	42
4.2	Export of Knowledge	0.327	25

5 QUALITY OF INNOVATION POLICY

21

0.419

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	1.000	1
5.3	Public Expenditure on R&D and Innovation	0.020	68
5.4	Participation in Federal STI Policy	0.477	26

Volga Federal District

SARATOV REGION

1.1	GRP per worker	0.196	49
	Fixed assets renewal coefficient	0.246	50
	Employment in high-tech manufacturing	0.533	24
	Employment in knowledge-intensive activities	0.286	37
1.2	Participation of adult population in higher education	0.328	34
	Higher education enrolment per 10,000 population	0.540	18
	STEM enrolment in higher education programmes	0.249	63
	Participation of employed population in lifelong learning	0.625	33
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.646	31
	STEM enrolment in programmes for mid-career professionals	0.843	9
1.3	Enterprises with broadband top speed access over 100 Mbps	0.290	68
	Enterprises providing ICT related training of staff	0.163	55
	Active Internet users in the adult population	0.332	56
2.1	GERD as a percentage of GRP	0.110	33
	GERD per researcher	0.484	61
	GERD financed by the business enterprise sector	0.337	24
	Average monthly salary of R&D personnel as a percentage of regional average	0.434	48
2.2	R&D personnel employed in the region	0.197	29
	Young researchers	0.673	38
	Researchers with scientific degrees	0.414	42
2.3	Publication activity	0.498	25
	Patent activity	0.351	44
	Development of advanced manufacturing technologies	0.346	43
3.1	Enterprises engaged in technological innovation	0.190	60
	Enterprises engaged in non-technological innovation	0.194	53
	Enterprises having developed in-house technological innovations	0.197	60
	Enterprises participating in joint R&D projects	0.237	46
3.2	Small enterprises engaged in technological innovation	0.359	23
3.3	Expenditure on technological innovation	0.482	36
3.4	Innovative goods and services	0.080	52
	Innovative goods and services new to the market	0.012	53
	Enterprises having reduced material and energy costs through innovation	0.256	22
4.1	Exports of goods	0.365	43
	Non-resource exports	0.441	27
	Exports of services	0.379	45
	Exports of innovative goods and services	0.030	36
4.2	Patent activity abroad	0.462	21
	Exports of technologies	0.265	32
	International students in higher education programmes	0.255	46
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.003	56
	Federal appropriations in expenditure on technological innovation	0.056	47
	Regional appropriations in expenditure on technological innovation	0.000	52
5.4	Number of innovative projects supported by federal authorities	0.546	14
	Number of federal development institutions supporting innovative projects	0.600	16
	Federal funding of innovative projects	0.661	14
	Number of innovation development territories with federal status	0.325	29
	Number of innovation infrastructure facilities for SMEs	0.250	52

Volga Federal District

ULYANOVSK REGION

0.385 COMPOSITE INNOVATION INDEX

20 RANK

RANK
LEADING REGION INDEX VALUE
RUSSIA AVERAGE VALUE
INDEX VALUE
NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

68

0.334

1.1	Basic Macroeconomic Indicators	0.431	6
1.2	Educational Potential of the Population	0.358	74
1.3	Digitisation Potential	0.156	84

2 S&T POTENTIAL

2

0.594

2.1	R&D Funding	0.825	1
2.2	R&D Personnel	0.442	36
2.3	R&D Output	0.439	24

3 INNOVATIVE ACTIVITY

42

0.241

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.141	71
3.2	Small Innovative Enterprises	0.209	51
3.3	Expenditure on Technological Innovation	0.571	26
3.4	Efficiency of Innovative Activity	0.275	13

4 EXPORT ACTIVITY

39

0.313

4.1	Export of Goods and Services	0.358	38
4.2	Export of Knowledge	0.253	48

5 QUALITY OF INNOVATION POLICY

20

0.422

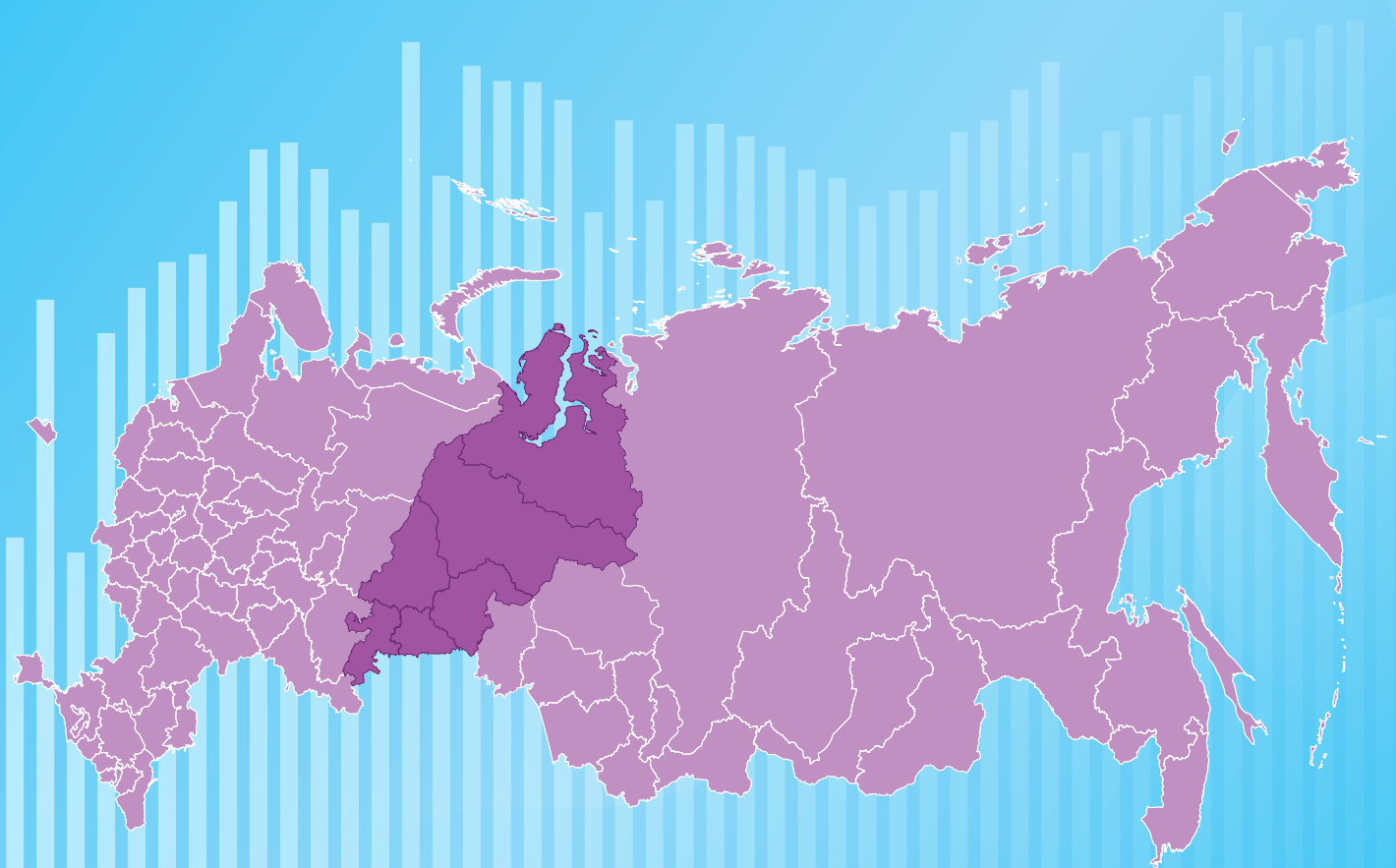
5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	1.000	1
5.3	Public Expenditure on R&D and Innovation	0.049	55
5.4	Participation in Federal STI Policy	0.464	28

Volga Federal District

ULYANOVSK REGION

1.1	GRP per worker	0.152	68
	Fixed assets renewal coefficient	0.287	38
	Employment in high-tech manufacturing	1.000	1
	Employment in knowledge-intensive activities	0.285	38
1.2	Participation of adult population in higher education	0.141	72
	Higher education enrolment per 10,000 population	0.518	21
	STEM enrolment in higher education programmes	0.347	34
	Participation of employed population in lifelong learning	0.109	81
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.489	63
	STEM enrolment in programmes for mid-career professionals	0.543	61
1.3	Enterprises with broadband top speed access over 100 Mbps	0.388	36
	Enterprises providing ICT related training of staff	0.081	78
	Active Internet users in the adult population	0.000	85
2.1	GERD as a percentage of GRP	0.665	2
	GERD per researcher	1.000	1
	GERD financed by the business enterprise sector	0.871	4
	Average monthly salary of R&D personnel as a percentage of regional average	0.764	3
2.2	R&D personnel employed in the region	0.315	14
	Young researchers	0.848	5
	Researchers with scientific degrees	0.164	76
2.3	Publication activity	0.312	65
	Patent activity	0.477	17
	Development of advanced manufacturing technologies	0.527	11
3.1	Enterprises engaged in technological innovation	0.145	73
	Enterprises engaged in non-technological innovation	0.059	77
	Enterprises having developed in-house technological innovations	0.165	68
	Enterprises participating in joint R&D projects	0.196	54
3.2	Small enterprises engaged in technological innovation	0.209	51
3.3	Expenditure on technological innovation	0.571	26
3.4	Innovative goods and services	0.451	12
	Innovative goods and services new to the market	0.025	37
	Enterprises having reduced material and energy costs through innovation	0.348	8
4.1	Exports of goods	0.228	65
	Non-resource exports	0.277	54
	Exports of services	0.820	6
	Exports of innovative goods and services	0.108	26
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.507	6
	International students in higher education programmes	0.253	48
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.000	61
	Federal appropriations in expenditure on technological innovation	0.148	37
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.384	45
	Number of federal development institutions supporting innovative projects	0.400	41
	Federal funding of innovative projects	0.273	43
	Number of innovation development territories with federal status	0.514	8
	Number of innovation infrastructure facilities for SMEs	0.750	13

URAL
FEDERAL DISTRICT



Ural Federal District

KURGAN REGION

0.259 COMPOSITE INNOVATION INDEX

68 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

27

0.401

1.1	Basic Macroeconomic Indicators	0.370	13
1.2	Educational Potential of the Population	0.500	28
1.3	Digitisation Potential	0.244	73

2 S&T POTENTIAL

80

0.272

2.1	R&D Funding	0.239	75
2.2	R&D Personnel	0.377	64
2.3	R&D Output	0.211	79

3 INNOVATIVE ACTIVITY

61

0.177

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.154	69
3.2	Small Innovative Enterprises	0.269	42
3.3	Expenditure on Technological Innovation	0.274	56
3.4	Efficiency of Innovative Activity	0.146	38

4 EXPORT ACTIVITY

74

0.136

4.1	Export of Goods and Services	0.169	70
4.2	Export of Knowledge	0.093	70

5 QUALITY OF INNOVATION POLICY

60

0.223

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.057	51
5.4	Participation in Federal STI Policy	0.262	59

Ural Federal District

KURGAN REGION

1.1	GRP per worker	0.152	67
	Fixed assets renewal coefficient	0.053	82
	Employment in high-tech manufacturing	0.890	7
	Employment in knowledge-intensive activities	0.385	20
1.2	Participation of adult population in higher education	0.154	68
	Higher education enrolment per 10,000 population	0.361	56
	STEM enrolment in higher education programmes	0.247	64
	Participation of employed population in lifelong learning	0.881	8
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.693	22
	STEM enrolment in programmes for mid-career professionals	0.661	41
1.3	Enterprises with broadband top speed access over 100 Mbps	0.305	62
	Enterprises providing ICT related training of staff	0.055	82
	Active Internet users in the adult population	0.371	51
2.1	GERD as a percentage of GRP	0.028	67
	GERD per researcher	0.357	78
	GERD financed by the business enterprise sector	0.209	34
	Average monthly salary of R&D personnel as a percentage of regional average	0.361	69
2.2	R&D personnel employed in the region	0.076	60
	Young researchers	0.601	54
	Researchers with scientific degrees	0.453	38
2.3	Publication activity	0.301	68
	Patent activity	0.332	51
	Development of advanced manufacturing technologies	0.000	65
3.1	Enterprises engaged in technological innovation	0.174	63
	Enterprises engaged in non-technological innovation	0.088	70
	Enterprises having developed in-house technological innovations	0.178	66
	Enterprises participating in joint R&D projects	0.175	61
3.2	Small enterprises engaged in technological innovation	0.269	42
3.3	Expenditure on technological innovation	0.274	56
3.4	Innovative goods and services	0.125	41
	Innovative goods and services new to the market	0.008	57
	Enterprises having reduced material and energy costs through innovation	0.304	13
4.1	Exports of goods	0.168	75
	Non-resource exports	0.218	65
	Exports of services	0.278	67
	Exports of innovative goods and services	0.011	47
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.060	56
	International students in higher education programmes	0.218	50
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.000	61
	Federal appropriations in expenditure on technological innovation	0.168	35
	Regional appropriations in expenditure on technological innovation	0.003	41
5.4	Number of innovative projects supported by federal authorities	0.293	64
	Number of federal development institutions supporting innovative projects	0.267	58
	Federal funding of innovative projects	0.000	73
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.750	13

Ural Federal District

SVERDLOVSK REGION

0.457 COMPOSITE INNOVATION INDEX

7 RANK

RANK

LEADING REGION INDEX VALUE

RUSSIA AVERAGE VALUE

INDEX VALUE

NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

7

0.481

1.1	Basic Macroeconomic Indicators	0.307	41
1.2	Educational Potential of the Population	0.598	5
1.3	Digitisation Potential	0.479	7

2 S&T POTENTIAL

10

0.493

2.1	R&D Funding	0.494	10
2.2	R&D Personnel	0.485	15
2.3	R&D Output	0.500	12

3 INNOVATIVE ACTIVITY

17

0.377

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.454	14
3.2	Small Innovative Enterprises	0.396	18
3.3	Expenditure on Technological Innovation	0.575	25
3.4	Efficiency of Innovative Activity	0.201	21

4 EXPORT ACTIVITY

20

0.402

4.1	Export of Goods and Services	0.408	28
4.2	Export of Knowledge	0.394	15

5 QUALITY OF INNOVATION POLICY

11

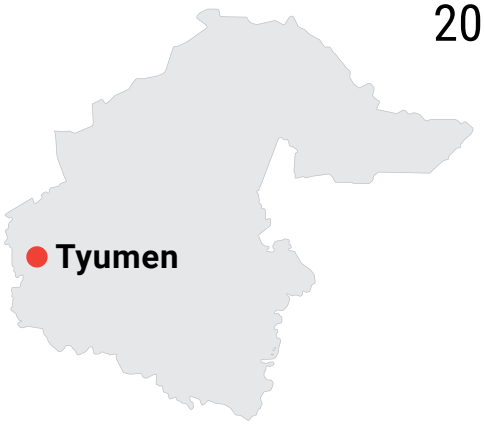
0.501

5.1	Regulatory Framework for Innovation Policy	1.000	1
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.078	45
5.4	Participation in Federal STI Policy	0.655	7

SVERDLOVSK REGION

Ural Federal District

TYUMEN REGION



0.374 COMPOSITE INNOVATION INDEX

25 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

11

0.457

1.1	Basic Macroeconomic Indicators	0.294	48
1.2	Educational Potential of the Population	0.569	10
1.3	Digitisation Potential	0.449	12

2 S&T POTENTIAL

11

0.489

2.1	R&D Funding	0.574	4
2.2	R&D Personnel	0.462	20
2.3	R&D Output	0.402	35

3 INNOVATIVE ACTIVITY

21

0.340

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.422	18
3.2	Small Innovative Enterprises	0.127	70
3.3	Expenditure on Technological Innovation	0.333	48
3.4	Efficiency of Innovative Activity	0.305	10

4 EXPORT ACTIVITY

33

0.343

4.1	Export of Goods and Services	0.311	41
4.2	Export of Knowledge	0.385	16

5 QUALITY OF INNOVATION POLICY

67

0.203

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.055	52
5.4	Participation in Federal STI Policy	0.274	57

Ural Federal District

TYUMEN REGION

1.1	GRP per worker	0.399	6
	Fixed assets renewal coefficient	0.345	23
	Employment in high-tech manufacturing	0.167	58
	Employment in knowledge-intensive activities	0.264	44
1.2	Participation of adult population in higher education	0.281	38
	Higher education enrolment per 10,000 population	0.679	6
	STEM enrolment in higher education programmes	0.427	7
	Participation of employed population in lifelong learning	0.731	21
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.603	42
	STEM enrolment in programmes for mid-career professionals	0.694	31
1.3	Enterprises with broadband top speed access over 100 Mbps	0.456	20
	Enterprises providing ICT related training of staff	0.495	4
	Active Internet users in the adult population	0.396	46
2.1	GERD as a percentage of GRP	0.215	14
	GERD per researcher	0.654	17
	GERD financed by the business enterprise sector	0.428	18
	Average monthly salary of R&D personnel as a percentage of regional average	1.000	1
2.2	R&D personnel employed in the region	0.278	16
	Young researchers	0.919	2
	Researchers with scientific degrees	0.190	70
2.3	Publication activity	0.294	72
	Patent activity	0.447	19
	Development of advanced manufacturing technologies	0.464	24
3.1	Enterprises engaged in technological innovation	0.439	15
	Enterprises engaged in non-technological innovation	0.362	21
	Enterprises having developed in-house technological innovations	0.488	21
	Enterprises participating in joint R&D projects	0.400	16
3.2	Small enterprises engaged in technological innovation	0.127	70
3.3	Expenditure on technological innovation	0.333	48
3.4	Innovative goods and services	0.627	5
	Innovative goods and services new to the market	0.023	39
	Enterprises having reduced material and energy costs through innovation	0.265	19
4.1	Exports of goods	0.450	33
	Non-resource exports	0.315	47
	Exports of services	0.478	25
	Exports of innovative goods and services	0.002	58
4.2	Patent activity abroad	0.554	10
	Exports of technologies	0.231	34
	International students in higher education programmes	0.370	23
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.008	49
	Federal appropriations in expenditure on technological innovation	0.150	36
	Regional appropriations in expenditure on technological innovation	0.007	31
5.4	Number of innovative projects supported by federal authorities	0.407	37
	Number of federal development institutions supporting innovative projects	0.733	11
	Federal funding of innovative projects	0.229	50
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.000	69

KHANTY-MANSI AUTONOMOUS REGION – YUGRA

0.329 COMPOSITE INNOVATION INDEX

44 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

10

0.465

1.1	Basic Macroeconomic Indicators	0.256	69
1.2	Educational Potential of the Population	0.572	8
1.3	Digitisation Potential	0.531	4

2 S&T POTENTIAL

54

0.349

2.1	R&D Funding	0.449	15
2.2	R&D Personnel	0.349	76
2.3	R&D Output	0.216	78

3 INNOVATIVE ACTIVITY

53

0.205

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.143	70
3.2	Small Innovative Enterprises	0.203	53
3.3	Expenditure on Technological Innovation	0.644	14
3.4	Efficiency of Innovative Activity	0.143	41

4 EXPORT ACTIVITY

60

0.225

4.1	Export of Goods and Services	0.247	58
4.2	Export of Knowledge	0.195	58

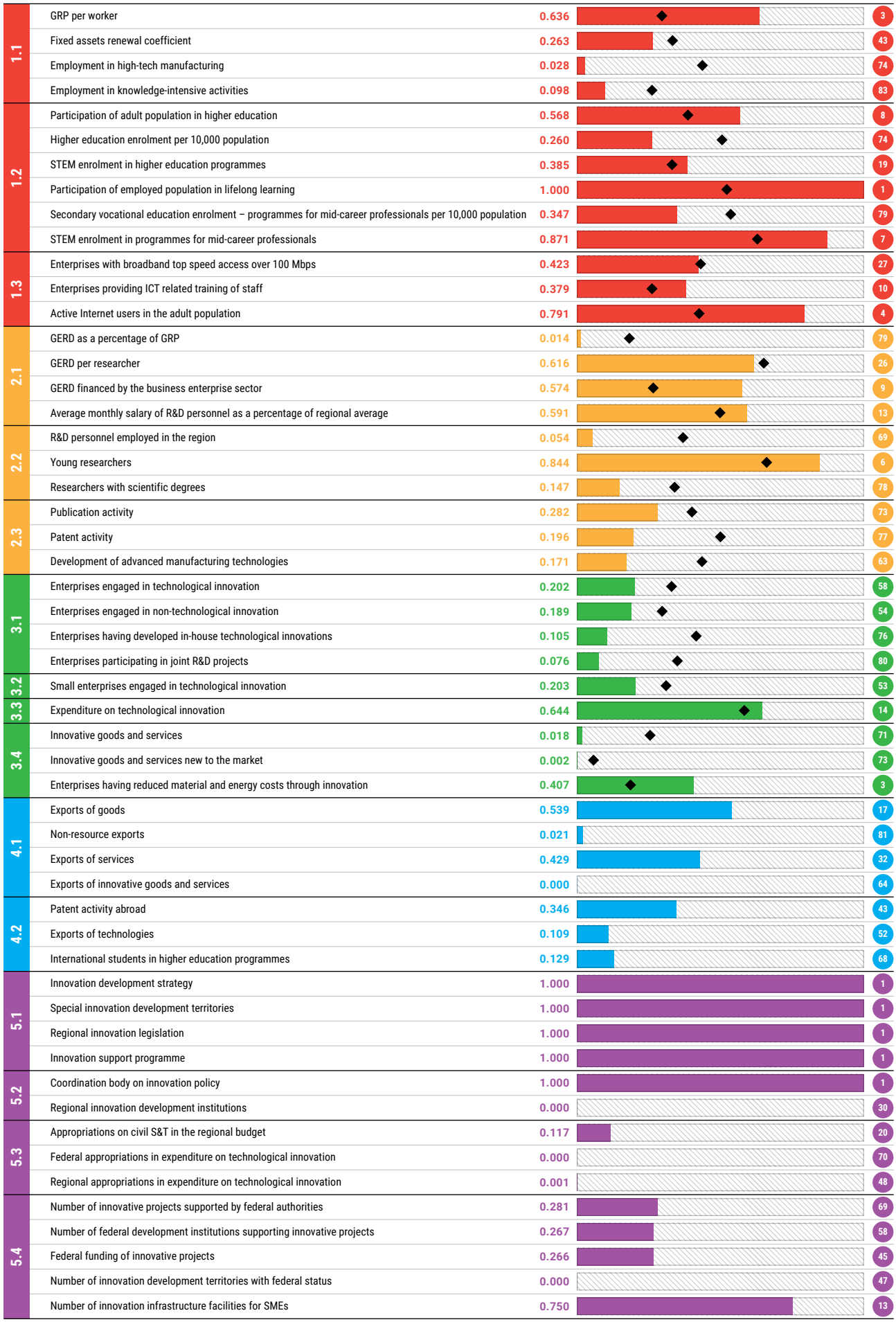
5 QUALITY OF INNOVATION POLICY

44

0.318

5.1	Regulatory Framework for Innovation Policy	1.000	1
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.039	57
5.4	Participation in Federal STI Policy	0.313	51

KHANTY-MANSI AUTONOMOUS REGION – YUGRA



Ural Federal District

YAMAL-NENETS AUTONOMOUS REGION

0.299 COMPOSITE INNOVATION INDEX

59 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

8

0.477

1.1	Basic Macroeconomic Indicators	0.338	23
1.2	Educational Potential of the Population	0.551	13
1.3	Digitisation Potential	0.513	5

2 S&T POTENTIAL

50

0.355

2.1	R&D Funding	0.287	57
2.2	R&D Personnel	0.362	72
2.3	R&D Output	0.440	23

3 INNOVATIVE ACTIVITY

52

0.206

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.248	44
3.2	Small Innovative Enterprises	0.419	15
3.3	Expenditure on Technological Innovation	0.147	75
3.4	Efficiency of Innovative Activity	0.098	58

4 EXPORT ACTIVITY

70

0.156

4.1	Export of Goods and Services	0.112	77
4.2	Export of Knowledge	0.215	53

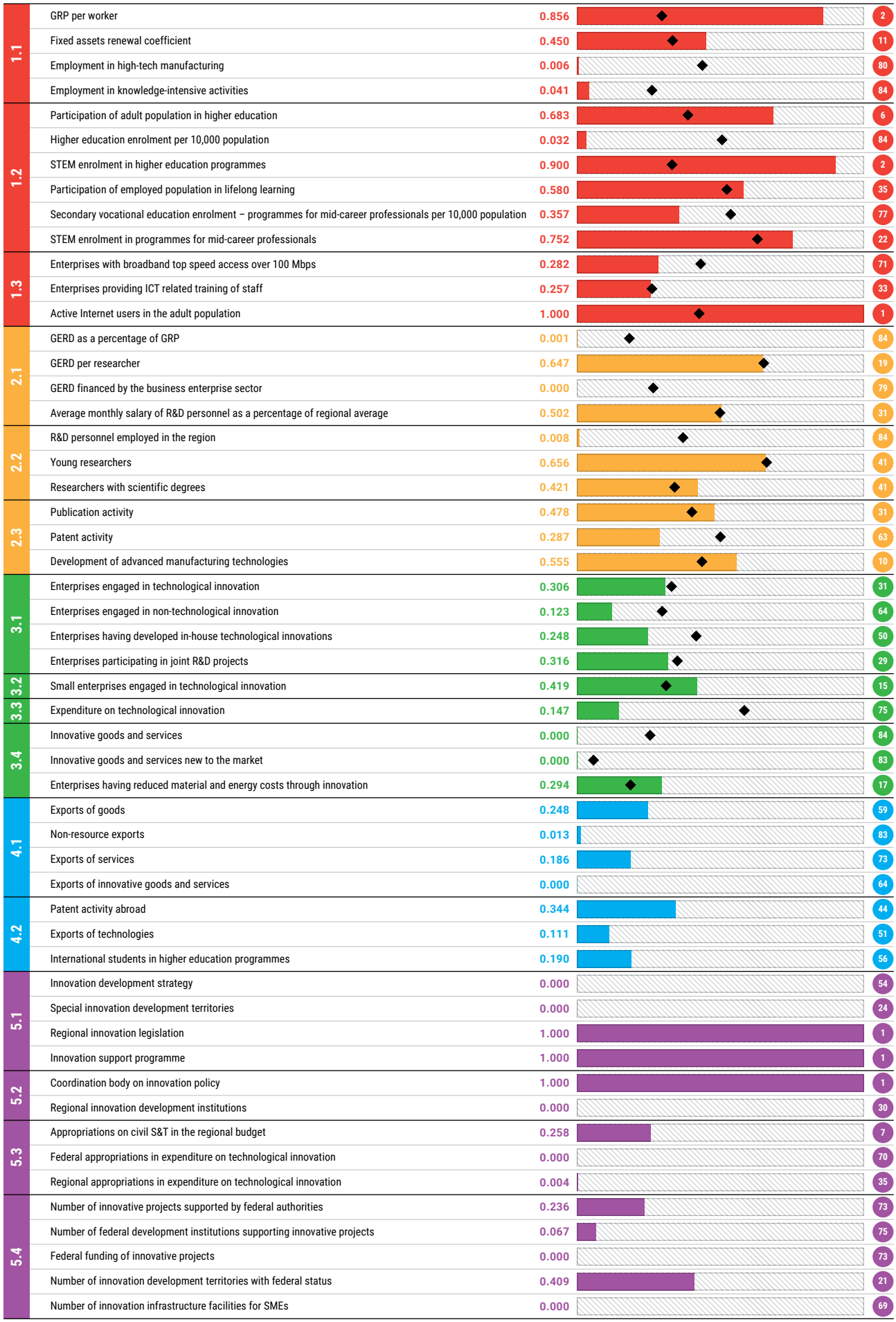
5 QUALITY OF INNOVATION POLICY

69

0.197

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.087	42
5.4	Participation in Federal STI Policy	0.142	75

YAMAL-NENETS AUTONOMOUS REGION



Ural Federal District

CHELYABINSK REGION

0.429 COMPOSITE INNOVATION INDEX

9 RANK

RANK · LEADING REGION INDEX VALUE · INDEX VALUE · RUSSIA AVERAGE VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

9

0.466

1.1	Basic Macroeconomic Indicators	0.357	17
1.2	Educational Potential of the Population	0.570	9
1.3	Digitisation Potential	0.402	19

2 S&T POTENTIAL

22

0.417

2.1	R&D Funding	0.406	21
2.2	R&D Personnel	0.402	50
2.3	R&D Output	0.447	17

3 INNOVATIVE ACTIVITY

29

0.305

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.403	21
3.2	Small Innovative Enterprises	0.208	52
3.3	Expenditure on Technological Innovation	0.447	40
3.4	Efficiency of Innovative Activity	0.160	34

4 EXPORT ACTIVITY

16

0.442

4.1	Export of Goods and Services	0.451	18
4.2	Export of Knowledge	0.428	12

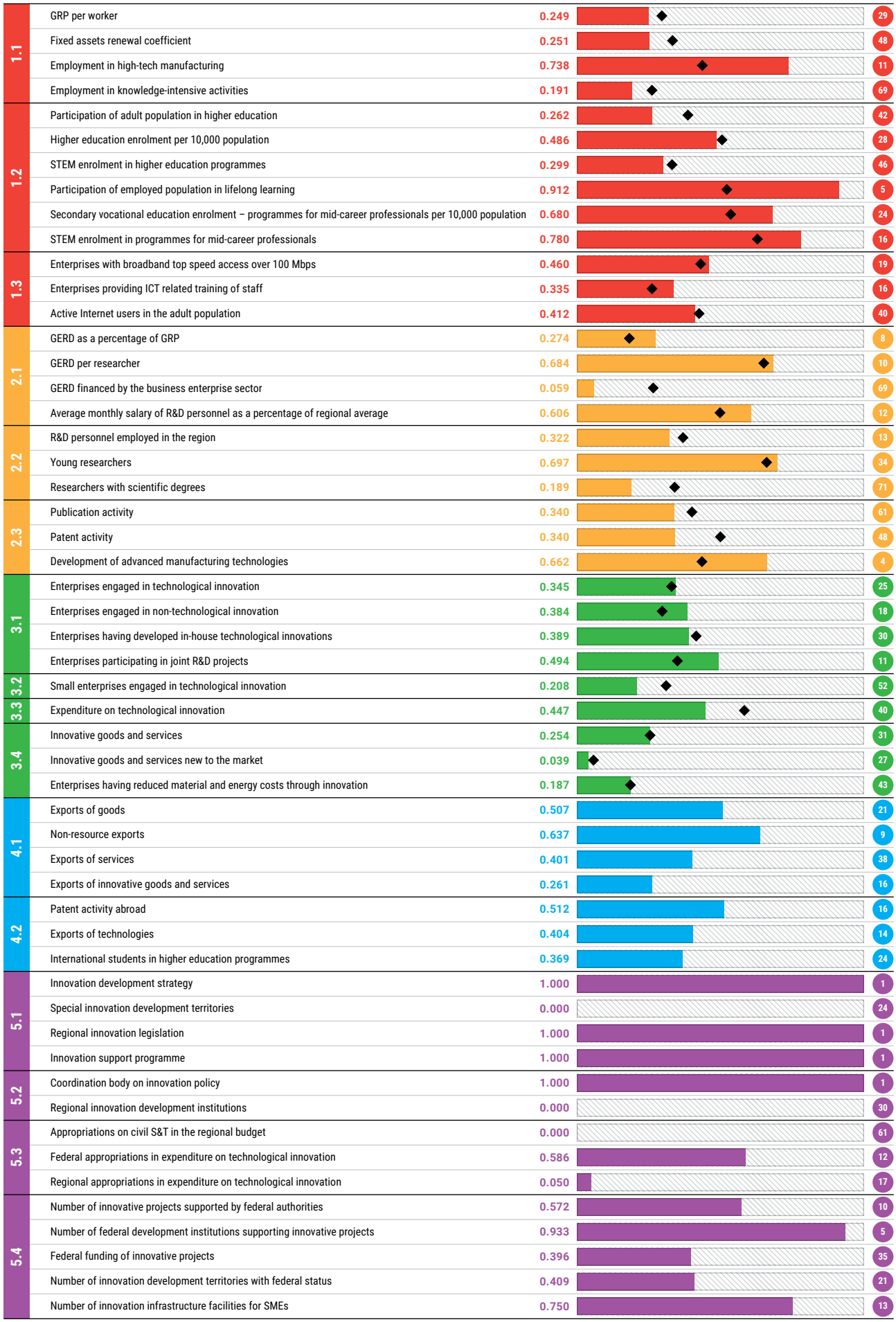
5 QUALITY OF INNOVATION POLICY

12

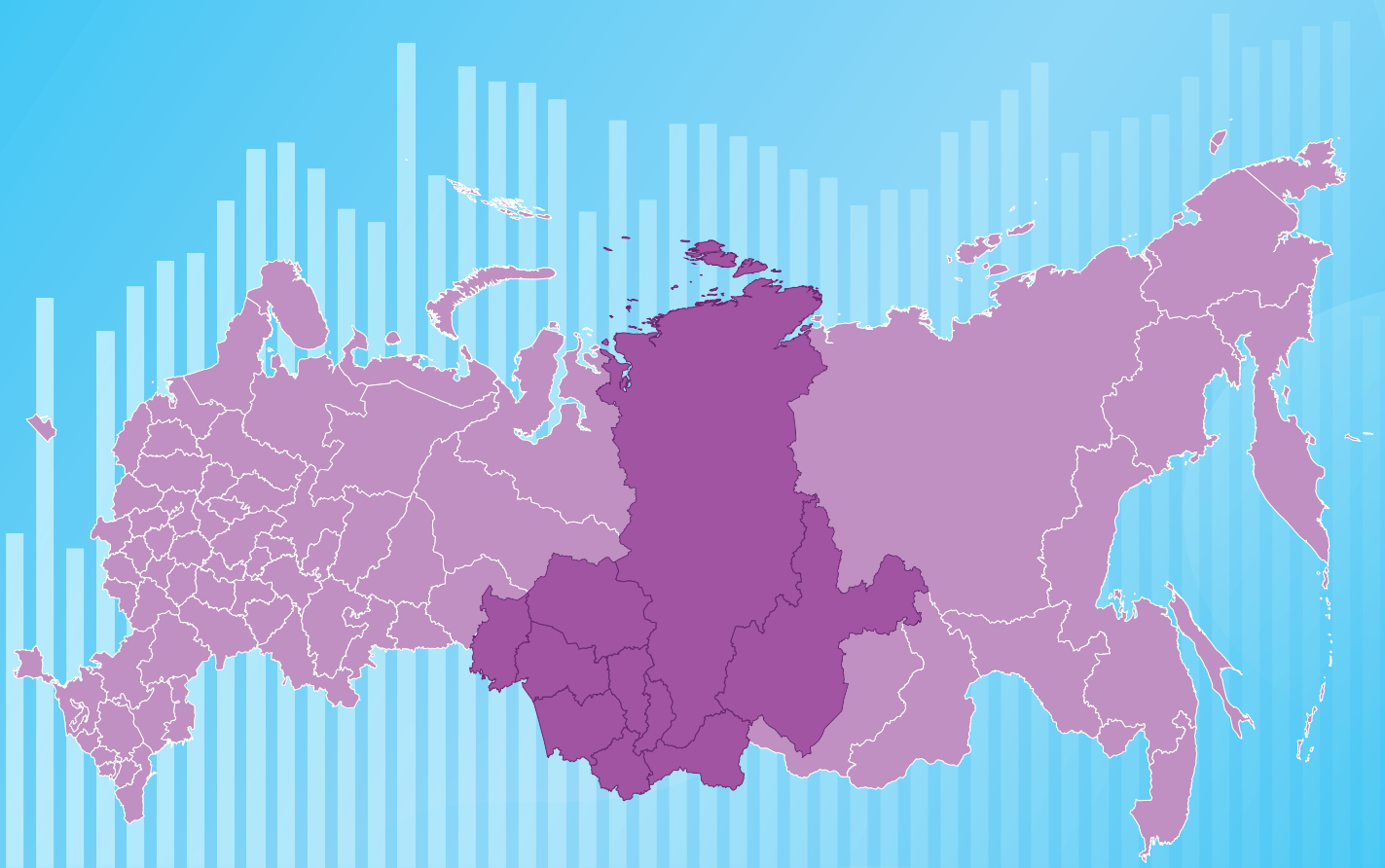
0.495

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.212	15
5.4	Participation in Federal STI Policy	0.612	12

CHELYABINSK REGION



SIBERIAN FEDERAL DISTRICT



Siberian Federal District

ALTAI REPUBLIC

0.227 COMPOSITE INNOVATION INDEX

77 RANK

RANK
LEADING REGION INDEX VALUE
RUSSIA AVERAGE VALUE
INDEX VALUE
NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

58

0.357

1.1	Basic Macroeconomic Indicators	0.323	31
1.2	Educational Potential of the Population	0.386	70
1.3	Digitisation Potential	0.346	33

2 S&T POTENTIAL

79

0.273

2.1	R&D Funding	0.213	78
2.2	R&D Personnel	0.387	61
2.3	R&D Output	0.239	74

3 INNOVATIVE ACTIVITY

68

0.163

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.187	59
3.2	Small Innovative Enterprises	0.000	79
3.3	Expenditure on Technological Innovation	0.383	45
3.4	Efficiency of Innovative Activity	0.112	52

4 EXPORT ACTIVITY

80

0.094

4.1	Export of Goods and Services	0.102	79
4.2	Export of Knowledge	0.082	73

5 QUALITY OF INNOVATION POLICY

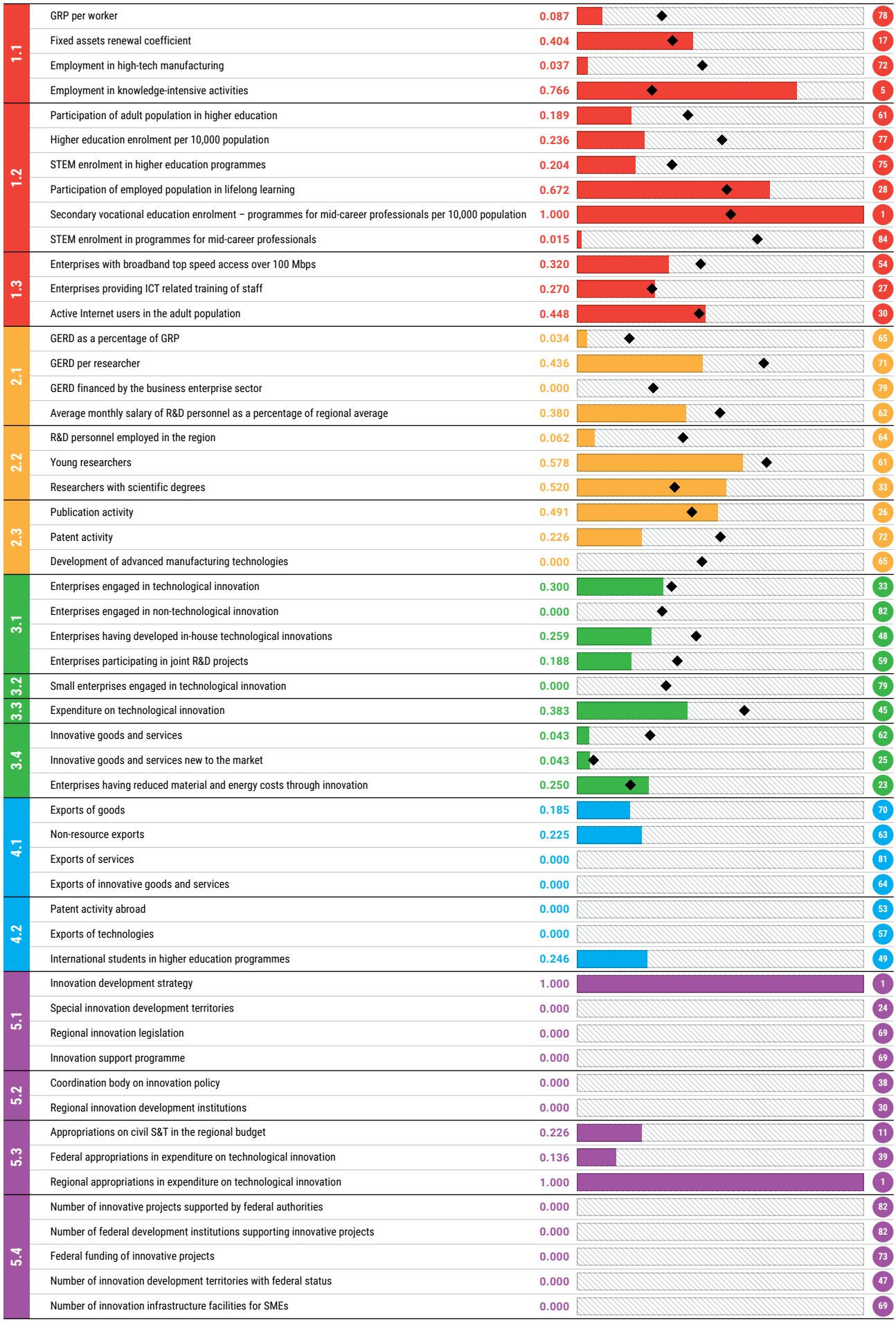
75

0.161

5.1	Regulatory Framework for Innovation Policy	0.250	70
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.454	1
5.4	Participation in Federal STI Policy	0.000	84

Siberian Federal District

ALTAI REPUBLIC



Siberian Federal District

REPUBLIC OF TUVA

0.218 COMPOSITE INNOVATION INDEX

78 RANK

RANK | LEADING REGION INDEX VALUE | RUSSIA AVERAGE VALUE | INDEX VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

52

0.365

1.1	Basic Macroeconomic Indicators	0.394	9
1.2	Educational Potential of the Population	0.391	68
1.3	Digitisation Potential	0.273	64

2 S&T POTENTIAL

81

0.270

2.1	R&D Funding	0.260	68
2.2	R&D Personnel	0.439	38
2.3	R&D Output	0.112	82

3 INNOVATIVE ACTIVITY

84

0.034

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.065	82
3.2	Small Innovative Enterprises	0.000	79
3.3	Expenditure on Technological Innovation	0.043	81
3.4	Efficiency of Innovative Activity	0.002	82

4 EXPORT ACTIVITY

84

0.041

4.1	Export of Goods and Services	0.053	82
4.2	Export of Knowledge	0.026	79

5 QUALITY OF INNOVATION POLICY

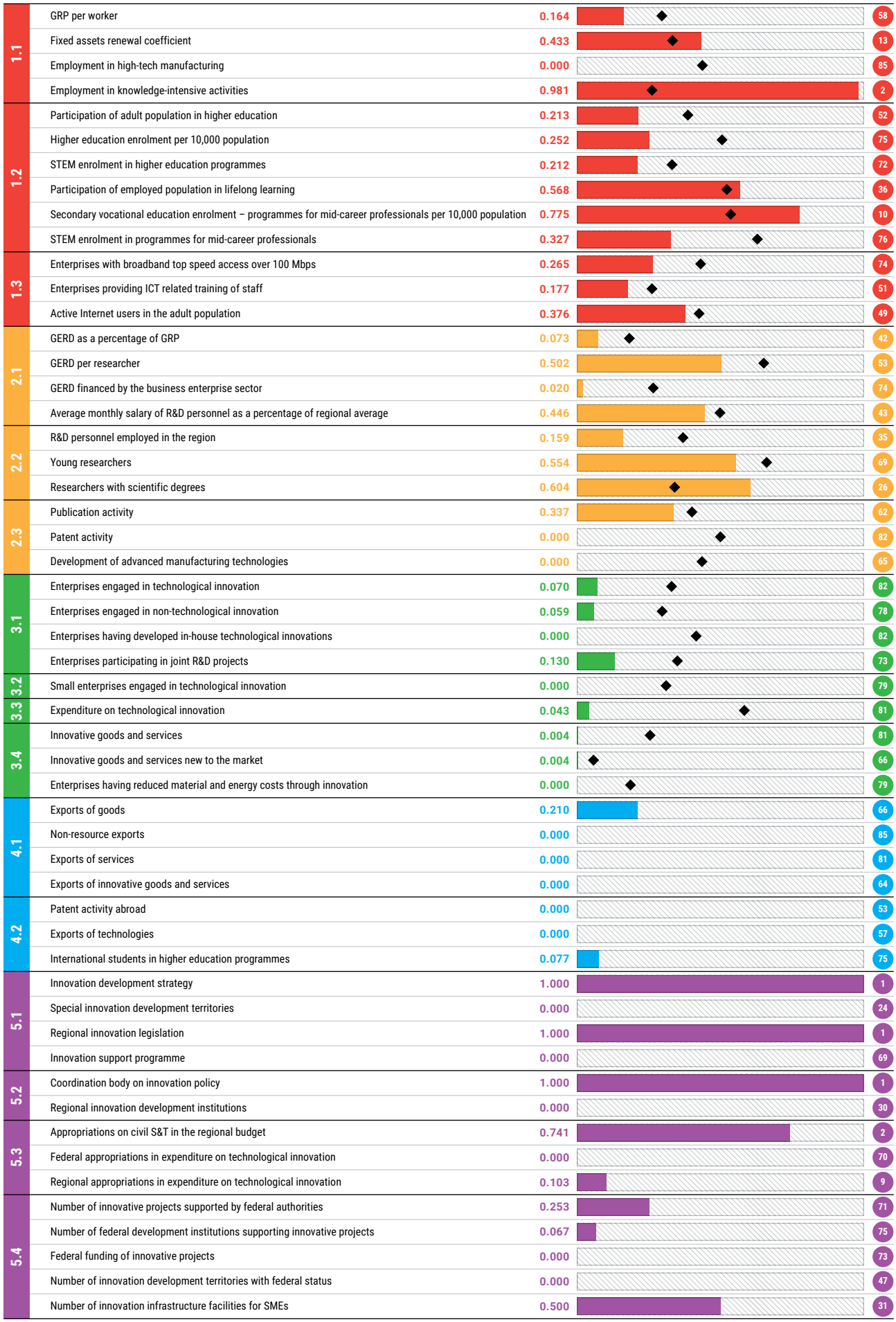
54

0.266

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.281	9
5.4	Participation in Federal STI Policy	0.164	69

Siberian Federal District

REPUBLIC OF TUVA



Siberian Federal District

REPUBLIC OF KHAKASSIA

0.241 COMPOSITE INNOVATION INDEX

75 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

79

0.299

1.1	Basic Macroeconomic Indicators	0.267	61
1.2	Educational Potential of the Population	0.349	78
1.3	Digitisation Potential	0.244	72

2 S&T POTENTIAL

70

0.317

2.1	R&D Funding	0.187	80
2.2	R&D Personnel	0.456	23
2.3	R&D Output	0.351	50

3 INNOVATIVE ACTIVITY

77

0.127

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.114	77
3.2	Small Innovative Enterprises	0.074	74
3.3	Expenditure on Technological Innovation	0.296	53
3.4	Efficiency of Innovative Activity	0.106	54

4 EXPORT ACTIVITY

24

0.382

4.1	Export of Goods and Services	0.663	1
4.2	Export of Knowledge	0.008	83

5 QUALITY OF INNOVATION POLICY

83

0.091

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.052	53
5.4	Participation in Federal STI Policy	0.050	82

Siberian Federal District

REPUBLIC OF KHAKASSIA

1.1	GRP per worker	0.267	26
	Fixed assets renewal coefficient	0.158	68
	Employment in high-tech manufacturing	0.197	56
	Employment in knowledge-intensive activities	0.446	15
1.2	Participation of adult population in higher education	0.144	71
	Higher education enrolment per 10,000 population	0.278	72
	STEM enrolment in higher education programmes	0.296	49
	Participation of employed population in lifelong learning	0.201	71
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.509	60
	STEM enrolment in programmes for mid-career professionals	0.666	38
1.3	Enterprises with broadband top speed access over 100 Mbps	0.340	47
	Enterprises providing ICT related training of staff	0.249	35
	Active Internet users in the adult population	0.143	79
2.1	GERD as a percentage of GRP	0.007	82
	GERD per researcher	0.246	83
	GERD financed by the business enterprise sector	0.168	43
	Average monthly salary of R&D personnel as a percentage of regional average	0.327	72
2.2	R&D personnel employed in the region	0.025	81
	Young researchers	0.436	79
	Researchers with scientific degrees	0.907	5
2.3	Publication activity	0.354	60
	Patent activity	0.205	74
	Development of advanced manufacturing technologies	0.495	14
3.1	Enterprises engaged in technological innovation	0.142	74
	Enterprises engaged in non-technological innovation	0.067	74
	Enterprises having developed in-house technological innovations	0.101	77
	Enterprises participating in joint R&D projects	0.147	67
3.2	Small enterprises engaged in technological innovation	0.074	74
3.3	Expenditure on technological innovation	0.296	53
3.4	Innovative goods and services	0.018	72
	Innovative goods and services new to the market	0.001	81
	Enterprises having reduced material and energy costs through innovation	0.300	14
4.1	Exports of goods	0.821	3
	Non-resource exports	0.832	4
	Exports of services	1.000	1
	Exports of innovative goods and services	0.000	64
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.000	57
	International students in higher education programmes	0.024	83
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.126	19
	Federal appropriations in expenditure on technological innovation	0.000	70
	Regional appropriations in expenditure on technological innovation	0.031	23
5.4	Number of innovative projects supported by federal authorities	0.000	82
	Number of federal development institutions supporting innovative projects	0.000	82
	Federal funding of innovative projects	0.000	73
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.250	52

Siberian Federal District

ALTAI REGION

0.351 COMPOSITE INNOVATION INDEX

38 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

72 — 0.317

1.1	Basic Macroeconomic Indicators	0.228	76
1.2	Educational Potential of the Population	0.396	65
1.3	Digitisation Potential	0.277	59

2 S&T POTENTIAL

46 — 0.364

2.1	R&D Funding	0.374	28
2.2	R&D Personnel	0.435	41
2.3	R&D Output	0.279	67

3 INNOVATIVE ACTIVITY

13 — 0.400

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.488	12
3.2	Small Innovative Enterprises	0.951	2
3.3	Expenditure on Technological Innovation	0.389	44
3.4	Efficiency of Innovative Activity	0.102	55

4 EXPORT ACTIVITY

48 — 0.261

4.1	Export of Goods and Services	0.252	56
4.2	Export of Knowledge	0.273	42

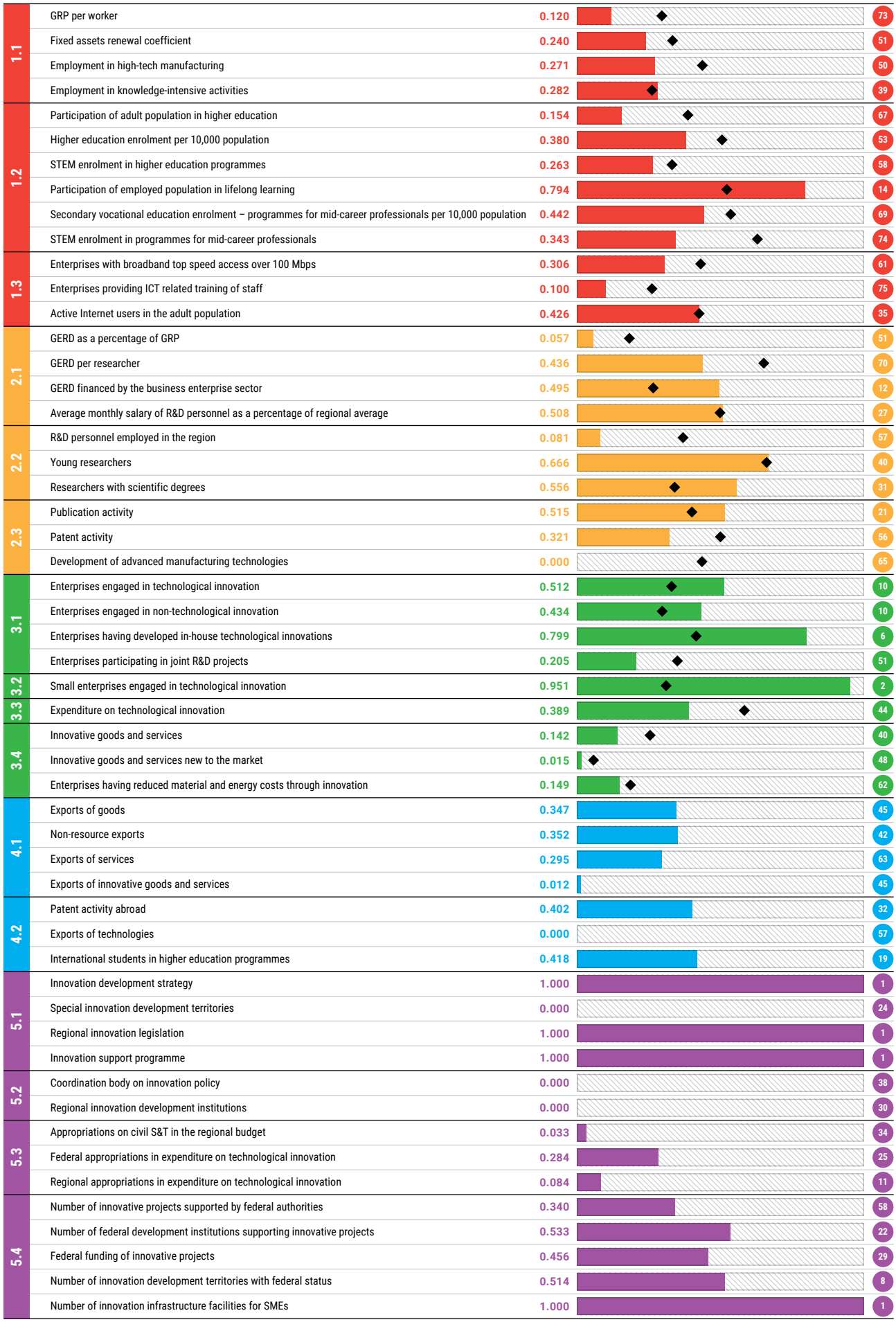
5 QUALITY OF INNOVATION POLICY

23 — 0.400

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.134	27
5.4	Participation in Federal STI Policy	0.569	16

Siberian Federal District

ALTAI REGION



Siberian Federal District

KRASNOYARSK REGION

0.412 COMPOSITE INNOVATION INDEX

12 RANK

RANK · LEADING REGION INDEX VALUE · INDEX VALUE · RUSSIA AVERAGE VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

14

0.440

1.1	Basic Macroeconomic Indicators	0.338	24
1.2	Educational Potential of the Population	0.563	11
1.3	Digitisation Potential	0.328	43

2 S&T POTENTIAL

29

0.399

2.1	R&D Funding	0.367	31
2.2	R&D Personnel	0.401	52
2.3	R&D Output	0.440	22

3 INNOVATIVE ACTIVITY

28

0.309

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.335	30
3.2	Small Innovative Enterprises	0.525	9
3.3	Expenditure on Technological Innovation	0.499	35
3.4	Efficiency of Innovative Activity	0.140	42

4 EXPORT ACTIVITY

22

0.398

4.1	Export of Goods and Services	0.424	24
4.2	Export of Knowledge	0.362	19

5 QUALITY OF INNOVATION POLICY

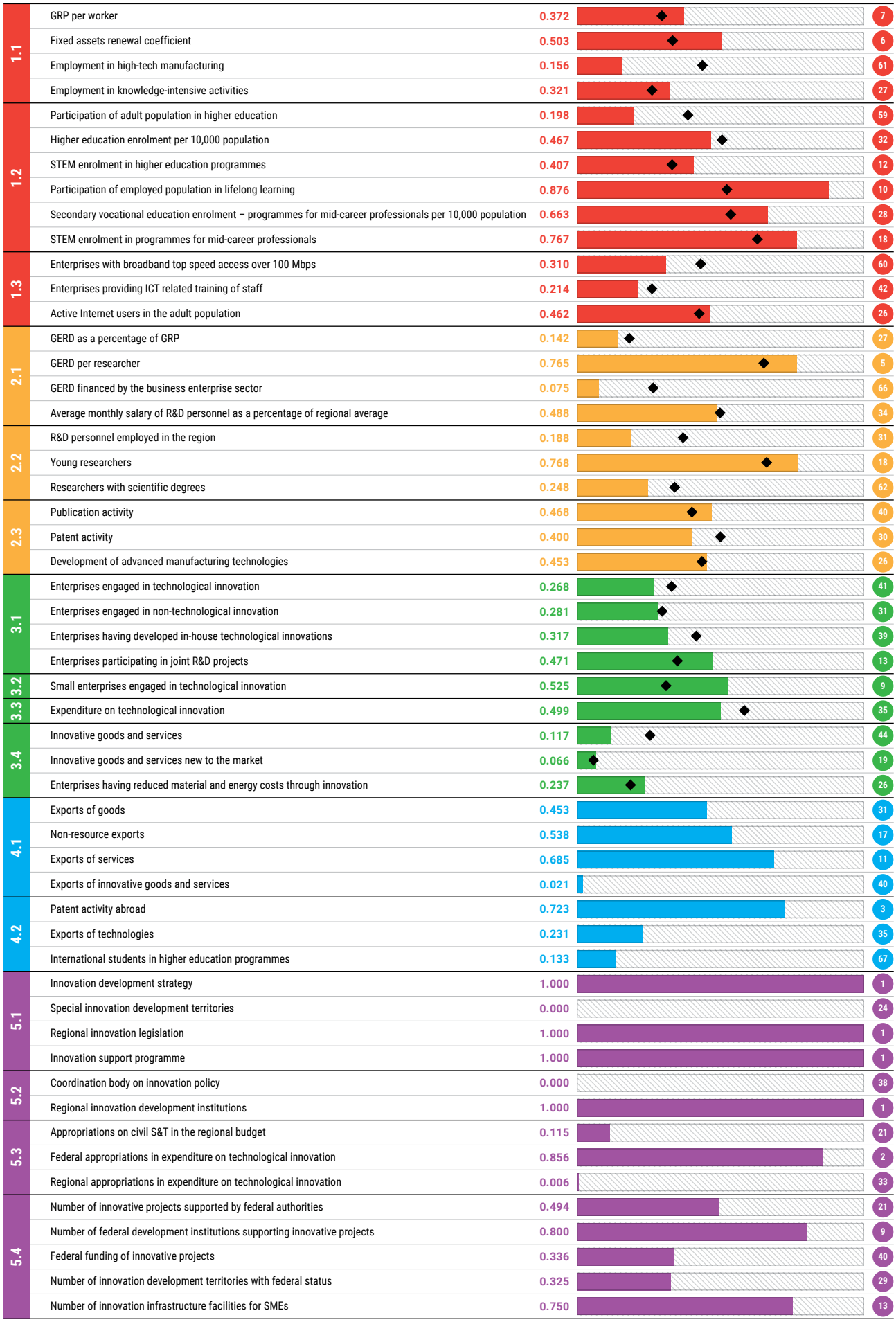
13

0.493

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.326	8
5.4	Participation in Federal STI Policy	0.541	18

Siberian Federal District

KRASNOYARSK REGION



Siberian Federal District

IRKUTSK REGION

0.355 COMPOSITE INNOVATION INDEX

33 RANK

RANK · LEADING REGION INDEX VALUE · RUSSIA AVERAGE VALUE · INDEX VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

24

0.407

1.1	Basic Macroeconomic Indicators	0.352	19
1.2	Educational Potential of the Population	0.507	22
1.3	Digitisation Potential	0.281	58

2 S&T POTENTIAL

18

0.427

2.1	R&D Funding	0.316	45
2.2	R&D Personnel	0.510	11
2.3	R&D Output	0.493	13

3 INNOVATIVE ACTIVITY

47

0.226

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.254	41
3.2	Small Innovative Enterprises	0.179	57
3.3	Expenditure on Technological Innovation	0.580	23
3.4	Efficiency of Innovative Activity	0.087	62

4 EXPORT ACTIVITY

27

0.371

4.1	Export of Goods and Services	0.427	22
4.2	Export of Knowledge	0.295	36

5 QUALITY OF INNOVATION POLICY

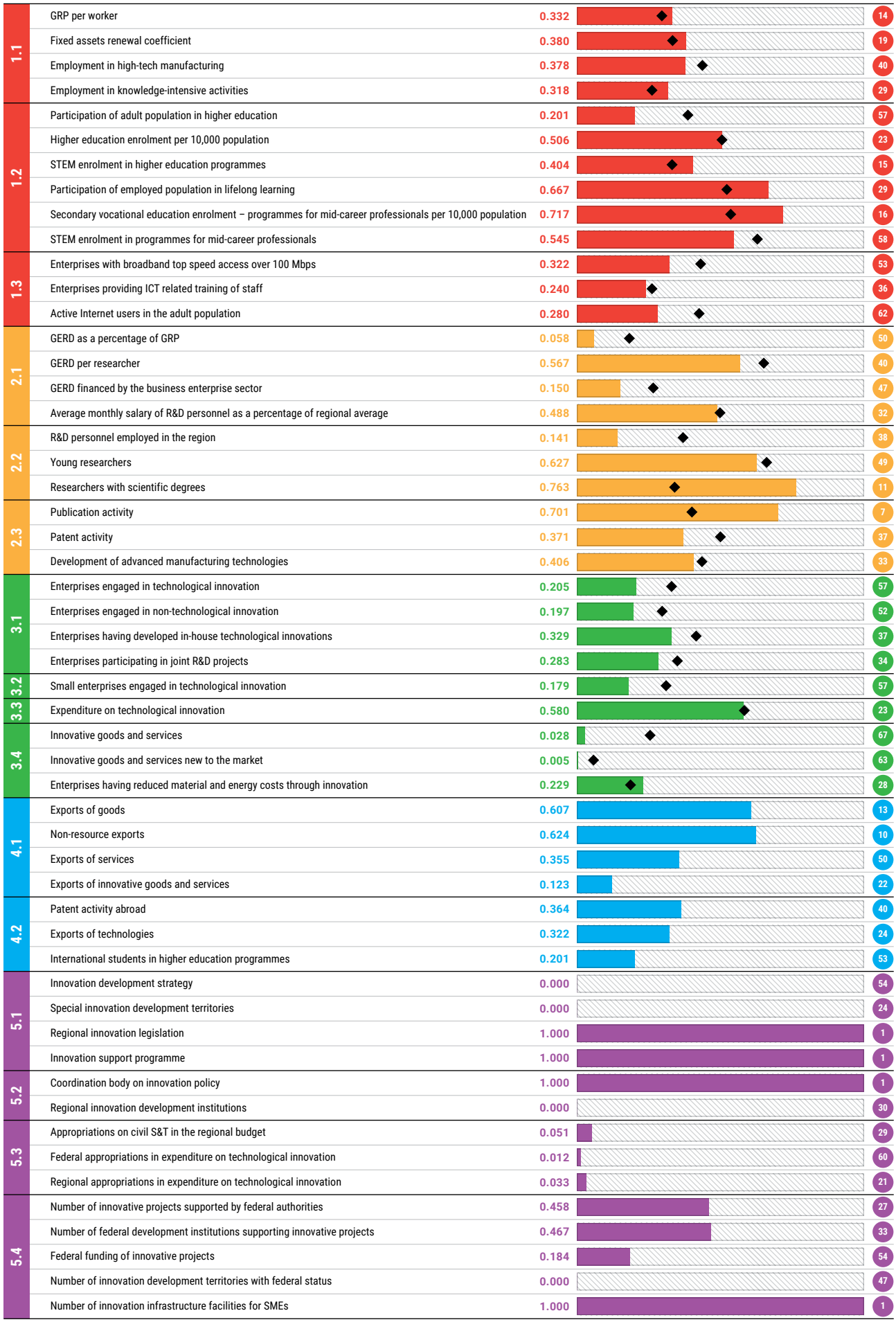
43

0.321

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.032	60
5.4	Participation in Federal STI Policy	0.422	37

Siberian Federal District

IRKUTSK REGION



Siberian Federal District

KEMEROVO REGION

0.363 COMPOSITE INNOVATION INDEX

31 RANK

RANK · LEADING REGION INDEX VALUE · INDEX VALUE · RUSSIA AVERAGE VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

22 — 0.412

1.1	Basic Macroeconomic Indicators	0.277	55
1.2	Educational Potential of the Population	0.542	14
1.3	Digitisation Potential	0.332	40

2 S&T POTENTIAL

24 — 0.414

2.1	R&D Funding	0.371	30
2.2	R&D Personnel	0.454	26
2.3	R&D Output	0.433	27

3 INNOVATIVE ACTIVITY

66 — 0.164

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.223	52
3.2	Small Innovative Enterprises	0.166	59
3.3	Expenditure on Technological Innovation	0.139	77
3.4	Efficiency of Innovative Activity	0.092	60

4 EXPORT ACTIVITY

15 — 0.445

4.1	Export of Goods and Services	0.585	2
4.2	Export of Knowledge	0.259	47

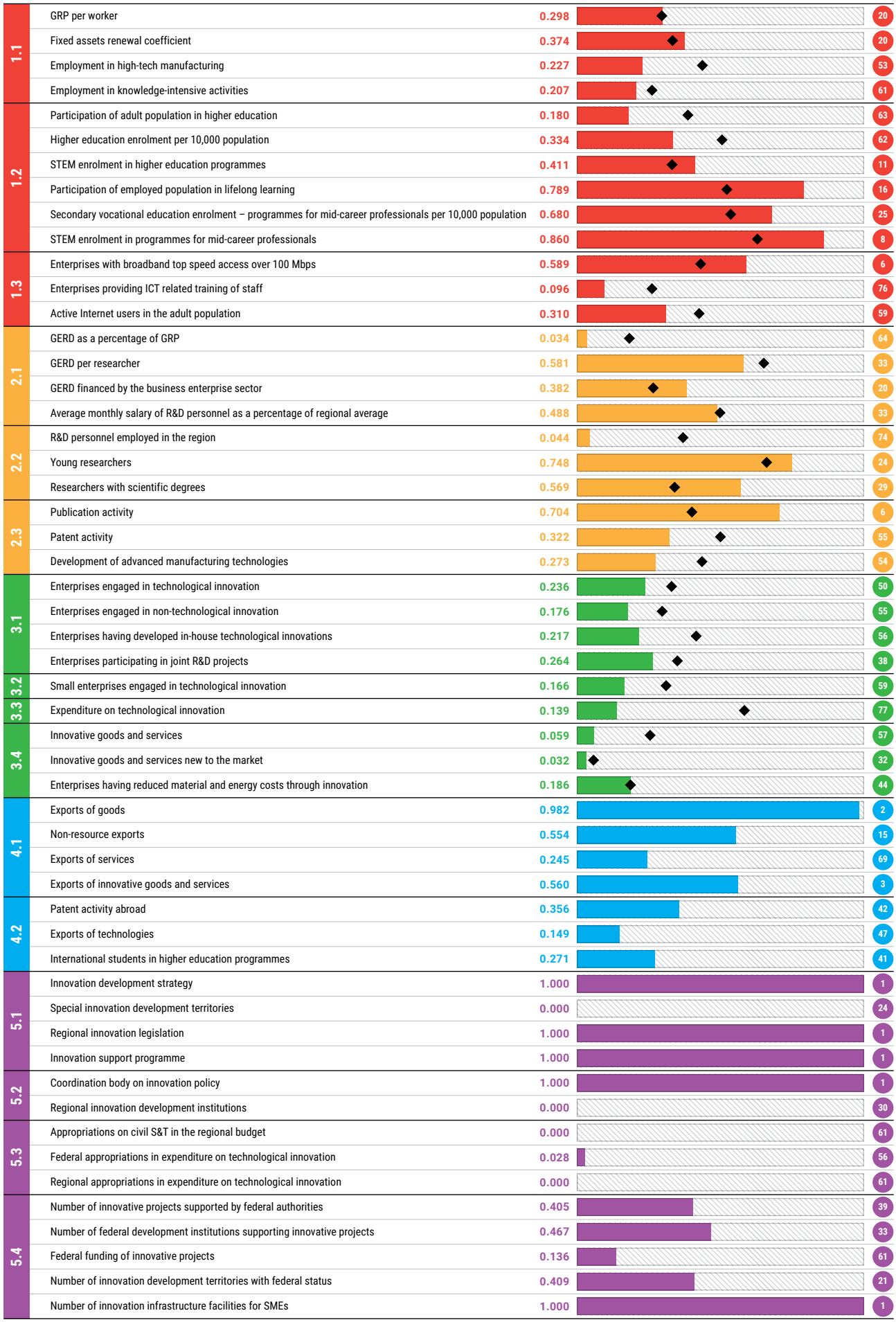
5 QUALITY OF INNOVATION POLICY

32 — 0.370

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.009	74
5.4	Participation in Federal STI Policy	0.483	24

Siberian Federal District

KEMEROVO REGION



Siberian Federal District

NOVOSIBIRSK REGION

0.441 COMPOSITE INNOVATION INDEX

8 RANK

RANK · LEADING REGION INDEX VALUE · RUSSIA AVERAGE VALUE · INDEX VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

38

0.393

1.1	Basic Macroeconomic Indicators	0.303	45
1.2	Educational Potential of the Population	0.471	43
1.3	Digitisation Potential	0.355	31

2 S&T POTENTIAL

8

0.503

2.1	R&D Funding	0.397	23
2.2	R&D Personnel	0.596	5
2.3	R&D Output	0.552	7

3 INNOVATIVE ACTIVITY

37

0.270

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.350	27
3.2	Small Innovative Enterprises	0.140	66
3.3	Expenditure on Technological Innovation	0.396	43
3.4	Efficiency of Innovative Activity	0.165	32

4 EXPORT ACTIVITY

7

0.462

4.1	Export of Goods and Services	0.379	34
4.2	Export of Knowledge	0.574	6

5 QUALITY OF INNOVATION POLICY

3

0.582

5.1	Regulatory Framework for Innovation Policy	1.000	1
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.139	25
5.4	Participation in Federal STI Policy	0.781	3

Siberian Federal District

NOVOSIBIRSK REGION

1.1	GRP per worker	0.246	30
	Fixed assets renewal coefficient	0.275	40
	Employment in high-tech manufacturing	0.445	35
	Employment in knowledge-intensive activities	0.248	54
1.2	Participation of adult population in higher education	0.407	20
	Higher education enrolment per 10,000 population	0.633	10
	STEM enrolment in higher education programmes	0.365	28
	Participation of employed population in lifelong learning	0.286	64
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.522	55
	STEM enrolment in programmes for mid-career professionals	0.614	51
1.3	Enterprises with broadband top speed access over 100 Mbps	0.405	32
	Enterprises providing ICT related training of staff	0.158	57
	Active Internet users in the adult population	0.500	22
2.1	GERD as a percentage of GRP	0.313	7
	GERD per researcher	0.563	41
	GERD financed by the business enterprise sector	0.179	41
	Average monthly salary of R&D personnel as a percentage of regional average	0.531	25
2.2	R&D personnel employed in the region	0.598	7
	Young researchers	0.598	55
	Researchers with scientific degrees	0.593	27
2.3	Publication activity	0.663	8
	Patent activity	0.523	11
	Development of advanced manufacturing technologies	0.469	20
3.1	Enterprises engaged in technological innovation	0.290	38
	Enterprises engaged in non-technological innovation	0.253	43
	Enterprises having developed in-house technological innovations	0.458	25
	Enterprises participating in joint R&D projects	0.398	18
3.2	Small enterprises engaged in technological innovation	0.140	66
3.3	Expenditure on technological innovation	0.396	43
3.4	Innovative goods and services	0.294	26
	Innovative goods and services new to the market	0.020	43
	Enterprises having reduced material and energy costs through innovation	0.182	45
4.1	Exports of goods	0.342	46
	Non-resource exports	0.318	46
	Exports of services	0.769	8
	Exports of innovative goods and services	0.086	28
4.2	Patent activity abroad	0.697	4
	Exports of technologies	0.580	4
	International students in higher education programmes	0.445	17
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.003	55
	Federal appropriations in expenditure on technological innovation	0.389	19
	Regional appropriations in expenditure on technological innovation	0.024	25
5.4	Number of innovative projects supported by federal authorities	0.913	3
	Number of federal development institutions supporting innovative projects	0.933	5
	Federal funding of innovative projects	0.842	3
	Number of innovation development territories with federal status	0.468	14
	Number of innovation infrastructure facilities for SMEs	0.750	13

Siberian Federal District

OMSK REGION

0.370 COMPOSITE INNOVATION INDEX

28 RANK

RANK · LEADING REGION INDEX VALUE · INDEX VALUE · RUSSIA AVERAGE VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

12 — 0.453

1.1	Basic Macroeconomic Indicators	0.293	49
1.2	Educational Potential of the Population	0.621	4
1.3	Digitisation Potential	0.329	42

2 S&T POTENTIAL

17 — 0.440

2.1	R&D Funding	0.512	8
2.2	R&D Personnel	0.383	63
2.3	R&D Output	0.402	36

3 INNOVATIVE ACTIVITY

33 — 0.289

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.312	33
3.2	Small Innovative Enterprises	0.307	33
3.3	Expenditure on Technological Innovation	0.813	5
3.4	Efficiency of Innovative Activity	0.078	66

4 EXPORT ACTIVITY

12 — 0.451

4.1	Export of Goods and Services	0.359	37
4.2	Export of Knowledge	0.575	5

5 QUALITY OF INNOVATION POLICY

65 — 0.207

5.1	Regulatory Framework for Innovation Policy	0.250	70
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.033	59
5.4	Participation in Federal STI Policy	0.344	46

Siberian Federal District

OMSK REGION

1.1	GRP per worker	0.232	38
	Fixed assets renewal coefficient	0.228	54
	Employment in high-tech manufacturing	0.419	37
	Employment in knowledge-intensive activities	0.294	34
1.2	Participation of adult population in higher education	0.151	70
	Higher education enrolment per 10,000 population	0.719	5
	STEM enrolment in higher education programmes	0.378	21
	Participation of employed population in lifelong learning	0.977	3
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.876	4
	STEM enrolment in programmes for mid-career professionals	0.627	49
1.3	Enterprises with broadband top speed access over 100 Mbps	0.339	49
	Enterprises providing ICT related training of staff	0.204	48
	Active Internet users in the adult population	0.445	31
2.1	GERD as a percentage of GRP	0.153	24
	GERD per researcher	0.684	11
	GERD financed by the business enterprise sector	0.628	6
	Average monthly salary of R&D personnel as a percentage of regional average	0.584	17
2.2	R&D personnel employed in the region	0.195	30
	Young researchers	0.760	20
	Researchers with scientific degrees	0.195	68
2.3	Publication activity	0.484	28
	Patent activity	0.368	38
	Development of advanced manufacturing technologies	0.353	42
3.1	Enterprises engaged in technological innovation	0.302	32
	Enterprises engaged in non-technological innovation	0.317	28
	Enterprises having developed in-house technological innovations	0.334	36
	Enterprises participating in joint R&D projects	0.295	32
3.2	Small enterprises engaged in technological innovation	0.307	33
3.3	Expenditure on technological innovation	0.813	5
3.4	Innovative goods and services	0.101	48
	Innovative goods and services new to the market	0.020	44
	Enterprises having reduced material and energy costs through innovation	0.111	72
4.1	Exports of goods	0.246	61
	Non-resource exports	0.312	48
	Exports of services	0.461	28
	Exports of innovative goods and services	0.415	12
4.2	Patent activity abroad	0.303	46
	Exports of technologies	0.430	12
	International students in higher education programmes	0.993	3
5.1	Innovation development strategy	0.000	54
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	0.000	69
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.000	59
	Federal appropriations in expenditure on technological innovation	0.092	42
	Regional appropriations in expenditure on technological innovation	0.007	32
5.4	Number of innovative projects supported by federal authorities	0.434	32
	Number of federal development institutions supporting innovative projects	0.333	44
	Federal funding of innovative projects	0.484	27
	Number of innovation development territories with federal status	0.468	14
	Number of innovation infrastructure facilities for SMEs	0.000	69

Siberian Federal District

TOMSK REGION

0.531 COMPOSITE INNOVATION INDEX

4 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

4

0.519

1.1	Basic Macroeconomic Indicators	0.332	27
1.2	Educational Potential of the Population	0.687	1
1.3	Digitisation Potential	0.433	14

2 S&T POTENTIAL

1

0.600

2.1	R&D Funding	0.471	13
2.2	R&D Personnel	0.662	2
2.3	R&D Output	0.712	2

3 INNOVATIVE ACTIVITY

4

0.505

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.691	5
3.2	Small Innovative Enterprises	0.543	7
3.3	Expenditure on Technological Innovation	0.781	6
3.4	Efficiency of Innovative Activity	0.153	36

4 EXPORT ACTIVITY

18

0.420

4.1	Export of Goods and Services	0.198	68
4.2	Export of Knowledge	0.717	1

5 QUALITY OF INNOVATION POLICY

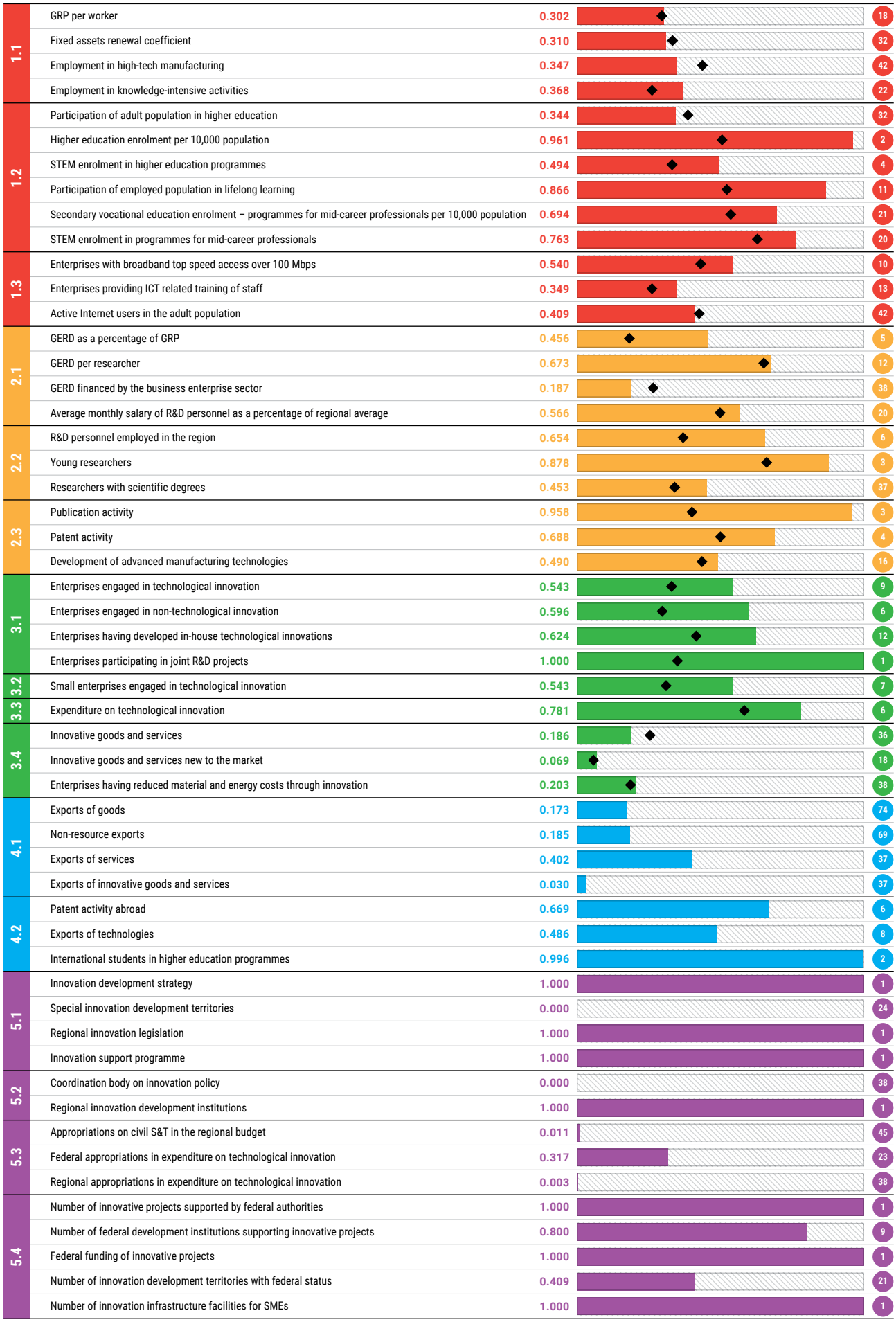
4

0.579

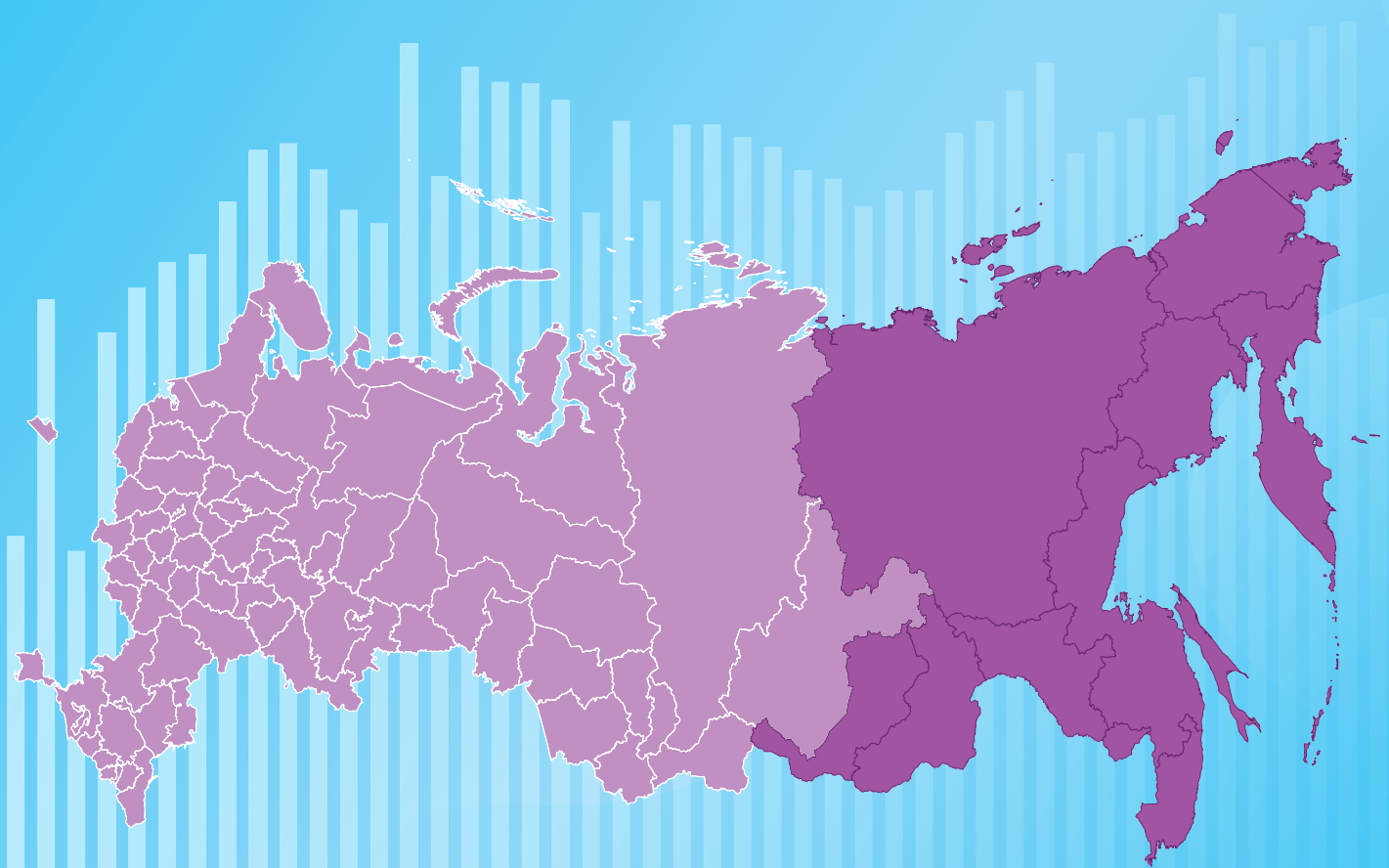
5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.111	34
5.4	Participation in Federal STI Policy	0.842	1

Siberian Federal District

TOMSK REGION



FAR EASTERN FEDERAL DISTRICT



Far Eastern Federal District

REPUBLIC OF BURYATIA

0.330 COMPOSITE INNOVATION INDEX

43 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

39

0.393

1.1	Basic Macroeconomic Indicators	0.338	21
1.2	Educational Potential of the Population	0.508	21
1.3	Digitisation Potential	0.233	76

2 S&T POTENTIAL

34

0.388

2.1	R&D Funding	0.265	66
2.2	R&D Personnel	0.540	8
2.3	R&D Output	0.400	37

3 INNOVATIVE ACTIVITY

46

0.238

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.233	49
3.2	Small Innovative Enterprises	0.470	10
3.3	Expenditure on Technological Innovation	0.462	38
3.4	Efficiency of Innovative Activity	0.093	59

4 EXPORT ACTIVITY

69

0.167

4.1	Export of Goods and Services	0.269	51
4.2	Export of Knowledge	0.031	77

5 QUALITY OF INNOVATION POLICY

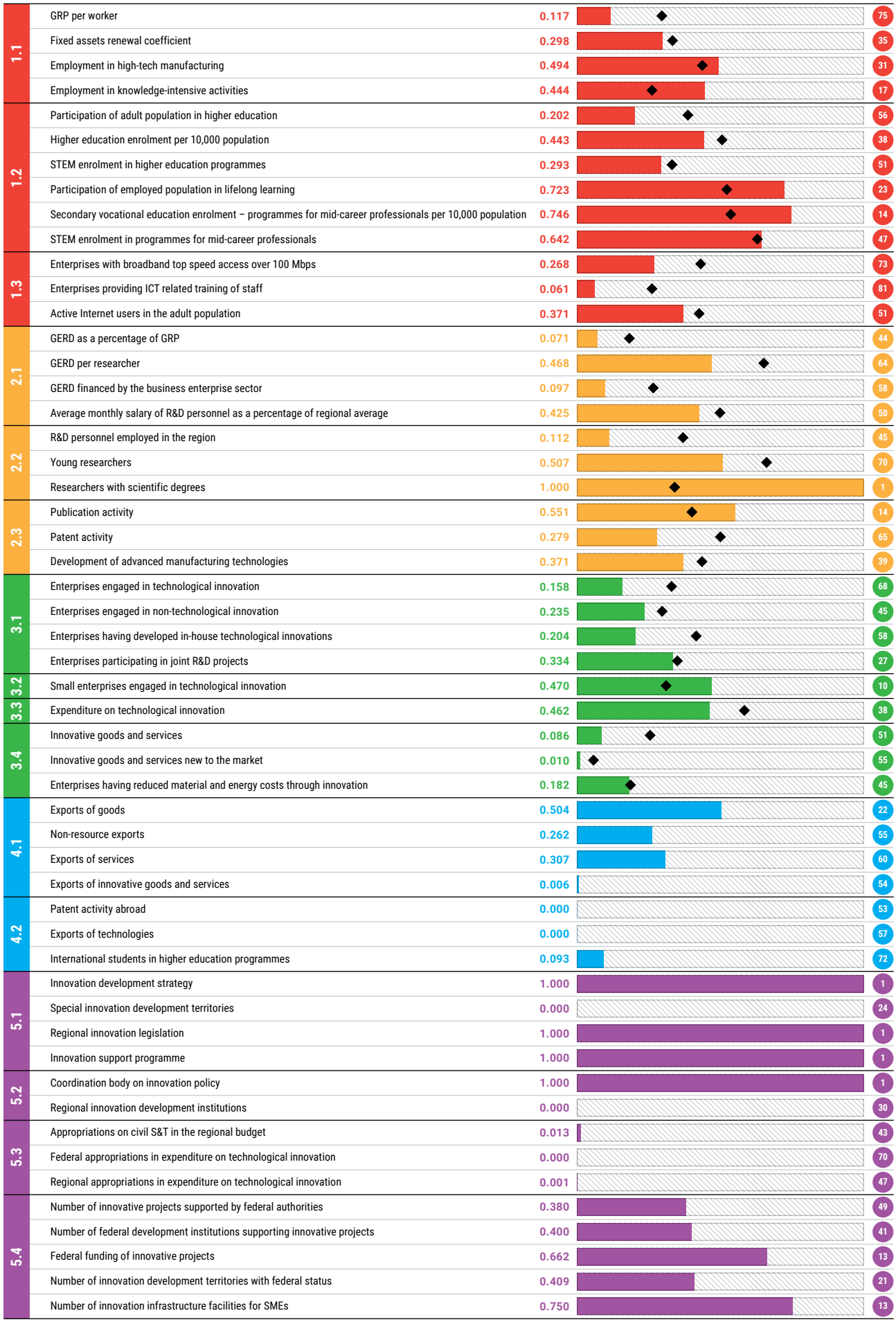
27

0.386

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.005	76
5.4	Participation in Federal STI Policy	0.520	19

Far Eastern Federal District

REPUBLIC OF BURYATIA



Far Eastern Federal District

REPUBLIC OF SAKHA (YAKUTIA)

0.316 COMPOSITE INNOVATION INDEX

55 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE

RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

15

0.437

1.1	Basic Macroeconomic Indicators	0.296	47
1.2	Educational Potential of the Population	0.500	26
1.3	Digitisation Potential	0.498	6

2 S&T POTENTIAL

55

0.348

2.1	R&D Funding	0.296	53
2.2	R&D Personnel	0.474	17
2.3	R&D Output	0.290	65

3 INNOVATIVE ACTIVITY

55

0.201

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.294	38
3.2	Small Innovative Enterprises	0.137	69
3.3	Expenditure on Technological Innovation	0.259	60
3.4	Efficiency of Innovative Activity	0.077	67

4 EXPORT ACTIVITY

51

0.255

4.1	Export of Goods and Services	0.284	47
4.2	Export of Knowledge	0.216	52

5 QUALITY OF INNOVATION POLICY

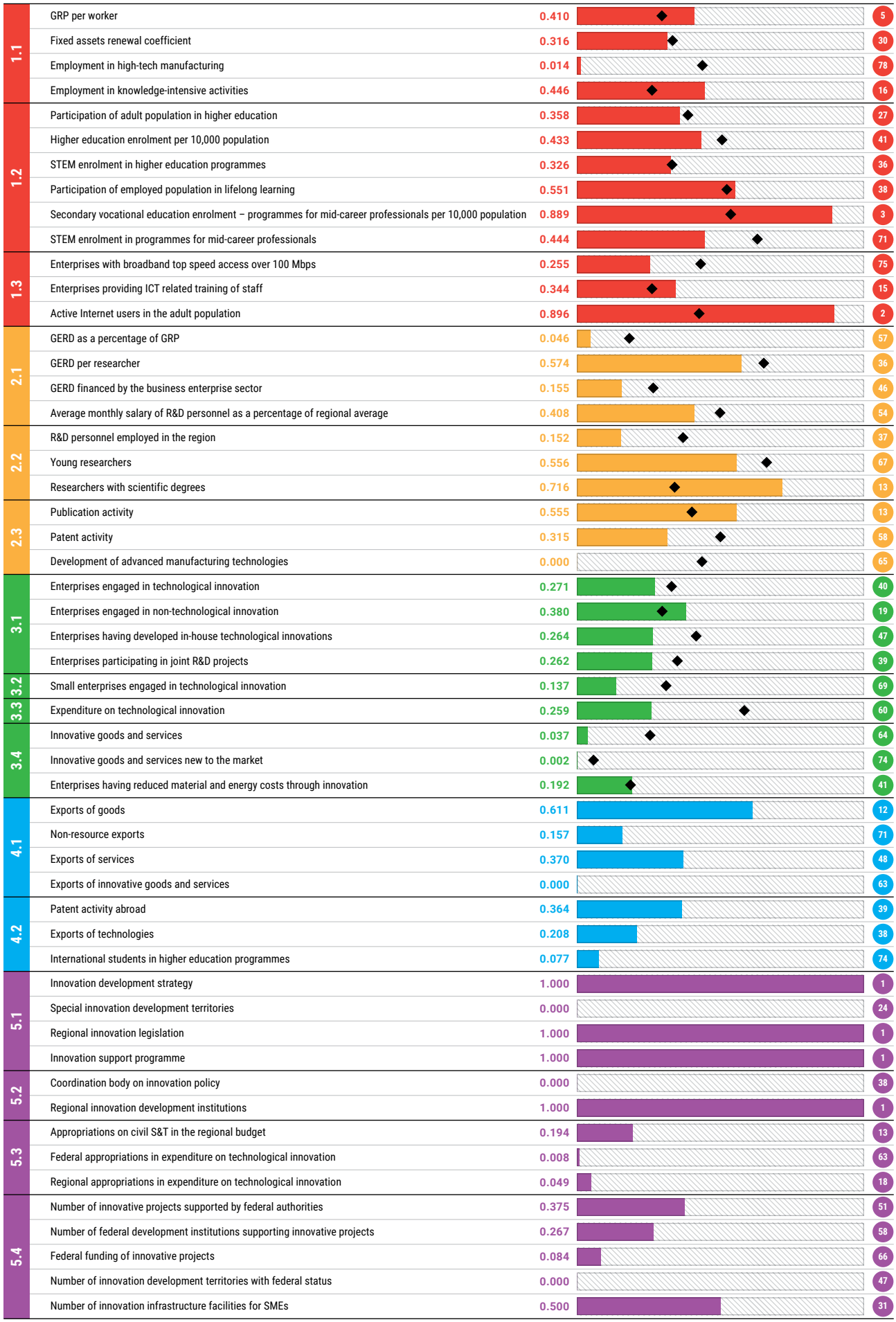
53

0.273

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.084	43
5.4	Participation in Federal STI Policy	0.245	63

Far Eastern Federal District

REPUBLIC OF SAKHA (YAKUTIA)



Far Eastern Federal District

TRANS-BAIKAL REGION

0.249 COMPOSITE INNOVATION INDEX

73 RANK

RANK · LEADING REGION INDEX VALUE · RUSSIA AVERAGE VALUE · INDEX VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

71 — 0.323

1.1	Basic Macroeconomic Indicators	0.297	46
1.2	Educational Potential of the Population	0.374	71
1.3	Digitisation Potential	0.255	69

2 S&T POTENTIAL

78 — 0.292

2.1	R&D Funding	0.285	60
2.2	R&D Personnel	0.370	66
2.3	R&D Output	0.225	77

3 INNOVATIVE ACTIVITY

78 — 0.120

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.090	81
3.2	Small Innovative Enterprises	0.233	49
3.3	Expenditure on Technological Innovation	0.326	50
3.4	Efficiency of Innovative Activity	0.056	75

4 EXPORT ACTIVITY

49 — 0.258

4.1	Export of Goods and Services	0.444	19
4.2	Export of Knowledge	0.010	81

5 QUALITY OF INNOVATION POLICY

63 — 0.220

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.236	12
5.4	Participation in Federal STI Policy	0.148	74

Far Eastern Federal District

TRANS-BAIKAL REGION

Far Eastern Federal District

KAMCHATKA REGION

0.300 COMPOSITE INNOVATION INDEX

58 RANK

RANK · LEADING REGION INDEX VALUE · INDEX VALUE · RUSSIA AVERAGE VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

28

0.400

1.1	Basic Macroeconomic Indicators	0.239	71
1.2	Educational Potential of the Population	0.515	19
1.3	Digitisation Potential	0.385	23

2 S&T POTENTIAL

49

0.357

2.1	R&D Funding	0.276	65
2.2	R&D Personnel	0.451	27
2.3	R&D Output	0.371	47

3 INNOVATIVE ACTIVITY

49

0.221

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.303	36
3.2	Small Innovative Enterprises	0.273	41
3.3	Expenditure on Technological Innovation	0.264	59
3.4	Efficiency of Innovative Activity	0.080	64

4 EXPORT ACTIVITY

62

0.206

4.1	Export of Goods and Services	0.351	39
4.2	Export of Knowledge	0.013	80

5 QUALITY OF INNOVATION POLICY

57

0.251

5.1	Regulatory Framework for Innovation Policy	0.500	49
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.019	69
5.4	Participation in Federal STI Policy	0.291	55

Far Eastern Federal District

KAMCHATKA REGION

1.1	GRP per worker	0.193		50
	Fixed assets renewal coefficient	0.339		28
	Employment in high-tech manufacturing	0.004		82
	Employment in knowledge-intensive activities	0.421		19
1.2	Participation of adult population in higher education	0.627		7
	Higher education enrolment per 10,000 population	0.279		71
	STEM enrolment in higher education programmes	0.314		41
	Participation of employed population in lifelong learning	0.639		31
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.588		47
	STEM enrolment in programmes for mid-career professionals	0.641		48
1.3	Enterprises with broadband top speed access over 100 Mbps	0.180		82
	Enterprises providing ICT related training of staff	0.464		7
	Active Internet users in the adult population	0.511		19
2.1	GERD as a percentage of GRP	0.099		35
	GERD per researcher	0.569		39
	GERD financed by the business enterprise sector	0.015		75
	Average monthly salary of R&D personnel as a percentage of regional average	0.421		52
2.2	R&D personnel employed in the region	0.212		26
	Young researchers	0.699		32
	Researchers with scientific degrees	0.444		39
2.3	Publication activity	0.474		33
	Patent activity	0.216		73
	Development of advanced manufacturing technologies	0.422		31
3.1	Enterprises engaged in technological innovation	0.432		16
	Enterprises engaged in non-technological innovation	0.270		36
	Enterprises having developed in-house technological innovations	0.273		45
	Enterprises participating in joint R&D projects	0.238		45
3.2	Small enterprises engaged in technological innovation	0.273		41
3.3	Expenditure on technological innovation	0.264		59
3.4	Innovative goods and services	0.063		56
	Innovative goods and services new to the market	0.010		56
	Enterprises having reduced material and energy costs through innovation	0.167		52
4.1	Exports of goods	0.496		24
	Non-resource exports	0.613		11
	Exports of services	0.295		64
	Exports of innovative goods and services	0.000		64
4.2	Patent activity abroad	0.000		53
	Exports of technologies	0.000		57
	International students in higher education programmes	0.038		80
5.1	Innovation development strategy	1.000		1
	Special innovation development territories	0.000		24
	Regional innovation legislation	1.000		1
	Innovation support programme	0.000		69
5.2	Coordination body on innovation policy	1.000		1
	Regional innovation development institutions	0.000		30
5.3	Appropriations on civil S&T in the regional budget	0.003		57
	Federal appropriations in expenditure on technological innovation	0.054		48
	Regional appropriations in expenditure on technological innovation	0.001		46
5.4	Number of innovative projects supported by federal authorities	0.539		15
	Number of federal development institutions supporting innovative projects	0.200		63
	Federal funding of innovative projects	0.214		51
	Number of innovation development territories with federal status	0.000		47
	Number of innovation infrastructure facilities for SMEs	0.500		31

Far Eastern Federal District

PRIMORSKY REGION

0.337 COMPOSITE INNOVATION INDEX

40 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

46

0.380

1.1	Basic Macroeconomic Indicators	0.206	81
1.2	Educational Potential of the Population	0.516	18
1.3	Digitisation Potential	0.338	38

2 S&T POTENTIAL

19

0.420

2.1	R&D Funding	0.347	38
2.2	R&D Personnel	0.494	12
2.3	R&D Output	0.445	19

3 INNOVATIVE ACTIVITY

74

0.149

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.185	60
3.2	Small Innovative Enterprises	0.106	72
3.3	Expenditure on Technological Innovation	0.291	55
3.4	Efficiency of Innovative Activity	0.067	70

4 EXPORT ACTIVITY

17

0.429

4.1	Export of Goods and Services	0.516	7
4.2	Export of Knowledge	0.313	29

5 QUALITY OF INNOVATION POLICY

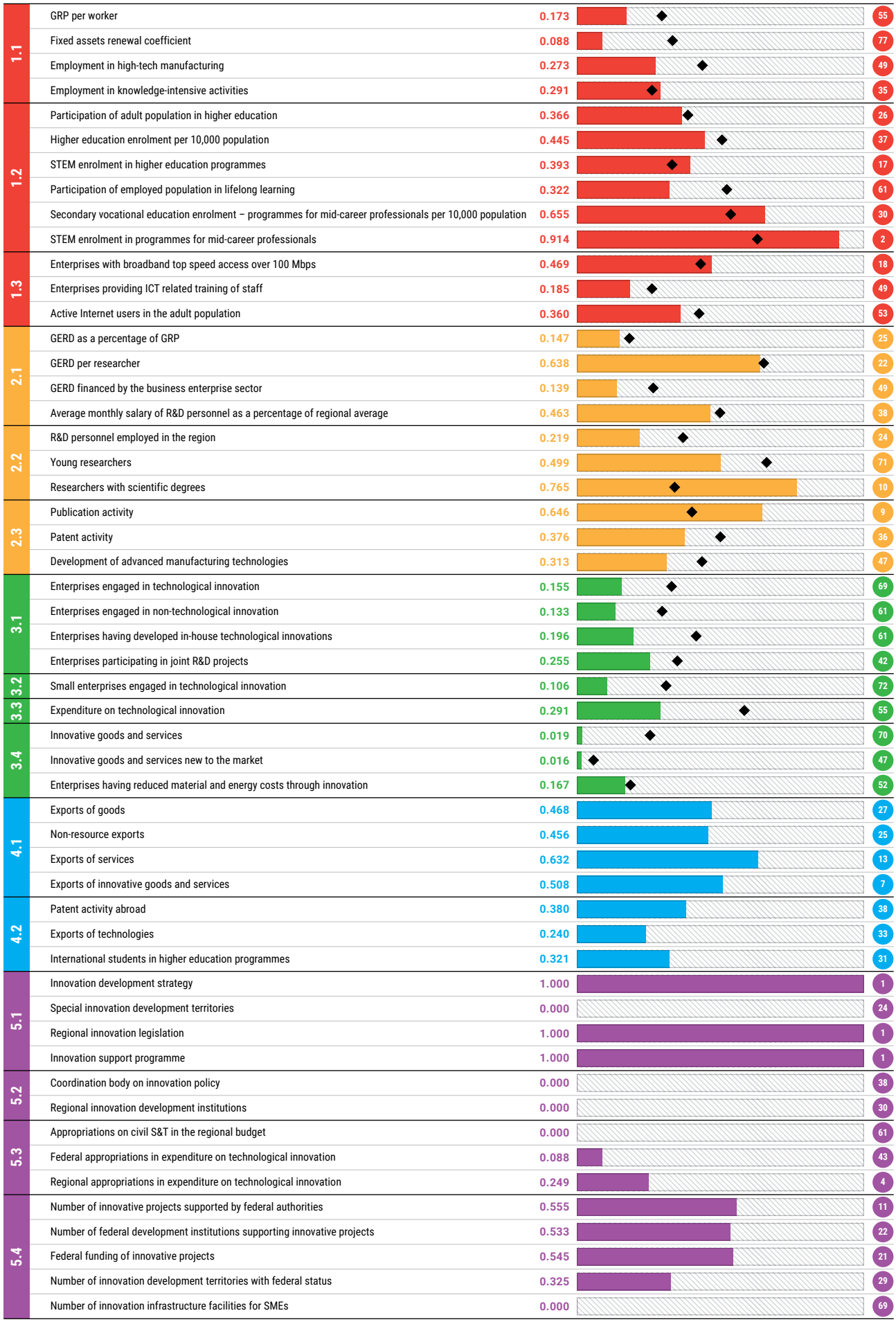
49

0.305

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.112	33
5.4	Participation in Federal STI Policy	0.392	41

Far Eastern Federal District

PRIMORSKY REGION

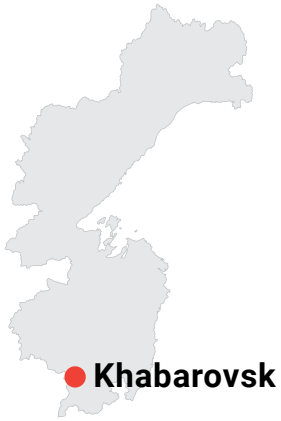


Far Eastern Federal District

KHABAROVSK REGION

0.408 COMPOSITE INNOVATION INDEX

16 RANK



RANK · LEADING REGION INDEX VALUE · RUSSIA AVERAGE VALUE · INDEX VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

6

0.482

1.1	Basic Macroeconomic Indicators	0.269	59
1.2	Educational Potential of the Population	0.662	2
1.3	Digitisation Potential	0.405	18

2 S&T POTENTIAL

32

0.395

2.1	R&D Funding	0.343	39
2.2	R&D Personnel	0.438	39
2.3	R&D Output	0.423	30

3 INNOVATIVE ACTIVITY

15

0.385

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.361	25
3.2	Small Innovative Enterprises	0.140	66
3.3	Expenditure on Technological Innovation	0.638	15
3.4	Efficiency of Innovative Activity	0.415	3

4 EXPORT ACTIVITY

43

0.292

4.1	Export of Goods and Services	0.461	17
4.2	Export of Knowledge	0.067	74

5 QUALITY OF INNOVATION POLICY

18

0.424

5.1	Regulatory Framework for Innovation Policy	1.000	1
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.133	29
5.4	Participation in Federal STI Policy	0.469	27

Far Eastern Federal District

KHABAROVSK REGION

1.1	GRP per worker	0.215	44
	Fixed assets renewal coefficient	0.193	60
	Employment in high-tech manufacturing	0.418	38
	Employment in knowledge-intensive activities	0.250	53
1.2	Participation of adult population in higher education	0.438	14
	Higher education enrolment per 10,000 population	0.629	11
	STEM enrolment in higher education programmes	0.376	24
	Participation of employed population in lifelong learning	0.777	19
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.755	12
	STEM enrolment in programmes for mid-career professionals	1.000	1
1.3	Enterprises with broadband top speed access over 100 Mbps	0.218	78
	Enterprises providing ICT related training of staff	0.472	6
	Active Internet users in the adult population	0.525	16
2.1	GERD as a percentage of GRP	0.146	26
	GERD per researcher	0.897	3
	GERD financed by the business enterprise sector	0.023	73
	Average monthly salary of R&D personnel as a percentage of regional average	0.304	75
2.2	R&D personnel employed in the region	0.095	51
	Young researchers	0.468	75
	Researchers with scientific degrees	0.750	12
2.3	Publication activity	0.472	36
	Patent activity	0.367	39
	Development of advanced manufacturing technologies	0.430	29
3.1	Enterprises engaged in technological innovation	0.294	37
	Enterprises engaged in non-technological innovation	0.365	20
	Enterprises having developed in-house technological innovations	0.246	51
	Enterprises participating in joint R&D projects	0.538	7
3.2	Small enterprises engaged in technological innovation	0.140	66
3.3	Expenditure on technological innovation	0.638	15
3.4	Innovative goods and services	0.839	3
	Innovative goods and services new to the market	0.180	5
	Enterprises having reduced material and energy costs through innovation	0.227	29
4.1	Exports of goods	0.378	40
	Non-resource exports	0.312	49
	Exports of services	0.465	26
	Exports of innovative goods and services	0.689	2
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.000	57
	International students in higher education programmes	0.200	54
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	1.000	1
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	1.000	1
5.3	Appropriations on civil S&T in the regional budget	0.254	8
	Federal appropriations in expenditure on technological innovation	0.039	52
	Regional appropriations in expenditure on technological innovation	0.106	8
5.4	Number of innovative projects supported by federal authorities	0.380	48
	Number of federal development institutions supporting innovative projects	0.400	41
	Federal funding of innovative projects	0.490	26
	Number of innovation development territories with federal status	0.325	29
	Number of innovation infrastructure facilities for SMEs	0.750	13

Far Eastern Federal District

AMUR REGION

0.242 COMPOSITE INNOVATION INDEX

74 RANK

RANK · LEADING REGION INDEX VALUE · RUSSIA AVERAGE VALUE · INDEX VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

63

0.349

1.1	Basic Macroeconomic Indicators	0.168	84
1.2	Educational Potential of the Population	0.503	24
1.3	Digitisation Potential	0.282	57

2 S&T POTENTIAL

71

0.311

2.1	R&D Funding	0.244	73
2.2	R&D Personnel	0.414	47
2.3	R&D Output	0.297	62

3 INNOVATIVE ACTIVITY

73

0.153

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.161	68
3.2	Small Innovative Enterprises	0.043	78
3.3	Expenditure on Technological Innovation	0.515	31
3.4	Efficiency of Innovative Activity	0.058	73

4 EXPORT ACTIVITY

66

0.185

4.1	Export of Goods and Services	0.204	64
4.2	Export of Knowledge	0.160	61

5 QUALITY OF INNOVATION POLICY

76

0.156

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.008	75
5.4	Participation in Federal STI Policy	0.156	71

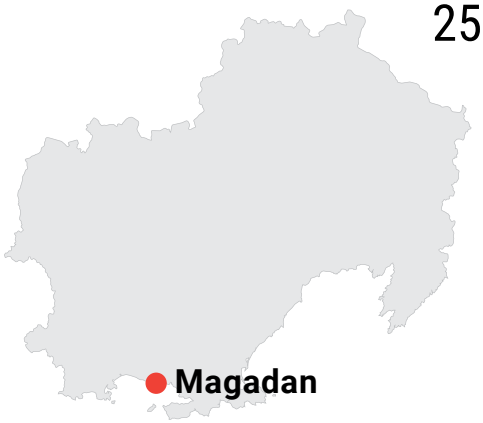
Far Eastern Federal District

AMUR REGION

1.1	GRP per worker	0.162	61
	Fixed assets renewal coefficient	0.164	66
	Employment in high-tech manufacturing	0.087	68
	Employment in knowledge-intensive activities	0.259	47
1.2	Participation of adult population in higher education	0.252	45
	Higher education enrolment per 10,000 population	0.348	57
	STEM enrolment in higher education programmes	0.305	44
	Participation of employed population in lifelong learning	0.531	40
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.780	9
	STEM enrolment in programmes for mid-career professionals	0.803	13
1.3	Enterprises with broadband top speed access over 100 Mbps	0.278	72
	Enterprises providing ICT related training of staff	0.147	60
	Active Internet users in the adult population	0.420	37
2.1	GERD as a percentage of GRP	0.030	66
	GERD per researcher	0.490	57
	GERD financed by the business enterprise sector	0.078	64
	Average monthly salary of R&D personnel as a percentage of regional average	0.379	63
2.2	R&D personnel employed in the region	0.046	73
	Young researchers	0.566	64
	Researchers with scientific degrees	0.629	21
2.3	Publication activity	0.504	24
	Patent activity	0.387	34
	Development of advanced manufacturing technologies	0.000	65
3.1	Enterprises engaged in technological innovation	0.238	49
	Enterprises engaged in non-technological innovation	0.104	68
	Enterprises having developed in-house technological innovations	0.131	71
	Enterprises participating in joint R&D projects	0.172	62
3.2	Small enterprises engaged in technological innovation	0.043	78
3.3	Expenditure on technological innovation	0.515	31
3.4	Innovative goods and services	0.030	66
	Innovative goods and services new to the market	0.002	76
	Enterprises having reduced material and energy costs through innovation	0.143	63
4.1	Exports of goods	0.276	56
	Non-resource exports	0.206	67
	Exports of services	0.335	51
	Exports of innovative goods and services	0.000	61
4.2	Patent activity abroad	0.322	45
	Exports of technologies	0.000	57
	International students in higher education programmes	0.157	65
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	0.000	38
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.006	52
	Federal appropriations in expenditure on technological innovation	0.018	59
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.215	76
	Number of federal development institutions supporting innovative projects	0.067	75
	Federal funding of innovative projects	0.000	73
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.500	31

Far Eastern Federal District

MAGADAN REGION



0.256 COMPOSITE INNOVATION INDEX

70 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

47

0.377

1.1	Basic Macroeconomic Indicators	0.268	60
1.2	Educational Potential of the Population	0.476	41
1.3	Digitisation Potential	0.326	45

2 S&T POTENTIAL

74

0.304

2.1	R&D Funding	0.246	71
2.2	R&D Personnel	0.450	30
2.3	R&D Output	0.235	76

3 INNOVATIVE ACTIVITY

50

0.218

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.236	47
3.2	Small Innovative Enterprises	0.334	31
3.3	Expenditure on Technological Innovation	0.268	58
3.4	Efficiency of Innovative Activity	0.139	43

4 EXPORT ACTIVITY

75

0.131

4.1	Export of Goods and Services	0.207	63
4.2	Export of Knowledge	0.029	78

5 QUALITY OF INNOVATION POLICY

73

0.171

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.016	70
5.4	Participation in Federal STI Policy	0.082	81

Far Eastern Federal District

MAGADAN REGION

1.1	GRP per worker	0.331	15
	Fixed assets renewal coefficient	0.310	32
	Employment in high-tech manufacturing	0.047	71
	Employment in knowledge-intensive activities	0.383	21
1.2	Participation of adult population in higher education	0.391	24
	Higher education enrolment per 10,000 population	0.394	48
	STEM enrolment in higher education programmes	0.297	48
	Participation of employed population in lifelong learning	0.435	53
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.606	41
	STEM enrolment in programmes for mid-career professionals	0.735	25
1.3	Enterprises with broadband top speed access over 100 Mbps	0.192	81
	Enterprises providing ICT related training of staff	0.156	58
	Active Internet users in the adult population	0.629	8
2.1	GERD as a percentage of GRP	0.072	43
	GERD per researcher	0.534	47
	GERD financed by the business enterprise sector	0.024	72
	Average monthly salary of R&D personnel as a percentage of regional average	0.356	70
2.2	R&D personnel employed in the region	0.239	20
	Young researchers	0.451	78
	Researchers with scientific degrees	0.660	18
2.3	Publication activity	0.453	42
	Patent activity	0.254	70
	Development of advanced manufacturing technologies	0.000	65
3.1	Enterprises engaged in technological innovation	0.263	42
	Enterprises engaged in non-technological innovation	0.300	29
	Enterprises having developed in-house technological innovations	0.182	64
	Enterprises participating in joint R&D projects	0.199	52
3.2	Small enterprises engaged in technological innovation	0.334	31
3.3	Expenditure on technological innovation	0.268	58
3.4	Innovative goods and services	0.015	73
	Innovative goods and services new to the market	0.002	77
	Enterprises having reduced material and energy costs through innovation	0.400	4
4.1	Exports of goods	0.436	35
	Non-resource exports	0.295	52
	Exports of services	0.096	80
	Exports of innovative goods and services	0.000	64
4.2	Patent activity abroad	0.000	53
	Exports of technologies	0.000	57
	International students in higher education programmes	0.088	73
5.1	Innovation development strategy	1.000	1
	Special innovation development territories	0.000	24
	Regional innovation legislation	1.000	1
	Innovation support programme	1.000	1
5.2	Coordination body on innovation policy	1.000	1
	Regional innovation development institutions	0.000	30
5.3	Appropriations on civil S&T in the regional budget	0.000	61
	Federal appropriations in expenditure on technological innovation	0.049	49
	Regional appropriations in expenditure on technological innovation	0.000	61
5.4	Number of innovative projects supported by federal authorities	0.282	67
	Number of federal development institutions supporting innovative projects	0.067	75
	Federal funding of innovative projects	0.060	68
	Number of innovation development territories with federal status	0.000	47
	Number of innovation infrastructure facilities for SMEs	0.000	69

Far Eastern Federal District

SAKHALIN REGION

0.274 COMPOSITE INNOVATION INDEX

65 RANK

RANK · LEADING REGION INDEX VALUE · RUSSIA AVERAGE VALUE · INDEX VALUE · NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

44

0.385

1.1	Basic Macroeconomic Indicators	0.265	62
1.2	Educational Potential of the Population	0.498	30
1.3	Digitisation Potential	0.320	46

2 S&T POTENTIAL

75

0.298

2.1	R&D Funding	0.249	69
2.2	R&D Personnel	0.389	58
2.3	R&D Output	0.272	69

3 INNOVATIVE ACTIVITY

58

0.194

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.117	75
3.2	Small Innovative Enterprises	0.261	43
3.3	Expenditure on Technological Innovation	0.839	3
3.4	Efficiency of Innovative Activity	0.058	74

4 EXPORT ACTIVITY

36

0.315

4.1	Export of Goods and Services	0.465	16
4.2	Export of Knowledge	0.115	65

5 QUALITY OF INNOVATION POLICY

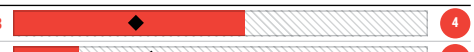
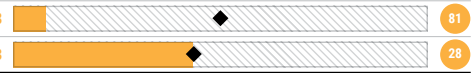
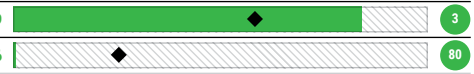
78

0.148

5.1	Regulatory Framework for Innovation Policy	0.750	14
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.024	65
5.4	Participation in Federal STI Policy	0.131	77

Far Eastern Federal District

SAKHALIN REGION

1.1	GRP per worker	0.558		4
	Fixed assets renewal coefficient	0.158		68
	Employment in high-tech manufacturing	0.005		81
	Employment in knowledge-intensive activities	0.339		23
1.2	Participation of adult population in higher education	0.272		39
	Higher education enrolment per 10,000 population	0.251		76
	STEM enrolment in higher education programmes	0.318		39
	Participation of employed population in lifelong learning	0.680		27
	Secondary vocational education enrolment – programmes for mid-career professionals per 10,000 population	0.634		35
	STEM enrolment in programmes for mid-career professionals	0.834		10
1.3	Enterprises with broadband top speed access over 100 Mbps	0.340		47
	Enterprises providing ICT related training of staff	0.276		26
	Active Internet users in the adult population	0.343		54
2.1	GERD as a percentage of GRP	0.025		68
	GERD per researcher	0.622		25
	GERD financed by the business enterprise sector	0.076		65
	Average monthly salary of R&D personnel as a percentage of regional average	0.272		80
2.2	R&D personnel employed in the region	0.105		46
	Young researchers	0.748		23
	Researchers with scientific degrees	0.314		52
2.3	Publication activity	0.304		67
	Patent activity	0.078		81
	Development of advanced manufacturing technologies	0.433		28
3.1	Enterprises engaged in technological innovation	0.165		64
	Enterprises engaged in non-technological innovation	0.032		80
	Enterprises having developed in-house technological innovations	0.130		72
	Enterprises participating in joint R&D projects	0.142		69
3.2	Small enterprises engaged in technological innovation	0.261		43
3.3	Expenditure on technological innovation	0.839		3
3.4	Innovative goods and services	0.006		80
	Innovative goods and services new to the market	0.001		82
	Enterprises having reduced material and energy costs through innovation	0.167		52
4.1	Exports of goods	1.000		1
	Non-resource exports	0.370		40
	Exports of services	0.491		24
	Exports of innovative goods and services	0.000		64
4.2	Patent activity abroad	0.000		53
	Exports of technologies	0.294		28
	International students in higher education programmes	0.050		79
5.1	Innovation development strategy	1.000		1
	Special innovation development territories	1.000		1
	Regional innovation legislation	0.000		69
	Innovation support programme	1.000		1
5.2	Coordination body on innovation policy	0.000		38
	Regional innovation development institutions	0.000		30
5.3	Appropriations on civil S&T in the regional budget	0.005		53
	Federal appropriations in expenditure on technological innovation	0.001		69
	Regional appropriations in expenditure on technological innovation	0.067		12
5.4	Number of innovative projects supported by federal authorities	0.246		72
	Number of federal development institutions supporting innovative projects	0.133		71
	Federal funding of innovative projects	0.027		72
	Number of innovation development territories with federal status	0.000		47
	Number of innovation infrastructure facilities for SMEs	0.250		52

JEWISH AUTONOMOUS REGION

0.207 COMPOSITE INNOVATION INDEX

81 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE | RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

82

0.279

1.1	Basic Macroeconomic Indicators	0.287	52
1.2	Educational Potential of the Population	0.295	80
1.3	Digitisation Potential	0.238	74

2 S&T POTENTIAL

76

0.296

2.1	R&D Funding	0.151	83
2.2	R&D Personnel	0.540	7
2.3	R&D Output	0.247	72

3 INNOVATIVE ACTIVITY

76

0.137

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.128	74
3.2	Small Innovative Enterprises	0.279	37
3.3	Expenditure on Technological Innovation	0.220	65
3.4	Efficiency of Innovative Activity	0.073	69

4 EXPORT ACTIVITY

68

0.168

4.1	Export of Goods and Services	0.212	62
4.2	Export of Knowledge	0.109	67

5 QUALITY OF INNOVATION POLICY

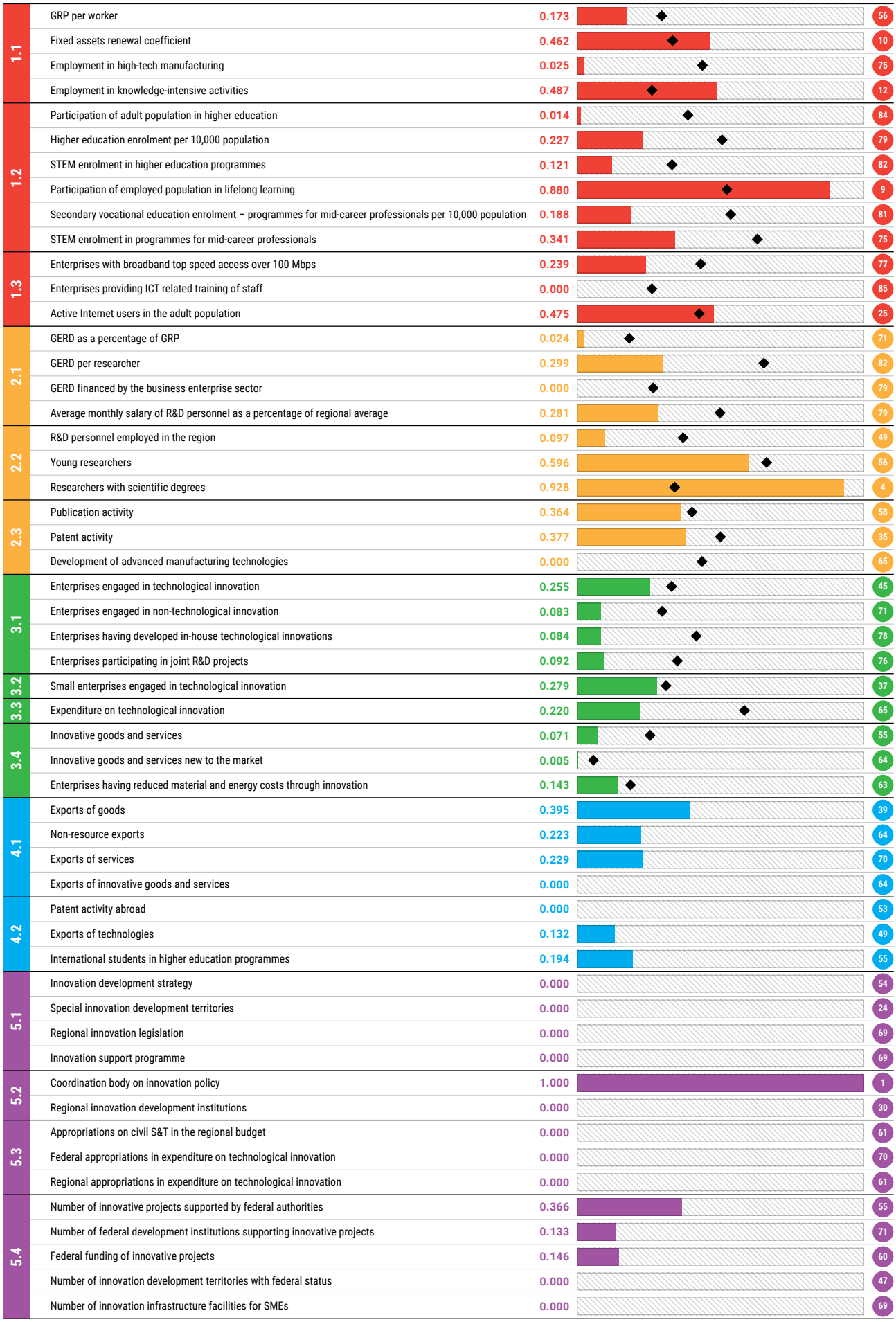
82

0.115

5.1	Regulatory Framework for Innovation Policy	0.000	83
5.2	Organisational Support for Innovation Policy	0.500	11
5.3	Public Expenditure on R&D and Innovation	0.000	83
5.4	Participation in Federal STI Policy	0.129	78

Far Eastern Federal District

JEWISH AUTONOMOUS REGION



Far Eastern Federal District

CHUKOTKA AUTONOMOUS REGION

0.121 COMPOSITE INNOVATION INDEX

85 RANK

RANK | LEADING REGION INDEX VALUE | INDEX VALUE

RUSSIA AVERAGE VALUE | NORMALISED INDICATOR VALUE

1 SOCIO-ECONOMIC CONDITIONS FOR INNOVATION

81

0.282

1.1	Basic Macroeconomic Indicators	0.258	68
1.2	Educational Potential of the Population	0.356	76
1.3	Digitisation Potential	0.169	83

2 S&T POTENTIAL

85

0.000

2.1	R&D Funding	0.000	85
2.2	R&D Personnel	0.000	85
2.3	R&D Output	0.000	85

3 INNOVATIVE ACTIVITY

67

0.163

3.1	Innovative Activity: Technological and Non-Technological Innovation	0.271	40
3.2	Small Innovative Enterprises	0.000	79
3.3	Expenditure on Technological Innovation	0.226	64
3.4	Efficiency of Innovative Activity	0.053	76

4 EXPORT ACTIVITY

77

0.114

4.1	Export of Goods and Services	0.133	74
4.2	Export of Knowledge	0.089	71

5 QUALITY OF INNOVATION POLICY

85

0.001

5.1	Regulatory Framework for Innovation Policy	0.000	83
5.2	Organisational Support for Innovation Policy	0.000	57
5.3	Public Expenditure on R&D and Innovation	0.003	79
5.4	Participation in Federal STI Policy	0.000	84

Far Eastern Federal District

CHUKOTKA AUTONOMOUS REGION

RUSSIAN REGIONAL INNOVATION SCOREBOARD

Issue 6

Editor M. Sokolova
Art director O. Vasiliev
Design G. Podzolkova, I. Tsygankov
Desk-top publishing O. Egin, V. Puchkov

National Research University Higher School of Economics
Institute for Statistical Studies and Economics of Knowledge
20 Myasnitskaya st., Moscow, 101000, Russia
Tel.: +7 (495) 621-28-73
http://issek.hse.ru, E-mail: issek@hse.ru