



MINISTRY OF EDUCATION
OF THE RUSSIAN FEDERATION



FEDERAL STATE
STATISTICS SERVICE



HSE
UNIVERSITY



HSE Institute for Statistical
Studies and Economics
of Knowledge



INDICATORS OF INNOVATION IN THE RUSSIAN FEDERATION

DATA BOOK



MINISTRY OF ECONOMIC DEVELOPMENT
OF THE RUSSIAN FEDERATION



FEDERAL STATE
STATISTICS SERVICE



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2022

INDICATORS OF INNOVATION IN THE RUSSIAN FEDERATION

DATA BOOK

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This data book contains the most recent statistical data characterising innovation processes in the economy of the Russian Federation. The methodology for the main indicators is based on the latest recommendations of international organisations in statistical measurement of innovations (Oslo Manual, 4th edition) and Community Innovation Surveys in the EU countries.

The data book provides statistical data reflecting the innovative activity of Russian enterprises, sales of product and business process innovations, input and output of innovative activities, including the degree of novelty and sales markets, sales of innovative goods and services on users' orders. The publication also includes indicators reflecting the intensity of cooperation ties with external and internal partners, features and forms of open innovations, and assessments of factors hampering innovation. Separate chapters of the data book are devoted to the innovation activity in Russian regions, environmental innovation, and international comparisons covering a wide range of indicators.

The information is broken down by types of economic activity, taking into account the level of technological efficiency of industries.

The data book includes information of the Federal State Statistics Service, Organisation for Economic Co-operation and Development (OECD), European Commission, Eurostat, national statistical agencies of foreign countries, as well as methodological and analytical studies of the HSE Institute for Statistical Studies and Economics of Knowledge.

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SYMBOLS USED IN TABLES ARE:

- ... data not available and not included in the totals,
- data not applicable,
- 0.0 insignificant value.

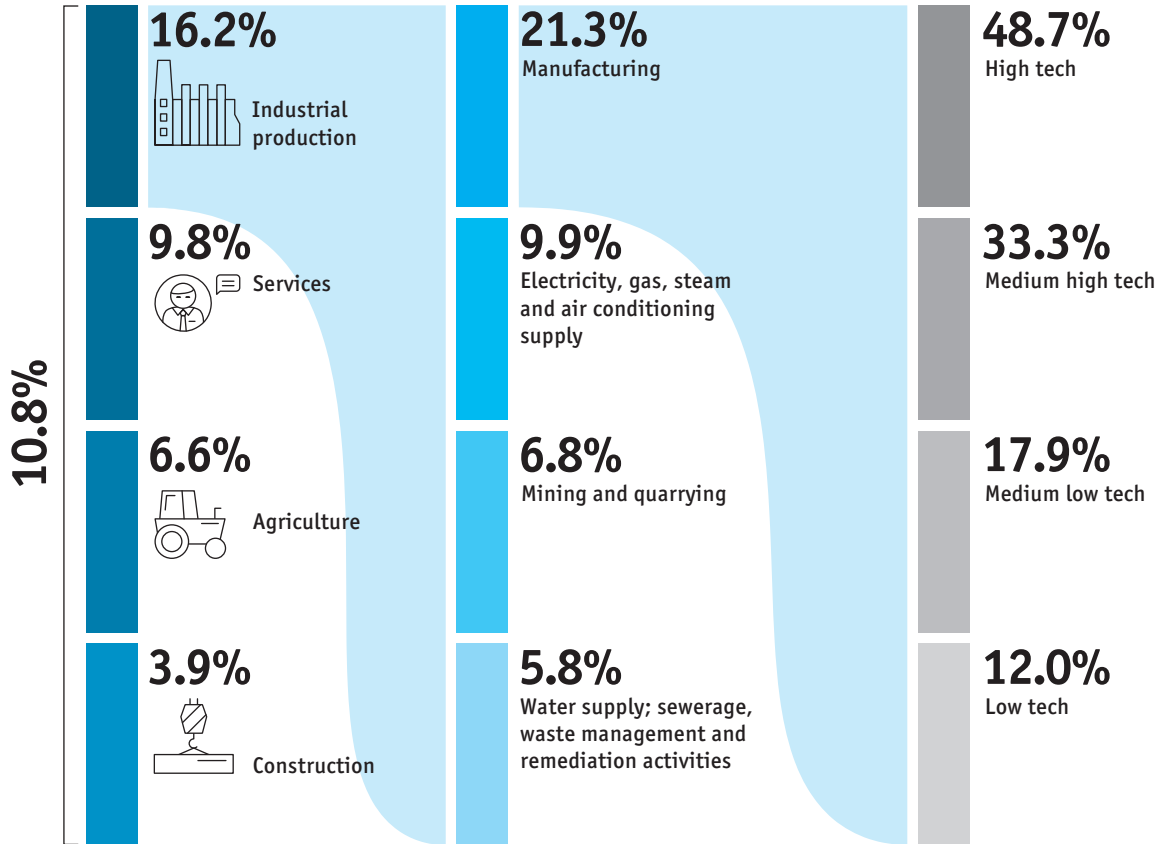
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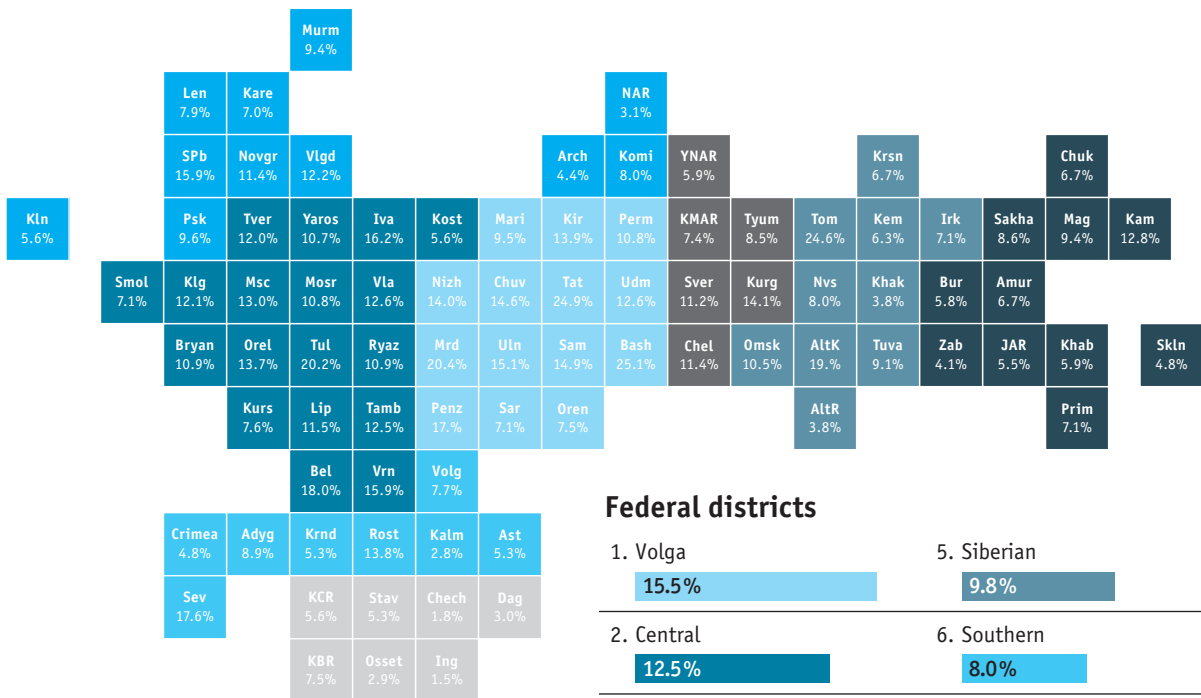


**INFOGRAPHICS ON THE
INNOVATION DEVELOPMENT:
2020 RESULTS**

INNOVATION ACTIVITY BY TYPE OF ECONOMIC ACTIVITY

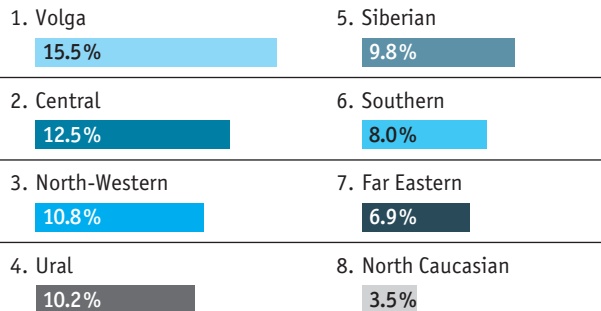
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10.8%
Russian Federation

Federal districts

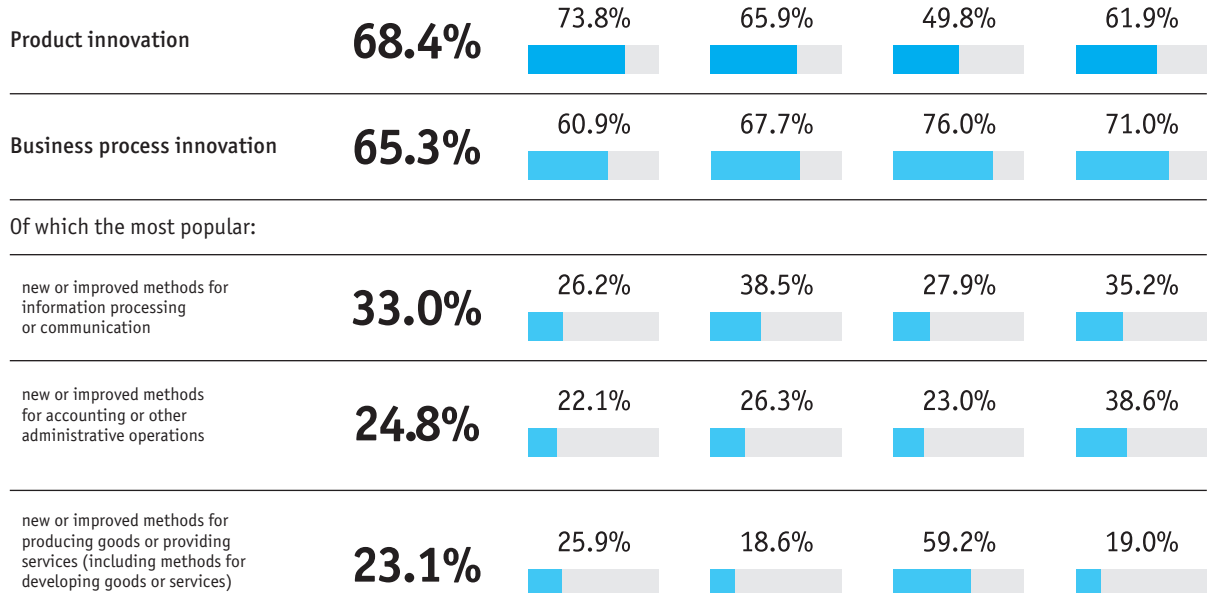


INNOVATION ACTIVITY OF ENTERPRISES
BY FEDERAL DISTRICT AND RUSSIAN REGION

12



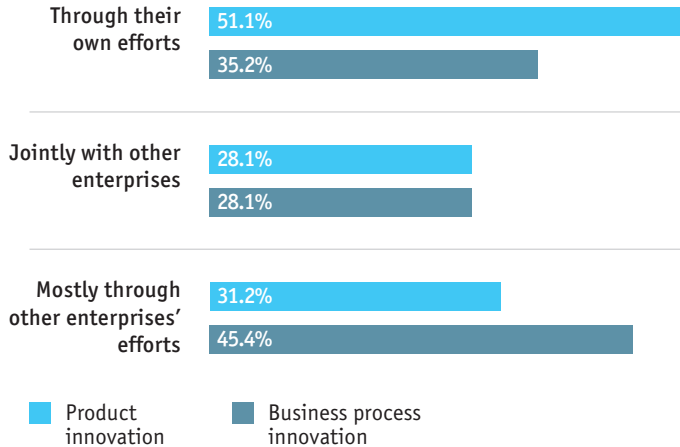
Enterprises that had:



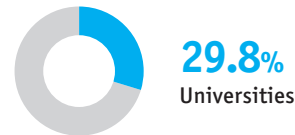
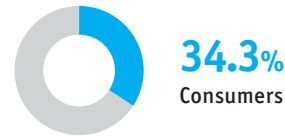
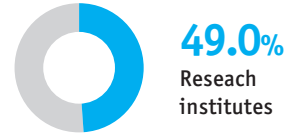
17.0%

of innovation-active enterprises that engaged in joint R&D projects in 2020

Enterprises that developed innovation in cooperation in 2018–2020

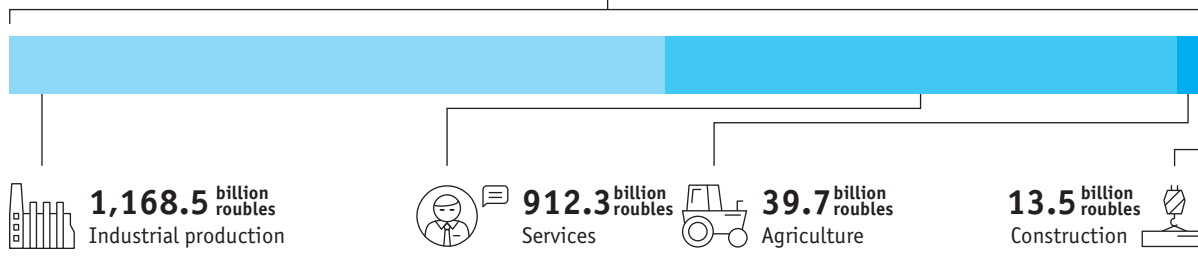


Main cooperation partners

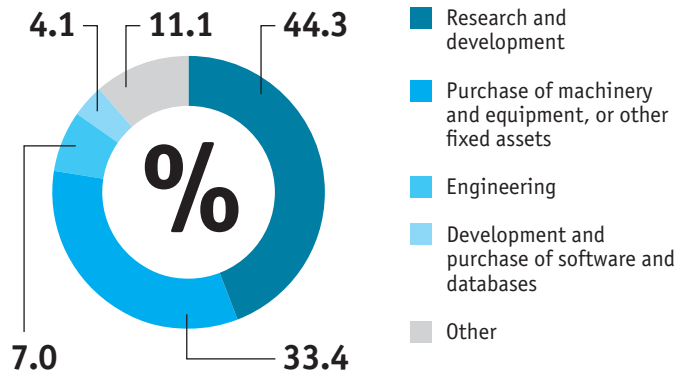


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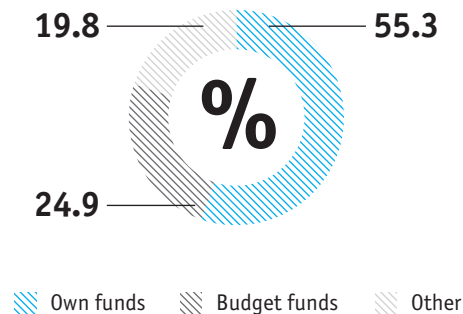
2,134.0 billion roubles



Main types of innovative activities



Sources of funds



2.3%

1.9%



Industrial production

4.3%



Services

1.6%



Agriculture

0.3%



Construction

2.4%

Manufacturing

2.1%

Water supply; sewerage,
waste management and
remediation activities

1.2%

Electricity, gas, steam
and air conditioning
supply

0.8%

Mining and quarrying

5.9%

High tech

2.6%

Medium high tech

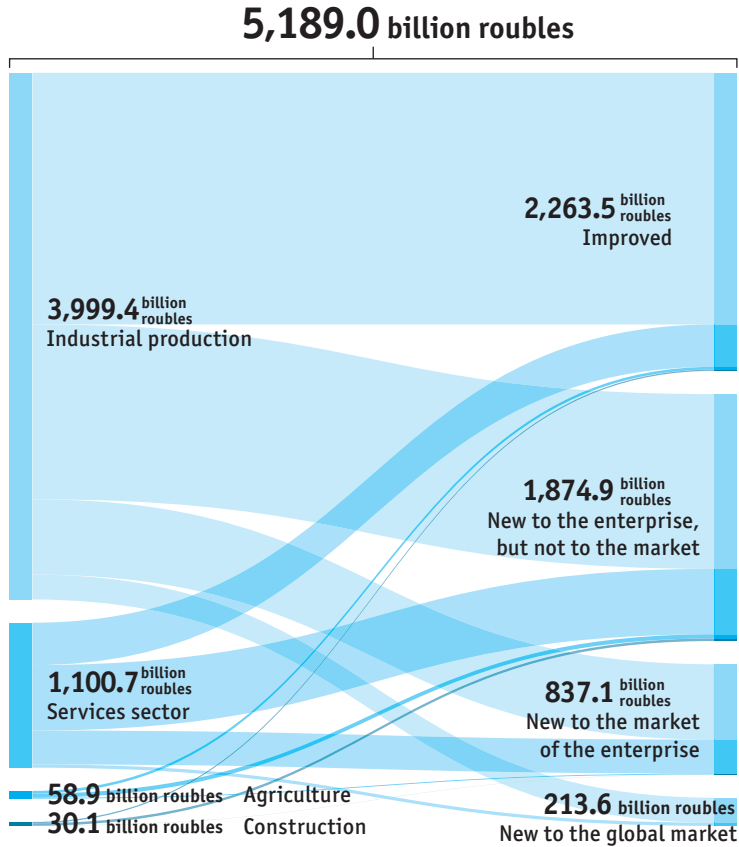
2.2%

Medium low tech

0.9%

Low tech

INTENSITY OF INNOVATION EXPENDITURE
BY TYPE OF ECONOMIC ACTIVITIES



As a percentage of total sales

5.7%



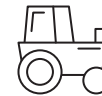
6.4%

Industrial production



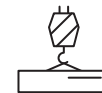
5.2%

Services



2.3%

Agriculture



0.6%

Construction

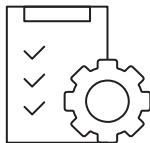
24.5 %

of enterprises that produced
customised innovative goods
and services in 2018–2020



6.7%

Jointly with users



22.6%

According
to orders of
specific users



1.7%

Through users'
own efforts

MAIN INDICATORS OF INNOVATION

	2010	2014	2015	2016	2017	2018	2019	2020
Innovation activity of enterprises, <i>percentage</i>	9.5	9.9	9.3	8.4	14.6	12.8	9.1	10.8
Industrial production	10.8	10.9	10.6	10.5	17.8	15.6	15.1	16.2
Telecommunications; computer programming, consultancy and related activities; IT industry	13.6	10.7	10.8	9.3	12.4	9.5	9.8	12.2
Construction	...	...	2.0	1.5	9.6	7.6	3.7	3.9
Agriculture	...	...	...	4.0	4.6	4.2	4.2	6.6
Transportation and storage	...	...	...	...	...	...	2.8	4.0
Health and social services activities	...	...	...	...	...	...	5.3	8.6
Innovation expenditure, <i>million roubles:</i>								
at current prices	411008.8	1231476.9	1211294.4	1298444.5	1416922.8	1484901.1	1954133.3	2134038.4
at constant 2010 prices*	411008.8	861895.9	790817.0	824618.6	854546.0	814135.1	1039211.5	1124776.5
Industrial production:								
at current prices	356163.5	778263.5	741283.8	787232.5	856794.0	893881.3	984315.5	1168528.8
at constant 2010 prices	356163.5	544697.3	483961.5	499957.1	516732.4	490093.4	523460.7	615890.4
Telecommunications; computer programming, consultancy and related activities; IT industry								
at current prices	40223.1	48612.3	67749.9	54681.7	55565.9	61734.7	100958.0	104003.4
at constant 2010 prices	40223.1	34023.2	44231.8	34727.4	33511.8	33847.6	53689.6	54816.5
Construction:								
at current prices	...	...	13.4	7.3	196.4	49.7	10930.5	13520.9
at constant 2010 prices	...	...	8.8	4.6	118.5	27.3	5812.9	7126.4
Agriculture:								
at current prices	...	...	...	15073.6	15942.0	22033.3	49393.2	39692.8
at constant 2010 prices	...	...	...	9573.0	9614.6	12080.3	26267.4	20920.7

(continued)

	2010	2014	2015	2016	2017	2018	2019	2020
Transportation and storage:								
at current prices	...	...	...	...	...	...	228822.7	203748.5
at constant 2010 prices	...	...	...	...	...	...	121688.3	107388.7
Human health and social work activities:								
at current prices	...	...	...	...	...	...	17763.8	34295.5
at constant 2010 prices	...	...	...	...	...	...	9446.8	18076.0
Innovation expenditure as a percentage of total sales	1.6	3.0	2.7	2.5	2.5	2.2	2.1	2.3
Industrial production	1.5	2.1	1.8	1.8	1.7	1.5	1.6	1.9
Telecommunications; computer programming, consultancy and related activities; IT industry	3.0	2.5	3.4	2.4	2.4	2.6	3.2	2.8
Construction	...	...	0.01	0.01	0.2	0.03	0.1	0.3
Agriculture	...	...	...	0.9	1.0	1.2	1.6	1.6
Transportation and storage	...	...	...	...	...	...	2.6	2.0
Health and social services activities	...	...	...	...	...	...	0.9	1.6
Sales of innovative goods and services, <i>million roubles</i> :								
at current prices	1243712.5	3579923.8	3843428.7	4364321.7	4166998.7	4516276.4	4863381.9	5189046.2
at constant 2010 prices	1243712.5	2505545.8	2509256.8	2771701.8	2513116.6	2476164.5	2586355.0	2734963.5
Industrial production:								
at current prices	1165747.6	3037407.3	3258254.6	3723693.4	3403055.2	3693061.6	3871481.1	3999391.8
at constant 2010 prices	1165747.6	2125845.0	2127214.6	2364850.4	2052382.4	2024815.8	2058860.4	2107938.5

(continued)

	2010	2014	2015	2016	2017	2018	2019	2020
Telecommunications; computer programming, consultancy and related activities; IT industry								
at current prices	62636.4	62928.5	86048.9	80955.8	111254.6	138610.7	200311.3	222389.1
at constant 2010 prices	62636.4	44042.9	56178.7	51413.6	67097.7	75996.9	106525.9	117213.5
Construction:								
at current prices	...	...	600.3	2351.0	152.9	48.7	29952.4	30079.9
at constant 2010 prices	...	...	391.9	1493.1	92.2	26.7	15928.7	15854.1
Agriculture:								
at current prices	...	...	...	22222.9	28446.0	33829.1	69559.2	58855.8
at constant 2010 prices	...	...	...	14113.4	17155.8	18547.7	36991.7	31020.8
Transportation and storage:								
at current prices	...	...	...	...	...	...	47469.6	125550.2
at constant 2010 prices	...	...	...	...	...	...	25244.4	66173.1
Human health and social work activities:								
at current prices	...	...	...	...	...	...	13710.9	25249.8
at constant 2010 prices	...	...	...	...	...	...	7291.5	13308.3
Innovative goods and services as a percentage of total sales	4.8	8.7	8.4	8.5	7.2	6.5	5.3	5.7
Industrial production	4.9	8.2	7.9	8.4	6.7	6.0	6.1	6.4
Telecommunications; computer programming, consultancy and related activities; IT industry	4.7	3.3	4.3	3.5	4.8	5.7	6.4	6.0

(continued)

	2010	2014	2015	2016	2017	2018	2019	2020
Construction	...	...	0.6	1.7	0.1	0.03	0.4	0.6
Agriculture	...	...	...	1.4	1.8	1.9	2.3	2.3
Transportation and storage	...	...	...	...	...	...	0.5	1.2
Health and social services activities	...	...	...	...	...	...	0.7	1.2
Enterprises engaged in technological innovation as a percentage of the total number of enterprises**	7.9	8.8	8.3	7.3	20.8	19.8	21.6	23.0
Industrial production	9.3	9.7	9.5	9.2	19.6	18.5	20.0	21.5
Telecommunications; computer programming, consultancy and related activities; IT industry	10.8	9.5	9.4	7.7	15.7	14.3	17.9	18.7
Construction	...	...	2.0	1.1	10.5	9.5	8.2	10.9
Agriculture	...	...	...	3.4	5.2	5.4	6.5	9.4
Expenditure on technological innovation as a percentage of total sales	1.6	2.9	2.6	2.5	2.4	2.1	1.9	2.1
Industrial production	1.5	2.1	1.8	1.8	1.7	1.4	1.4	1.6
Telecommunications; computer programming, consultancy and related activities; IT industry	2.9	2.4	3.3	2.3	2.3	2.5	2.2	2.1
Construction	...	...	0.01	0.01	0.2	0.03	0.1	0.3
Agriculture	...	...	...	0.9	1.0	1.2	1.5	1.5
Innovation activity of small enterprises, <i>percentage</i>***	...	...	4.5	...	5.2	...	5.8	...
Innovation expenditure of small enterprises, <i>million roubles</i> ****:								
at current prices	...	...	12151.8	...	19220.4	...	27340.2	...
at constant 2010 prices	...	...	7933.5	...	11591.8	...	14539.6	...

(continued)

	2010	2014	2015	2016	2017	2018	2019	2020
Innovation expenditure as a percentage of total sales in small enterprises	0.6	...	0.8	...	1.0	...
Sales of innovative goods and services in small enterprises, <i>million roubles</i> :								
at current prices	31270.9	...	37523.0	...	67055.9	...
at constant 2010 prices	20415.8	...	22630.1	...	35660.4	...
Innovative goods and services as a percentage of total sales in small enterprises	1.6	...	1.6	...	2.4	...

* Here and below, the data are calculated taking into account the GDP deflator as of April 01, 2021.

** Since 2018, the indicator is calculated according to the methodology approved by Order no. 788 of Rosstat of December 20, 2019 for the purpose of information support of Clause 1e of the Decree no 204 of the President of the Russian Federation of May 07, 2018 'On the National Goals and Strategic Tasks of the Development of the Russian Federation until 2024'. Any changes in 2017 data are due to the recalculation indicators according to the specified method.

*** Until 2019, the indicator was calculated based on the data of small enterprises engaged in technological innovations

**** Here and below, until 2019 indicators showing innovation expenditure were calculated based on the data on expenditure on technological innovation.

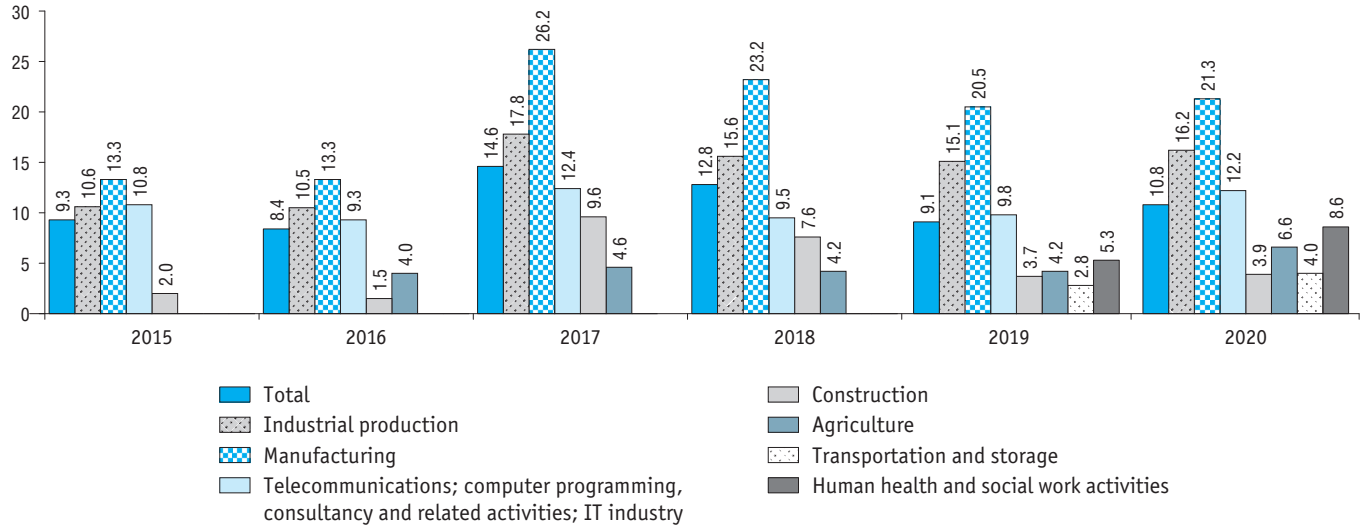


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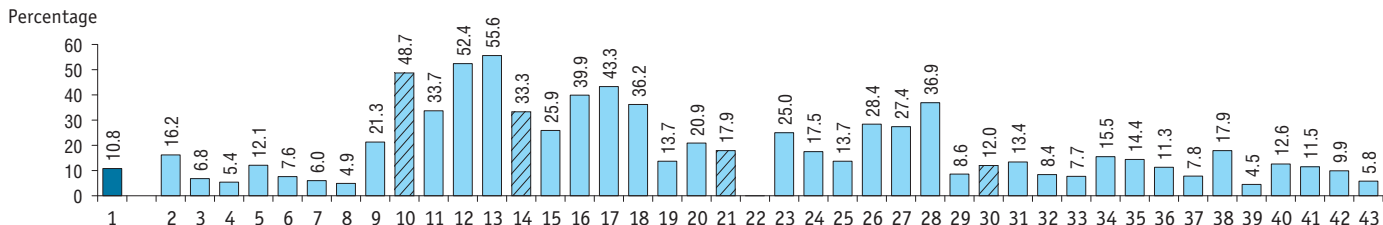
**INNOVATION ACTIVITY
OF ENTERPRISES**

1.1. INNOVATION ACTIVITY OF ENTERPRISES

Percentage



1.2. INNOVATION ACTIVITY OF ENTERPRISES BY TYPE OF ECONOMIC ACTIVITY: 2020



1 – total

2 – industrial production – total

3 – mining and quarrying

- 4 – mining of coal and lignite
- 5 – extraction of crude petroleum and natural gas
- 6 – mining of metal ores
- 7 – other mining and quarrying
- 8 – mining support service activities

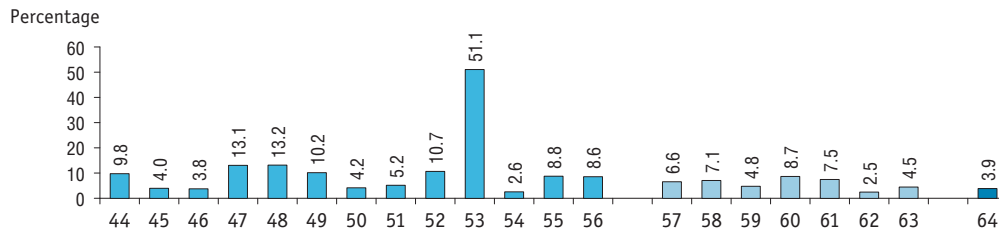
9 – manufacturing

- 10 – high tech
- 11 – manufacture of basic pharmaceutical products and pharmaceutical preparations
- 12 – manufacture of computer, electronic and optical products
- 13 – manufacture of air and spacecraft and related machinery
- 14 – medium high tech
- 15 – production of chemicals and chemical products
- 16 – manufacture of electrical equipment
- 17 – manufacture of machinery and equipment not elsewhere classified
- 18 – manufacture of motor vehicles, trailers and semi-trailers
- 19 – manufacture of other transport equipment*
- 20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

- 22 – reproduction of recorded media
- 23 – manufacture of coke and refined petroleum products
- 24 – manufacture of rubber and plastic products
- 25 – manufacture of other non-metallic mineral products
- 26 – manufacture of basic metals
- 27 – manufacture of fabricated metal products, except machinery and equipment
- 28 – building of ships and boats
- 29 – repair and installation of machinery and equipment
- 30 – low tech
- 31 – manufacture of food products
- 32 – manufacture of beverages
- 33 – manufacture of tobacco products
- 34 – manufacture of textiles
- 35 – manufacture of wearing apparel
- 36 – manufacture of leather and related products
- 37 – manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
- 38 – printing and reproduction of recorded media
- 39 – printing and reproduction of recorded media**
- 40 – manufacture of furniture
- 41 – other manufacturing***
- 42 – electricity, gas, steam and air conditioning supply
- 43 – water supply; sewerage, waste management and remediation activities

(continued)

**44 – types of economic activity within services sector – total**

45 – transportation and storage

46 – publishing activities

47 – telecommunications

48 – computer programming, consultancy and related activities

49 – IT industry

50 – legal and accounting activities

51 – activities of head offices; management consultancy activities

52 – architectural and engineering activities; technical testing and analysis

53 – scientific research and development

54 – advertising and market research

55 – other professional, scientific and technical activities

56 – human health and social work activities

57 – agriculture – total

58 – growing of non-perennial crops

59 – growing of perennial crops

60 – plant propagation

61 – animal production

62 – mixed farming

63 – support activities to agriculture and post-harvest crop activities

64 – construction – total

* Here and below in sections 1–8, excluding building of ships and boats and manufacture of air and spacecraft and related machinery.

** Here and below in sections 1–8, excluding reproduction of recorded media.

*** Here and below in sections 1–8, excluding manufacture of medical and dental instruments and supplies.

1.3. PERCENTAGE DISTRIBUTION OF ENTERPRISES BY TYPE OF INNOVATIVE AND ECONOMIC ACTIVITY: 2020

(as a percentage of enterprises that had expenditure on innovative activities)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Total	36.8	46.8	5.6	13.0	2.9	10.6	30.8	10.4	4.3	15.3
Industrial production – total	44.4	46.7	8.5	13.5	5.1	16.7	26.3	14.2	3.8	14.9
Mining and quarrying	35.9	33.1	1.4	13.4	–	12.7	32.4	18.3	2.8	19.0
Mining of coal and lignite	–	50.0	–	–	–	16.7	33.3	16.7	–	50.0
Extraction of crude petroleum and natural gas	48.3	25.9	1.7	22.4	–	12.1	25.9	22.4	1.7	12.1
Mining of metal ores	37.5	43.8	–	6.3	–	25.0	43.8	12.5	–	12.5
Other mining and quarrying	28.0	48.0	4.0	8.0	–	16.0	24.0	12.0	4.0	28.0
Mining support service activities	27.0	27.0	–	8.1	–	5.4	43.2	18.9	5.4	21.6
Manufacturing	48.4	47.6	10.1	14.2	6.2	17.8	24.6	15.2	3.6	14.0
High tech	67.8	46.5	11.9	22.8	4.8	18.9	33.9	19.9	1.9	11.1
Manufacture of basic pharmaceutical products and pharmaceutical preparations	68.4	38.2	10.5	11.8	3.9	17.1	17.1	21.1	1.3	7.9
Production of computer, electronic and optical products	67.9	45.7	11.4	22.5	4.6	19.6	36.8	18.6	1.8	8.9
Manufacture of air and spacecraft and related machinery	66.7	61.4	15.8	38.6	7.0	17.5	42.1	24.6	3.5	26.3

* Here and below in table 1.4, acquisition of patent rights (alienation), licenses, industrial designs, utility models, selection achievements, integrated circuit designs, etc.; patenting (registration) of the results of intellectual activity.

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Medium high tech	54.5	44.8	10.5	13.8	6.1	21.7	23.2	16.4	3.8	14.2
Production of chemicals and chemical products	48.8	54.4	10.6	13.8	5.6	24.4	21.9	18.1	3.8	18.8
Manufacture of electrical equipment	63.4	41.4	9.7	13.1	4.8	25.5	21.4	13.8	5.5	9.0
Manufacture of machinery and equipment not elsewhere classified	56.7	39.2	11.3	14.4	7.7	17.0	25.8	18.6	4.1	11.9
Manufacture of motor vehicles, trailers and semi-trailers	52.4	46.7	11.4	11.4	7.6	21.9	23.8	12.4	1.0	16.2
Manufacture of other transport equipment	42.9	42.9	5.7	14.3	2.9	25.7	25.7	25.7	5.7	22.9
Manufacture of medical and dental instruments and supplies	47.6	42.9	9.5	23.8	–	9.5	14.3	4.8	–	14.3
Medium low tech	45.7	50.6	7.3	15.0	2.8	19.4	27.2	17.4	5.2	18.5
Reproduction of recorded media	–	–	–	–	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	47.6	57.1	–	19.0	4.8	33.3	38.1	23.8	14.3	35.7
Manufacture of rubber and plastic products	38.0	52.2	7.6	5.4	3.3	14.1	19.6	15.2	1.1	7.6
Manufacture of other non-metallic mineral products	37.8	56.3	3.4	4.2	2.5	9.2	15.1	6.7	4.2	16.8
Manufacture of basic metals	53.8	44.1	4.3	19.4	3.2	26.9	32.3	22.6	2.2	20.4

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Manufacture of fabricated metal products, except machinery and equipment	50.5	53.6	11.9	23.2	3.6	26.3	31.4	19.6	7.7	15.5
Building of ships and boats	58.3	54.2	20.8	25.0	–	20.8	50.0	37.5	8.3	16.7
Repair and installation of machinery and equipment	39.1	33.3	4.3	11.6	–	5.8	24.6	14.5	2.9	31.9
Low tech	28.8	48.6	11.8	7.0	11.6	10.1	16.1	7.4	2.8	10.4
Manufacture of food products	28.1	45.9	13.9	7.3	13.9	9.2	13.2	6.6	2.3	10.6
Manufacture of beverages	35.6	33.3	22.2	11.1	26.7	26.7	20.0	13.3	6.7	13.3
Manufacture of tobacco products	50.0	25.0	–	–	25.0	25.0	–	25.0	–	25.0
Manufacture of textiles	57.1	42.9	7.1	7.1	3.6	3.6	14.3	10.7	–	7.1
Manufacture of wearing apparel	20.6	58.8	5.9	11.8	–	8.8	20.6	11.8	2.9	8.8
Manufacture of leather and related products	20.0	50.0	–	–	–	–	20.0	10.0	–	20.0
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	16.1	67.7	6.5	3.2	6.5	6.5	29.0	–	6.5	16.1
Manufacture of paper and paper products	20.0	62.9	2.9	2.9	2.9	5.7	22.9	5.7	5.7	2.9
Printing and reproduction of recorded media	10.0	60.0	–	–	10.0	–	20.0	–	–	10.0
Manufacture of furniture	30.0	40.0	–	–	–	20.0	20.0	10.0	–	20.0
Other manufacturing	47.1	64.7	17.6	11.8	5.9	11.8	11.8	5.9	–	–

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Electricity, gas, steam and air-conditioning supply	27.5	45.0	2.0	11.4	1.0	13.8	34.9	7.4	5.7	20.1
Water supply; sewerage, waste management, and remediation activities	22.7	50.4	2.5	6.7	–	9.2	29.4	8.4	4.2	15.1
Types of economic activity within services sector – total	33.9	44.0	3.9	13.7	1.5	7.0	35.5	8.4	5.1	16.4
Transportation and storage	30.2	39.8	1.6	9.6	1.1	7.2	26.5	9.6	3.5	20.1
Publishing activities	17.8	40.0	11.1	13.3	17.8	–	44.4	8.9	8.9	15.6
Telecommunications	14.2	51.9	3.9	33.5	0.4	39.1	34.8	3.4	1.3	5.6
Computer programming, consultancy and related activities	37.0	42.7	8.4	17.9	2.7	3.8	56.1	10.3	3.4	16.8
IT industry	16.4	28.0	3.6	7.1	1.3	3.1	73.8	4.9	34.2	12.4
Legal and accounting activities	10.8	44.0	0.6	4.8	–	1.8	43.4	10.2	3.0	18.1
Activities of head offices; management consultancy activities	16.8	25.7	11.5	8.8	2.7	5.3	53.1	13.3	4.4	17.7
Architectural and engineering activities; technical testing and analysis	30.7	35.1	2.2	14.7	1.3	6.9	44.2	10.8	4.3	14.7
Scientific research and development	82.2	37.1	6.6	18.3	1.9	8.8	26.1	16.4	4.3	13.0
Advertising and market research	14.3	31.4	22.9	11.4	2.9	2.9	51.4	5.7	8.6	14.3
Other professional, scientific and technical activities	28.6	50.0	–	14.3	–	–	64.3	21.4	–	14.3
Human health and social work activities	20.7	53.8	1.7	10.6	1.0	2.9	27.9	3.8	2.4	19.7

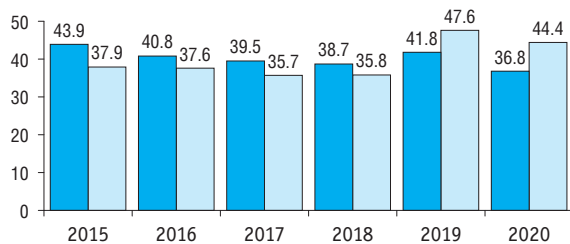
(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and data-bases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Agriculture – total	16.2	75.7	2.6	3.8	0.9	3.5	13.0	4.0	0.9	8.1
Growing of non-perennial crops	14.5	75.2	2.8	2.1	–	1.4	15.2	4.8	0.7	4.8
Growing of perennial crops	–	100	12.5	–	–	–	37.5	12.5	–	–
Plant propagation	50.0	50.0	–	–	–	–	–	–	–	–
Animal production	15.0	76.3	2.5	4.4	1.9	5.0	10.6	3.1	1.3	10.6
Mixed farming	–	77.8	–	–	–	11.1	–	–	–	22.2
Support activities to agriculture and post-harvest crop activities	45.5	68.2	–	13.6	–	4.5	13.6	4.5	–	9.1
Construction – total	16.8	50.5	2.7	9.2	1.1	6.5	37.0	3.8	2.7	14.1

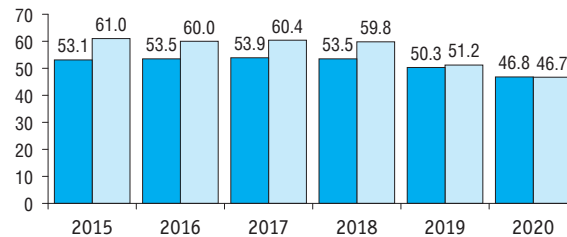
1.4. ENTERPRISES BY TYPE OF INNOVATIVE ACTIVITY*

(as a percentage of enterprises that had expenditure on innovative activities)

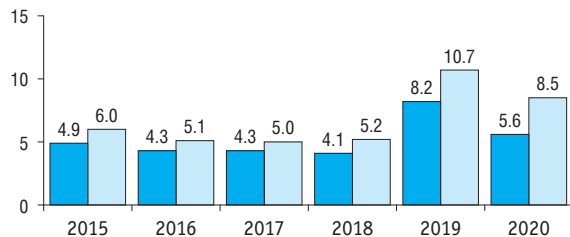
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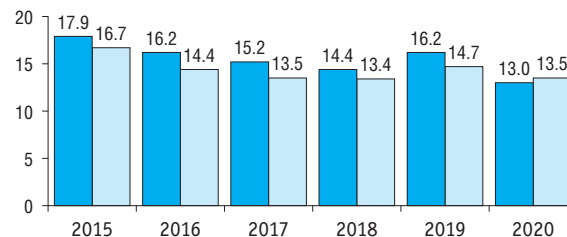
Purchase of machinery and equipment, or other fixed assets



Marketing and brand creation**



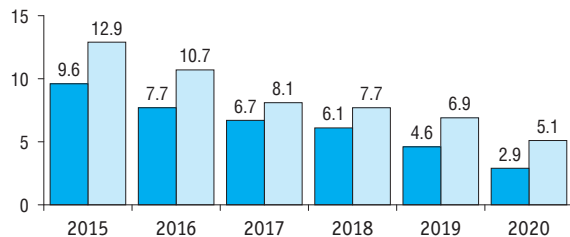
Education and training of personnel



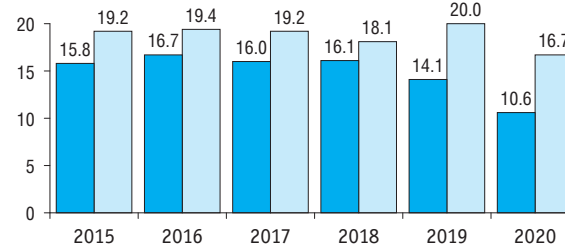
■ Total □ Industrial production

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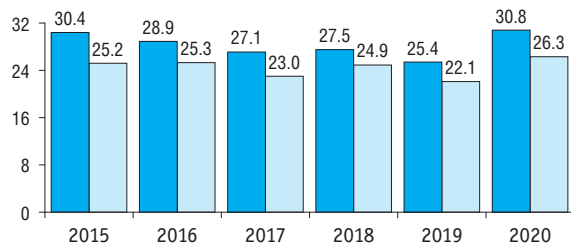
Design



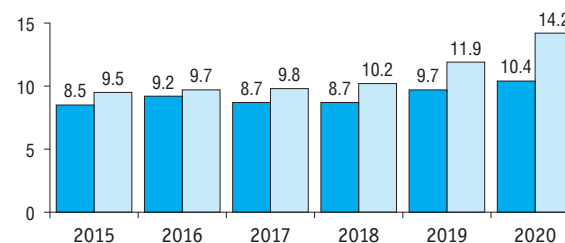
Engineering



Development and purchase of software and databases***



Acquisition of rights to the results of intellectual activity****



■ Total ■ Industrial production

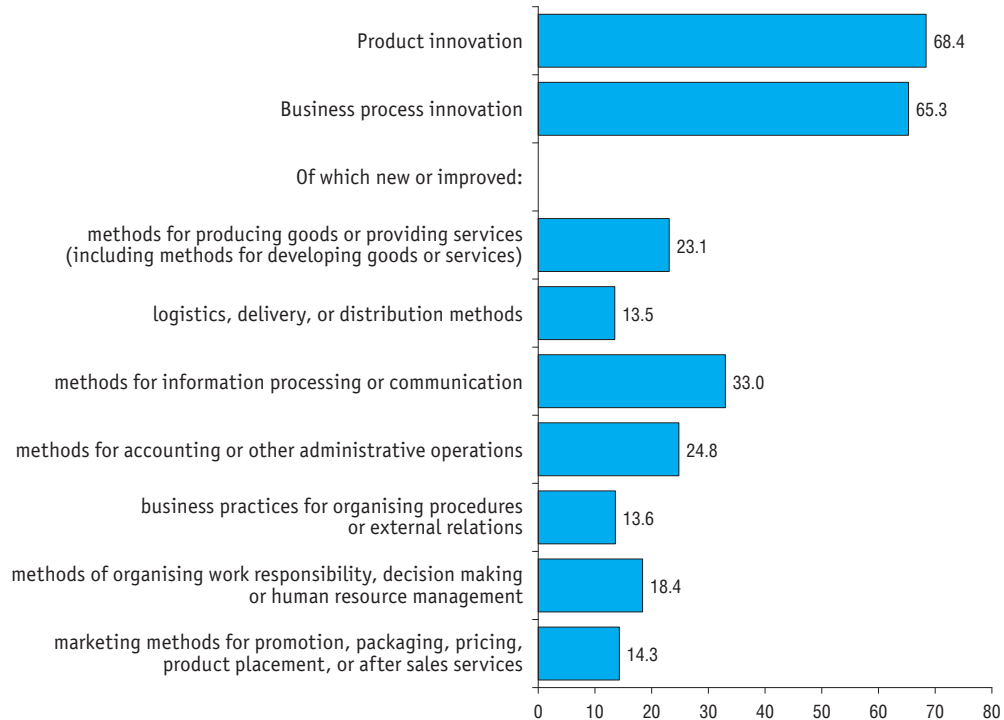
* Until 2019, these indicators are calculated as a percentage of enterprises that had expenditure on technological innovation.

** Until 2019, market research.

*** Until 2019, purchase of software.

**** Until 2019, acquisition of new technologies.

1.5. ENTERPRISES THAT ENGAGED IN PRODUCT AND BUSINESS PROCESS INNOVATION: 2018–2020 (as a percentage of all enterprises that completed innovative activities)



1.6. PERCENTAGE DISTRIBUTION OF ENTERPRISES THAT ENGAGED IN PRODUCT AND BUSINESS PROCESS INNOVATION BY TYPE OF ECONOMIC ACTIVITY: 2018–2020

(as a percentage of all enterprises that completed innovative activities)

	Product innovation	Business process innovation	Of which new or improved:						
			methods for producing goods or providing services (including methods for developing goods or services)	logistics, delivery, or distribution methods	methods for information processing or communication	methods for accounting or other administrative operations	business practices for organising procedures or external relations	methods of organising work responsibility, decision making or human resource management	marketing methods for promotion, packaging, pricing, product placement, or after sales services
Total	68.4	65.3	23.1	13.5	33.0	24.8	13.6	18.4	14.3
Industrial production – total	73.8	60.9	25.9	15.5	26.2	22.1	12.7	16.8	16.8
Mining and quarrying	45.8	70.5	27.4	12.1	26.3	27.4	11.6	16.8	7.4
Mining of coal and lignite	66.7	55.6	11.1	11.1	22.2	22.2	22.2	22.2	–
Extraction of crude petroleum and natural gas	32.4	84.5	38.0	9.9	23.9	36.6	5.6	12.7	2.8
Mining of metal ores	33.3	73.3	30.0	6.7	26.7	23.3	13.3	26.7	6.7
Other mining and quarrying	41.7	79.2	29.2	25.0	37.5	20.8	16.7	12.5	16.7
Mining support service activities	67.9	50.0	14.3	12.5	25.0	21.4	14.3	17.9	10.7
Manufacturing	81.6	57.6	26.3	16.4	23.5	20.5	13.0	16.2	18.7
High tech	86.2	56.1	22.0	15.0	26.0	19.3	13.4	19.1	16.2
Manufacture of basic pharmaceutical products and pharmaceutical preparations	76.2	61.9	16.7	14.3	20.2	20.2	11.9	27.4	16.7

(continued)

	Product innovation	Business process innovation	Of which new or improved:						
			methods for producing goods or providing services (including methods for developing goods or services)	logistics, delivery, or distribution methods	methods for information processing or communication	methods for accounting or other administrative operations	business practices for organising procedures or external relations	methods of organising work responsibility, decision making or human resource management	marketing methods for promotion, packaging, pricing, product placement, or after sales services
Production of computer, electronic and optical products	88.6	52.1	22.1	13.9	25.4	17.9	11.8	14.6	15.7
Manufacture of air and spacecraft and related machinery	89.1	67.3	29.1	21.8	38.2	25.5	23.6	29.1	18.2
Medium high tech	88.0	55.0	27.0	14.3	20.9	17.7	12.7	13.6	16.6
Production of chemicals and chemical products	80.1	65.1	34.9	16.9	24.1	21.7	13.3	16.3	18.7
Manufacture of electrical equipment	95.0	53.5	24.5	15.7	24.5	13.8	16.4	12.6	17.0
Manufacture of machinery and equipment not elsewhere classified	89.5	49.5	25.0	12.7	18.6	15.5	10.5	10.9	16.8
Manufacture of motor vehicles, trailers and semi-trailers	90.8	52.3	23.9	14.7	17.4	20.2	12.8	17.4	15.6

(continued)

	Product innovation	Business process innovation	Of which new or improved:						
			methods for producing goods or providing services (including methods for developing goods or services)	logistics, delivery, or distribution methods	methods for information processing or communication	methods for accounting or other administrative operations	business practices for organising procedures or external relations	methods of organising work responsibility, decision making or human resource management	marketing methods for promotion, packaging, pricing, product placement, or after sales services
Manufacture of other transport equipment	82.2	62.2	26.7	13.3	20.0	24.4	13.3	15.6	13.3
Manufacture of medical and dental instruments and supplies	78.3	43.5	21.7	–	13.0	13.0	4.3	4.3	8.7
Medium low tech	75.4	63.0	26.7	19.4	29.0	26.0	14.3	19.9	17.3
Reproduction of recorded media	–	–	–	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	61.8	72.7	43.6	41.8	45.5	36.4	9.1	32.7	7.3
Manufacture of rubber and plastic products	81.6	52.4	24.3	17.5	15.5	14.6	16.5	9.7	14.6
Manufacture of other non-metallic mineral products	76.0	62.0	33.1	11.6	17.4	17.4	11.6	16.5	19.8
Manufacture of basic metals	69.7	76.8	31.3	22.2	35.4	29.3	17.2	23.2	15.2

(continued)

	Product innovation	Business process innovation	Of which new or improved:						
			methods for producing goods or providing services (including methods for developing goods or services)	logistics, delivery, or distribution methods	methods for information processing or communication	methods for accounting or other administrative operations	business practices for organising procedures or external relations	methods of organising work responsibility, decision making or human resource management	marketing methods for promotion, packaging, pricing, product placement, or after sales services
Manufacture of fabricated metal products, except machinery and equipment	79.7	58.5	20.3	18.9	32.7	30.4	14.3	20.7	21.7
Building of ships and boats	82.1	75.0	32.1	25.0	35.7	25.0	14.3	14.3	17.9
Repair and installation of machinery and equipment	68.1	62.3	17.4	13.0	33.3	31.9	15.9	26.1	14.5
Low tech	78.2	55.7	27.6	16.3	18.9	18.6	11.6	13.1	24.0
Manufacture of food products	81.4	53.0	29.4	10.8	15.8	14.6	10.1	13.1	23.4
Manufacture of beverages	76.5	67.6	17.6	41.2	30.9	35.3	27.9	11.8	45.6
Manufacture of tobacco products	71.4	71.4	42.9	28.6	14.3	42.9	–	–	–
Manufacture of textiles	74.1	51.9	44.4	22.2	22.2	22.2	11.1	14.8	22.2
Manufacture of wearing apparel	66.7	43.3	20.0	10.0	13.3	13.3	6.7	10.0	13.3

(continued)

	Product innovation	Business process innovation	Of which new or improved:						
			methods for producing goods or providing services (including methods for developing goods or services)	logistics, delivery, or distribution methods	methods for information processing or communication	methods for accounting or other administrative operations	business practices for organising procedures or external relations	methods of organising work responsibility, decision making or human resource management	marketing methods for promotion, packaging, pricing, product placement, or after sales services
Manufacture of leather and related products	81.8	45.5	18.2	18.2	27.3	18.2	9.1	18.2	36.4
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	63.6	60.6	27.3	24.2	27.3	24.2	12.1	15.2	18.2
Manufacture of paper and paper products	69.7	75.8	21.2	15.2	27.3	27.3	6.1	9.1	12.1
Printing and reproduction of recorded media	82.4	35.3	23.5	5.9	5.9	17.6	5.9	5.9	–
Manufacture of furniture	82.4	58.8	29.4	29.4	29.4	17.6	11.8	23.5	29.4
Other manufacturing	76.2	66.7	28.6	23.8	14.3	14.3	14.3	23.8	28.6

(continued)

	Product innovation	Business process innovation	Of which new or improved:						
			methods for producing goods or providing services (including methods for developing goods or services)	logistics, delivery, or distribution methods	methods for information processing or communication	methods for accounting or other administrative operations	business practices for organising procedures or external relations	methods of organising work responsibility, decision making or human resource management	marketing methods for promotion, packaging, pricing, product placement, or after sales services
Electricity, gas, steam and air-conditioning supply	40.8	73.7	20.6	9.8	42.7	27.8	10.1	19.6	8.9
Water supply; sewerage, waste management, and remediation activities	46.3	77.9	30.1	17.6	38.2	29.4	14.7	21.3	14.0
Types of economic activity within services sector – total	65.9	67.7	18.6	11.3	38.5	26.3	14.1	19.6	12.3
Transportation and storage	57.9	71.7	18.4	23.5	45.7	32.1	16.4	25.3	14.5
Publishing activities	53.8	80.0	15.0	11.3	50.0	45.0	28.8	26.3	25.0
Telecommunications	77.4	86.2	31.1	8.5	35.2	34.9	4.1	14.4	16.7
Computer programming, consultancy and related activities	77.3	53.1	9.0	4.4	30.3	26.5	5.8	12.0	7.6
IT industry	74.2	54.3	8.2	6.3	36.7	29.3	16.0	15.6	11.7
Legal and accounting activities	49.6	69.1	8.1	7.3	38.2	40.7	9.8	18.7	6.5

(continued)

	Product innovation	Business process innovation	Of which new or improved:						
			methods for producing goods or providing services (including methods for developing goods or services)	logistics, delivery, or distribution methods	methods for information processing or communication	methods for accounting or other administrative operations	business practices for organising procedures or external relations	methods of organising work responsibility, decision making or human resource management	marketing methods for promotion, packaging, pricing, product placement, or after sales services
Activities of head offices; management consultancy activities	57.6	72.0	12.0	13.6	38.4	43.2	28.0	24.0	28.0
Architectural and engineering activities; technical testing and analysis	59.6	62.2	19.9	7.5	41.6	21.7	18.7	19.9	10.1
Research and development	84.2	53.2	24.8	9.6	27.3	16.9	12.7	13.7	10.0
Advertising and market research	61.7	83.0	10.6	10.6	44.7	25.5	36.2	29.8	23.4
Other professional, scientific and technical activities	70.6	64.7	5.9	–	35.3	35.3	23.5	17.6	–
Human health and social work activities	55.5	75.4	18.5	11.0	43.5	22.0	14.6	23.5	11.0
Agriculture – total	49.8	76.0	59.2	17.1	27.9	23.0	12.2	16.7	12.5
Growing of non-perennial crops	51.0	76.9	58.7	20.2	26.9	23.1	9.6	13.5	11.5

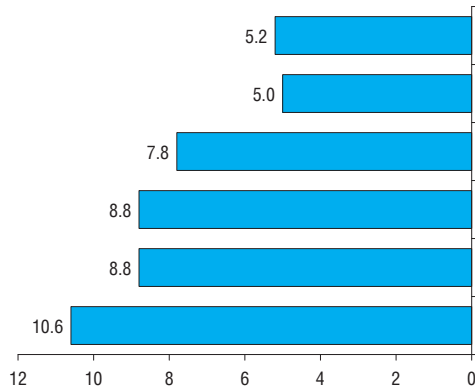
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	Product innovation	Business process innovation	Of which new or improved:						
			methods for producing goods or providing services (including methods for developing goods or services)	logistics, delivery, or distribution methods	methods for information processing or communication	methods for accounting or other administrative operations	business practices for organising procedures or external relations	methods of organising work responsibility, decision making or human resource management	marketing methods for promotion, packaging, pricing, product placement, or after sales services
Growing of perennial crops	33.3	83.3	66.7	33.3	50.0	50.0	50.0	33.3	33.3
Plant propagation	–	100	–	–	100	–	–	–	–
Animal production	48.6	75.4	59.4	12.3	26.8	23.2	13.0	18.8	13.8
Mixed farming	100	50.0	50.0	25.0	25.0	25.0	25.0	25.0	25.0
Support activities to agriculture and post-harvest crop activities	43.3	80.0	63.3	23.3	30.0	16.7	6.7	13.3	3.3
Construction – total	61.9	71.0	19.0	24.3	35.2	38.6	21.0	21.0	18.1

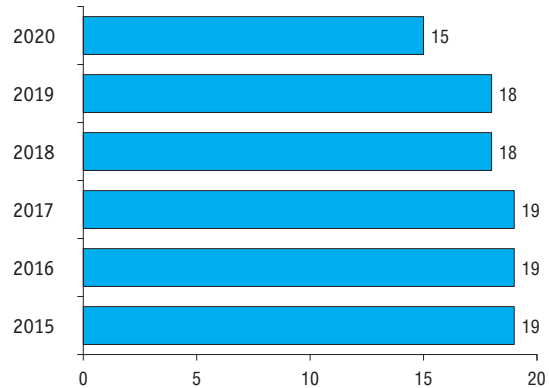
1.7. R&D UNITS IN ENTERPRISES

	2015	2016	2017	2018	2019	2020
Number of R&D units	23224	23248	22473	24541	26649	31059
Number of employees in R&D units	444265	433989	425795	446323	475544	467463

Enterprises with R&D units as a percentage of the total number of enterprises



Average number of employees in R&D units



1.8. ENTERPRISES WITH R&D UNITS BY TYPE OF ECONOMIC ACTIVITY: 2020

	Enterprises with R&D units, <i>percentage</i>	Number of R&D units	Number of employees in R&D units
Total	5.2	31059	467463
Industrial production – total	9.4	7549	150464
Mining and quarrying	2.4	102	4975
Mining of coal and lignite	1.5	5	40
Extraction of crude petroleum and natural gas	2.4	15	3331
Mining of metal ores	4.9	31	569
Other mining and quarrying	1.5	12	591
Mining support service activities	2.2	39	444
Manufacturing	13.7	7174	141911
High tech	40.7	2055	55031
Manufacture of basic pharmaceutical products and pharmaceutical preparations	22.6	131	1652
Production of computer, electronic and optical products	45.8	1633	38001
Manufacture of air and spacecraft and related machinery	45.1	291	15379
Medium high tech	26.0	2019	35544
Production of chemicals and chemical products	16.7	363	7957
Manufacture of electrical equipment	32.5	576	8198
Manufacture of machinery and equipment not elsewhere classified	37.9	722	11467
Manufacture of motor vehicles, trailers and semi-trailers	27.2	267	5948

(continued)

	Enterprises with R&D units, <i>percentage</i>	Number of R&D units	Number of employees in R&D units
Manufacture of other transport equipment	9.3	70	1710
Manufacture of medical and dental instruments and supplies	11.4	21	265
Medium low tech	11.7	2820	47187
Reproduction of recorded media	–	–	–
Manufacture of coke and refined petroleum products	16.7	62	1962
Manufacture of rubber and plastic products	9.6	132	1919
Manufacture of other non-metallic mineral products	6.3	125	1086
Manufacture of basic metals	19.2	167	5735
Manufacture of fabricated metal products, except machinery and equipment	21.6	2080	27862
Building of ships and boats	29.7	73	5266
Repair and installation of machinery and equipment	5.1	181	3357
Low tech	3.0	280	4150
Manufacture of food products	1.4	64	2445
Manufacture of beverages	0.9	9	69
Manufacture of tobacco products	1.9	1	1
Manufacture of textiles	8.2	37	252
Manufacture of wearing apparel	6.8	38	222
Manufacture of leather and related products	5.6	9	89
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	1.8	16	136

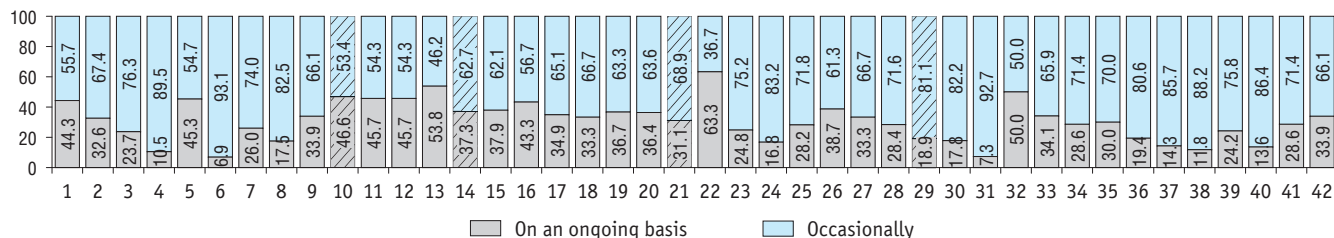
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	Enterprises with R&D units, <i>percentage</i>	Number of R&D units	Number of employees in R&D units
Manufacture of paper and paper products	8.5	33	299
Printing and reproduction of recorded media	1.3	6	69
Manufacture of furniture	9.4	36	338
Other manufacturing	8.1	31	229
Electricity, gas, steam and air-conditioning supply	2.6	228	2978
Water supply; sewerage, waste management, and remediation activities	1.0	45	600
Types of economic activity within services sector – total	4.2	23029	313073
Transportation and storage	0.5	101	2817
Publishing activities	0.5	30	150
Telecommunications	1.2	54	679
Computer programming, consultancy and related activities	5.7	876	14436
IT industry	1.5	336	3257
Legal and accounting activities	0.5	97	222
Activities of head offices; management consultancy activities	1.6	158	1468
Architectural and engineering activities; technical testing and analysis	7.5	2598	40195
Research and development	48.0	17425	243824
Advertising and market research	0.6	21	149
Other professional, scientific and technical activities	4.2	43	668
Human health and social work activities	0.7	1290	5209

(continued)

	Enterprises with R&D units, <i>percentage</i>	Number of R&D units	Number of employees in R&D units
Agriculture – total	0.6	80	686
Growing of non-perennial crops	0.4	15	31
Growing of perennial crops	1.3	3	156
Plant propagation	4.3	1	3
Animal production	0.3	14	228
Mixed farming	–	–	–
Support activities to agriculture and post-harvest crop activities	2.3	47	268
Construction – total	1.9	401	3240

1.9. PERCENTAGE DISTRIBUTION OF ENTERPRISES BY R&D INTENSITY AND TYPE OF ECONOMIC ACTIVITY: 2020



1 – total

2 – industrial production – total

3 – mining and quarrying

4 – mining of coal and lignite

5 – extraction of crude petroleum and natural gas

6 – mining of metal ores

7 – other mining and quarrying

8 – mining support service activities

9 – manufacturing

10 – high tech

11 – manufacture of basic pharmaceutical products and pharmaceutical preparations

12 – production of computer, electronic and optical products

13 – manufacture of air and spacecraft and related machinery

14 – medium high tech

15 – production of chemicals and chemical products

16 – manufacture of electrical equipment

17 – manufacture of machinery and equipment not elsewhere classified

18 – manufacture of motor vehicles, trailers and semi-trailers

19 – manufacture of other transport equipment

20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

22 – manufacture of coke and refined petroleum products

23 – manufacture of rubber and plastic products

24 – manufacture of other non-metallic mineral products

25 – manufacture of basic metals

26 – manufacture of fabricated metal products, except machinery and equipment

27 – building of ships and boats

28 – repair and installation of machinery and equipment

29 – low tech

30 – manufacture of food products

31 – manufacture of beverages

32 – manufacture of tobacco products

33 – manufacture of textiles

34 – manufacture of wearing apparel

35 – manufacture of leather and related products

36 – manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials

37 – manufacture of paper and paper products

38 – printing and reproduction of recorded media

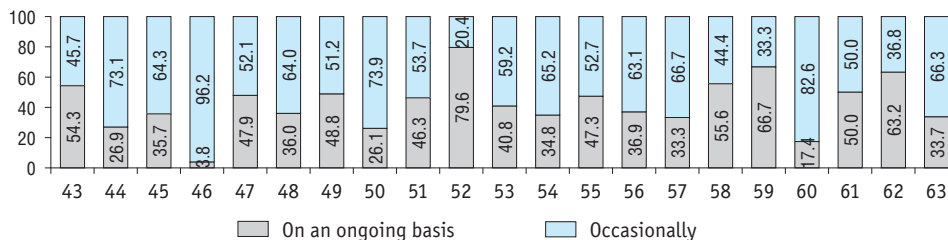
39 – manufacture of furniture

40 – other manufacturing

41 – electricity, gas, steam and air-conditioning supply

42 – water supply; sewerage, waste management, and remediation activities

(continued)



43 – types of economic activity within services sector – total

- 44 – transportation and storage
- 45 – publishing activities
- 46 – telecommunications
- 47 – computer programming, consultancy and related activities
- 48 – IT industry
- 49 – legal and accounting activities
- 50 – activities of head offices; management consultancy activities
- 51 – architectural and engineering activities; technical testing and analysis

52 – scientific research and development

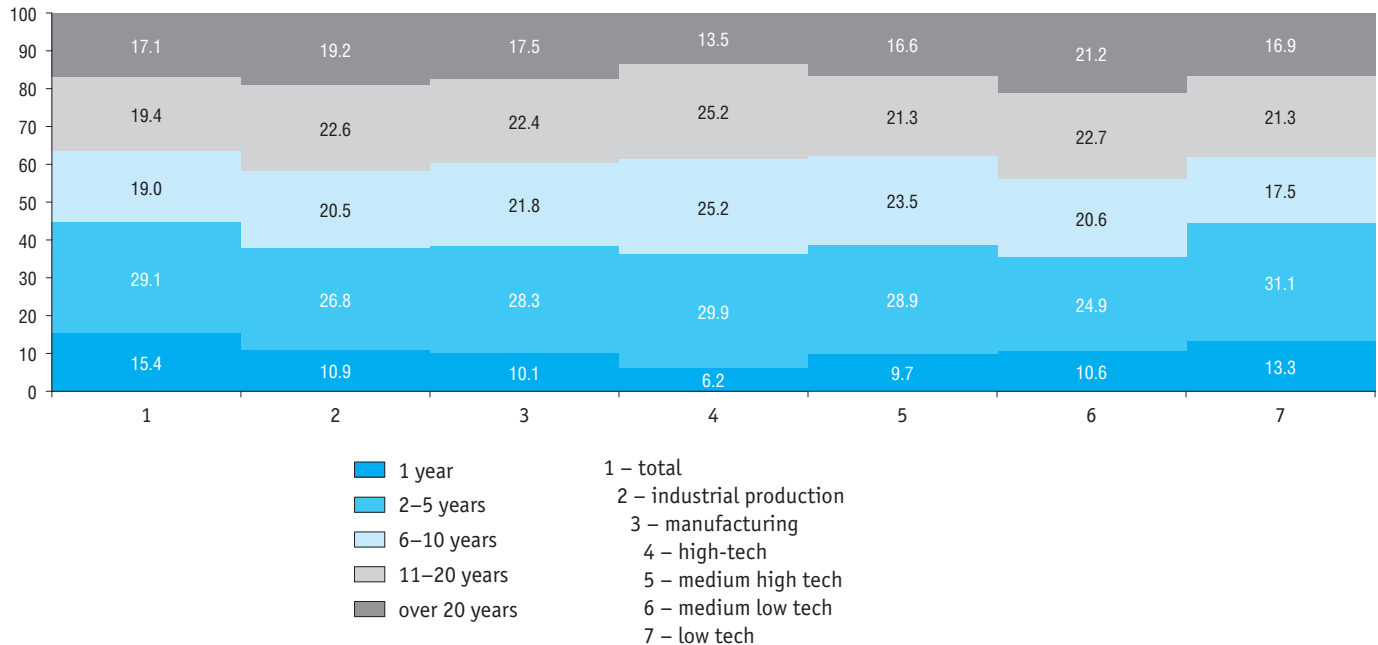
- 53 – advertising and market research
- 54 – other professional, scientific and technical activities
- 55 – human health and social work activities

56 – agriculture – total

- 57 – growing of non-perennial crops
- 58 – growing of perennial crops
- 59 – plant propagation
- 60 – animal production
- 61 – mixed farming
- 62 – support activities to agriculture and post-harvest crop activities

63 – construction – total

1.10. PRODUCT LIFE CYCLE IN ENTERPRISES THAT ENGAGED IN INNOVATIVE ACTIVITIES: 2020
(percentage distribution of enterprises by life cycle duration of the main good or service)





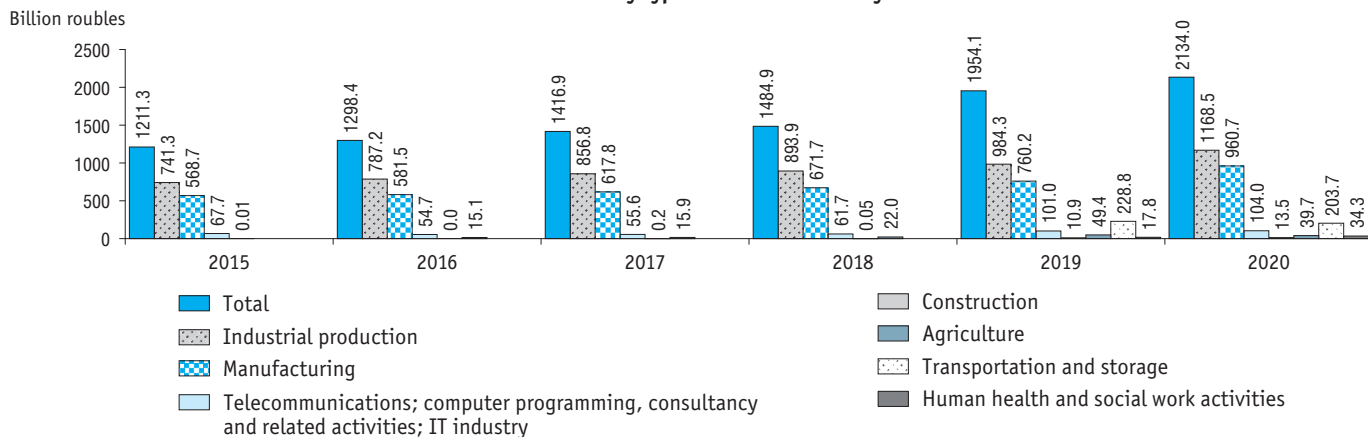
2

INNOVATION EXPENDITURE

2.1. INNOVATION EXPENDITURE

	2015	2016	2017	2018	2019	2020
Innovation expenditure – total:						
at current prices, <i>million roubles</i>	1211294.4	1298444.5	1416922.8	1484901.1	1954133.3	2134038.4
at constant 2010 prices, <i>million roubles*</i>	790817.0	824618.6	854546.0	814135.1	1039211.5	1124776.5
as a percentage of 2010	192.4	200.6	207.9	198.1	252.8	273.7
as a percentage of total sales	2.7	2.5	2.5	2.2	2.1	2.3

By type of economic activity



* The data are calculated taking into account the GDP deflator as of April 01, 2021.

2.2. INNOVATION EXPENDITURE BY INNOVATION AND TYPE OF ECONOMIC ACTIVITY: 2020

	Innovation expenditure		Including by innovation			
	million roubles	percentage	product		business process	
			million roubles	percentage	million roubles	percentage
Total	2134038.4	100	1347119.6	100	786918.8	100
Industrial production – total	1168528.8	54.8	640672.6	47.6	527856.2	67.1
Mining and quarrying	121784.8	5.7	22950.1	1.7	98834.7	12.6
Mining of coal and lignite	1270.7	0.1	1090.7	0.1	180.0	0.02
Extraction of crude petroleum and natural gas	85987.0	4.0	13764.1	1.0	72222.8	9.2
Mining of metal ores	13119.5	0.6	5508.2	0.4	7611.3	1.0
Other mining and quarrying	3743.5	0.2	1745.2	0.1	1998.3	0.3
Mining support service activities	17664.2	0.8	841.8	0.1	16822.3	2.1
Manufacturing	960723.3	45.0	570853.2	42.4	389870.0	49.5
High tech	226546.7	10.6	166017.0	12.3	60529.7	7.7
Manufacture of basic pharmaceutical products and pharmaceutical preparations	40052.5	1.9	12932.4	1.0	27120.1	3.4
Production of computer, electronic and optical products	91419.9	4.3	74238.4	5.5	17181.4	2.2
Manufacture of air and spacecraft and related machinery	95074.3	4.5	78846.2	5.9	16228.1	2.1
Medium high tech	203464.3	9.5	82718.5	6.1	120745.7	15.3
Production of chemicals and chemical products	113824.0	5.3	35036.4	2.6	78787.6	10.0
Manufacture of electrical equipment	13931.0	0.7	9148.0	0.7	4783.0	0.6
Manufacture of machinery and equipment not elsewhere classified	24305.3	1.1	18791.8	1.4	5513.5	0.7
Manufacture of motor vehicles, trailers and semi-trailers	48904.1	2.3	18031.1	1.3	30873.0	3.9
Manufacture of other transport equipment	1933.5	0.1	1277.8	0.1	655.7	0.1
Manufacture of medical and dental instruments and supplies	566.4	0.03	433.4	0.03	132.9	0.02
Medium low tech	458341.8	21.5	291537.4	21.6	166804.4	21.2
Reproduction of recorded media	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	176029.7	8.2	124753.4	9.3	51276.3	6.5

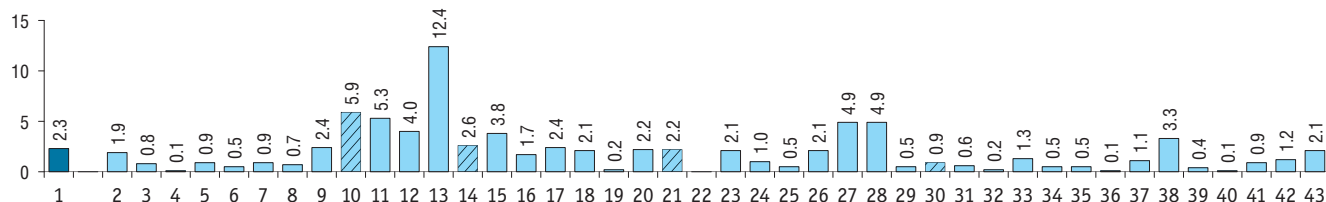
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	Innovation expenditure		Including by innovation			
	million roubles	percentage	product		business process	
			million roubles	percentage	million roubles	percentage
Manufacture of rubber and plastic products	9165.1	0.4	4060.3	0.3	5104.8	0.6
Manufacture of other non-metallic mineral products	6232.4	0.3	3509.4	0.3	2723.0	0.3
Manufacture of basic metals	149874.1	7.0	68464.2	5.1	81409.9	10.3
Manufacture of fabricated metal products, except machinery and equipment	90748.7	4.3	76769.8	5.7	13978.9	1.8
Building of ships and boats	23023.8	1.1	11532.8	0.9	11491.0	1.5
Repair and installation of machinery and equipment	3267.9	0.2	2447.3	0.2	820.6	0.1
Low tech	72370.6	3.4	30580.3	2.3	41790.3	5.3
Manufacture of food products	28510.1	1.3	18555.0	1.4	9955.2	1.3
Manufacture of beverages	1156.3	0.1	697.4	0.1	458.9	0.1
Manufacture of tobacco products	3166.1	0.1	3138.4	0.2	27.6	0.0
Manufacture of textiles	989.5	0.05	592.1	0.04	397.4	0.1
Manufacture of wearing apparel	506.2	0.02	434.7	0.03	71.5	0.01
Manufacture of leather and related products	42.0	0.0	28.8	0.0	13.2	0.0
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	5891.8	0.3	5099.8	0.4	792.0	0.1
Manufacture of paper and paper products	30490.0	1.4	1676.7	0.1	28813.3	3.7
Printing and reproduction of recorded media	606.2	0.03	133.9	0.01	472.3	0.1
Manufacture of furniture	98.7	0.0	21.3	0.0	77.4	0.01
Other manufacturing	913.7	0.04	202.1	0.02	711.6	0.1
Electricity, gas, steam and air-conditioning supply	65037.7	3.0	31702.4	2.4	33335.4	4.2
Water supply; sewerage, waste management, and remediation activities	20983.0	1.0	15166.9	1.1	5816.1	0.7

(continued)

	Innovation expenditure		Including by innovation			
	million roubles	percentage	product		business process	
			million roubles	percentage	million roubles	percentage
Types of economic activity within services sector – total	912296.0	42.7	683644.0	50.7	228652.0	29.1
Transportation and storage	203748.5	9.5	165399.3	12.3	38349.3	4.9
Publishing activities	333.3	0.02	176.9	0.01	156.3	0.02
Telecommunications	50372.2	2.4	18521.1	1.4	31851.1	4.0
Computer programming, consultancy and related activities	45680.2	2.1	37214.6	2.8	8465.5	1.1
IT industry	7951.1	0.4	4530.2	0.3	3420.9	0.4
Legal and accounting activities	3542.3	0.2	3266.5	0.2	275.8	0.04
Activities of head offices; management consultancy activities	23867.8	1.1	7519.7	0.6	16348.1	2.1
Architectural and engineering activities; technical testing and analysis	25573.1	1.2	3723.6	0.3	21849.5	2.8
Scientific research and development	515314.9	24.1	423315.7	31.4	91999.3	11.7
Advertising and market research	817.9	0.04	571.9	0.04	246.0	0.03
Other professional, scientific and technical activities	799.3	0.04	548.1	0.04	251.2	0.03
Human health and social work activities	34295.5	1.6	18856.5	1.4	15439.0	2.0
Agriculture – total	39692.8	1.9	20191.2	1.5	19501.5	2.5
Growing of non-perennial crops	22553.6	1.1	16135.1	1.2	6418.5	0.8
Growing of perennial crops	3560.5	0.2	334.7	0.02	3225.8	0.4
Plant propagation	36.5	0.0	26.0	0.0	10.4	0.0
Animal production	12936.8	0.6	3293.6	0.2	9643.2	1.2
Mixed farming	231.9	0.01	84.1	0.01	147.8	0.02
Support activities to agriculture and post-harvest crop activities	373.5	0.02	317.7	0.02	55.9	0.01
Construction – total	13520.9	0.6	2611.8	0.2	10909.1	1.4

2.3. INTENSITY OF INNOVATION EXPENDITURE BY TYPE OF ECONOMIC ACTIVITY: 2020

(innovation expenditure as a percentage of total sales)**1 – total****2 – industrial production – total**

3 – mining and quarrying

4 – mining of coal and lignite

5 – extraction of crude petroleum and natural gas

6 – mining of metal ores

7 – other mining and quarrying

8 – mining support service activities

9 – manufacturing

10 – high tech

11 – manufacture of basic pharmaceutical products
and pharmaceutical preparations

12 – manufacture of computer, electronic and optical products

13 – manufacture of air and spacecraft and related machinery

14 – medium high tech

15 – production of chemicals and chemical products

16 – manufacture of electrical equipment

17 – manufacture of machinery and equipment
not elsewhere classified

18 – manufacture of motor vehicles, trailers and semi-trailers

19 – manufacture of other transport equipment

20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

22 – reproduction of recorded media

23 – manufacture of coke and refined petroleum products

24 – manufacture of rubber and plastic products

25 – manufacture of other non-metallic mineral products

26 – manufacture of basic metals

27 – manufacture of fabricated metal products, except machinery and equipment

28 – building of ships and boats

29 – repair and installation of machinery and equipment

30 – low tech

31 – manufacture of food products

32 – manufacture of beverages

33 – manufacture of tobacco products

34 – manufacture of textiles

35 – manufacture of wearing apparel

36 – manufacture of leather and related products

37 – manufacture of wood and of products of wood and cork, except furniture;
manufacture of articles of straw and plaiting materials

38 – printing and reproduction of recorded media

39 – printing and reproduction of recorded media

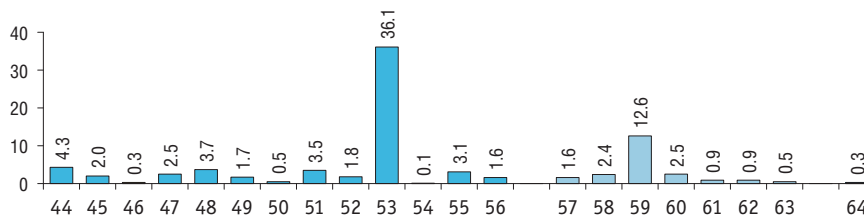
40 – manufacture of furniture

41 – other manufacturing

42 – electricity, gas, steam and air conditioning supply

43 – water supply; sewerage, waste management and remediation activities

(continued)



44 – types of economic activity within services sector – total

- 45 – transportation and storage
- 46 – publishing activities
- 47 – telecommunications
- 48 – computer programming, consultancy and related activities
- 49 – IT industry
- 50 – legal and accounting activities
- 51 – activities of head offices; management consultancy activities
- 52 – architectural and engineering activities; technical testing and analysis

53 – scientific research and development

54 – advertising and market research

55 – other professional, scientific and technical activities

56 – human health and social work activities

57 – agriculture – total

58 – growing of non-perennial crops

59 – growing of perennial crops

60 – plant propagation

61 – animal production

62 – mixed farming

63 – support activities to agriculture and post-harvest crop activities

64 – construction – total

2.4. INNOVATION EXPENDITURE BY TYPE OF INNOVATIVE AND ECONOMIC ACTIVITY: 2020

(million roubles)

	Innovation expenditure	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Total	2134038.4	945623.9	713523.8	5827.4	3572.8	7359.7	149772.7	87331.9	37816.1	4184.5	179025.7
Industrial production – total	1168528.8	447839.4	408973.2	4732.1	1074.6	6650.8	107020.4	30886.5	34085.5	2927.0	124339.2
Mining and quarrying	121784.8	20891.5	75339.0	10.9	46.2	–	5722.4	2049.6	237.9	157.7	17329.5
Mining of coal and lignite	1270.7	–	540.3	–	–	–	17.2	18.9	1.0	–	693.1
Extraction of crude petroleum and natural gas	85987.0	18426.6	50481.0	0.4	30.4	–	1623.4	1888.9	189.0	70.2	13277.1
Mining of metal ores	13119.5	346.3	8237.7	–	0.2	–	3108.9	52.7	0.4	–	1373.4
Other mining and quarrying	3743.5	969.7	1303.4	10.5	4.9	–	911.7	4.1	30.1	74.6	434.2
Mining support service activities	17664.2	1148.9	14776.6	–	10.6	–	61.2	84.9	17.4	12.9	1551.6
Manufacturing	960723.3	404753.7	297590.8	4694.7	937.8	6477.2	83294.9	25465.7	33815.6	1701.9	101990.9
High tech	226546.7	126120.8	43630.3	3657.6	172.1	2220.0	11337.8	4897.5	27414.8	47.2	7048.7
Manufacture of basic pharmaceutical products and pharmaceutical preparations	40052.5	6327.3	5810.7	584.3	18.7	4.6	348.1	461.6	26438.8	0.1	58.4
Production of computer, electronic and optical products	91419.9	54279.8	22567.8	3013.4	82.9	1179.9	3537.0	3572.6	479.8	30.0	2676.8
Manufacture of air and spacecraft and related machinery	95074.3	65513.8	15251.8	59.9	70.4	1035.5	7452.7	863.3	496.2	17.1	4313.6

* Here and below in tables 2.5, 2.7, figure 2.6, expenditure on acquisition of patent rights (alienation), licenses, industrial designs, utility models, selection achievements, integrated circuit designs, etc.; patenting (registration) of the results of intellectual activity.

(continued)

	Innovation expenditure	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Medium high tech	203464.3	42422.9	83563.3	320.9	382.7	1323.8	31445.2	4997.3	2651.3	272.0	36084.8
Production of chemicals and chemical products	113824.0	6435.0	55765.5	148.2	23.8	30.0	25770.8	3533.5	730.7	24.5	21361.9
Manufacture of electrical equipment	13931.0	6089.2	5044.1	7.7	15.4	29.3	701.5	658.3	632.4	140.1	613.0
Manufacture of machinery and equipment not elsewhere classified	24305.3	14069.3	6723.6	30.9	24.3	74.0	1695.0	232.7	1000.6	33.0	421.9
Manufacture of motor vehicles, trailers and semi-trailers	48904.1	14803.7	15395.6	103.3	59.1	1126.0	2917.9	527.6	281.7	73.5	13615.9
Manufacture of other transport equipment	1933.5	859.1	505.7	30.5	20.3	64.5	354.1	41.9	5.2	0.9	51.4
Manufacture of medical and dental instruments and supplies	566.4	166.6	128.9	0.3	239.8	–	6.0	3.3	0.9	–	20.7
Medium low tech	458341.8	219860.4	122573.0	446.2	332.6	1164.9	37008.0	15237.3	3682.7	1315.5	56721.2
Reproduction of recorded media	–	–	–	–	–	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	176029.7	107781.5	31830.2	–	17.3	962.0	8213.4	12419.5	296.5	473.8	14035.5
Manufacture of rubber and plastic products	9165.1	1007.9	6232.6	17.1	2.1	134.0	1272.7	43.8	300.6	0.4	153.8
Manufacture of other non-metallic mineral products	6232.4	1744.1	4018.8	3.1	0.9	6.9	52.6	77.0	34.4	10.4	284.3
Manufacture of basic metals	149874.1	42064.1	52395.3	229.2	54.3	24.6	15545.0	1352.7	2096.5	361.3	35751.1

(continued)

	Innovation expenditure	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Manufacture of fabricated metal products, except machinery and equipment	90748.7	55539.4	17672.1	185.0	64.1	37.3	11228.1	903.4	903.2	390.3	3825.8
Building of ships and boats	23023.8	10627.5	9665.2	9.1	7.6	–	462.5	236.6	22.8	21.2	1971.3
Repair and installation of machinery and equipment	3267.9	1096.1	758.7	2.7	186.3	–	233.7	204.3	28.7	58.1	699.3
Low tech	72370.6	16349.5	47824.3	269.9	50.4	1768.6	3503.9	333.7	66.7	67.3	2136.2
Manufacture of food products	28510.1	11718.4	13435.6	179.6	41.1	686.8	511.8	149.9	29.5	21.7	1735.8
Manufacture of beverages	1156.3	177.6	481.9	47.7	1.8	130.6	167.7	23.2	8.4	0.5	116.8
Manufacture of tobacco products	3166.1	2244.3	30.5	–	–	890.4	0.6	–	0.1	–	0.1
Manufacture of textiles	989.5	316.4	427.9	5.4	2.9	42.6	55.6	58.0	10.0	–	70.7
Manufacture of wearing apparel	506.2	96.4	336.0	2.3	2.2	–	3.6	41.5	9.5	1.0	13.6
Manufacture of leather and related products	42.0	0.3	25.1	–	–	–	–	2.5	0.4	–	13.6
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	5891.8	182.8	5427.9	9.1	0.1	10.5	79.5	2.3	–	0.1	179.5
Manufacture of paper and paper products	30490.0	1128.5	26607.0	8.6	0.4	1.2	2656.8	32.1	8.8	44.0	2.6
Printing and reproduction of recorded media	606.2	4.7	599.7	–	–	0.05	–	0.1	–	–	1.7

(continued)

	Innovation expenditure	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Manufacture of furniture	98.7	76.0	17.1	–	–	–	1.5	2.3	0.03	–	1.7
Other manufacturing	913.7	404.0	435.5	17.2	2.0	6.5	26.8	21.8	0.01	–	–
Electricity, gas, steam and air-conditioning supply	65037.7	19288.8	19329.7	4.4	87.8	173.5	17759.7	3314.6	28.5	270.7	4779.9
Water supply; sewerage, waste management, and remediation activities	20983.0	2905.5	16713.6	22.1	2.8	–	243.4	56.6	3.5	796.6	238.9
Types of economic activity within services sector – total	912296.0	494634.5	258847.0	953.2	2463.1	707.4	41830.6	56193.0	3660.9	1256.5	51749.6
Transportation and storage	203748.5	9685.1	184342.0	29.4	1072.5	25.1	1698.0	1808.2	108.7	49.7	4929.9
Publishing activities	333.3	108.3	121.9	1.2	0.7	1.6	–	73.3	2.6	0.1	23.6
Telecommunications	50372.2	3506.2	6864.3	23.5	53.9	0.2	26592.2	12441.0	64.6	37.9	788.6
Computer programming, consultancy and related activities	45680.2	19348.3	2092.2	297.6	66.9	6.9	245.8	13263.2	824.0	114.9	9420.2
IT industry	7951.1	1417.6	615.5	21.2	33.6	6.0	166.5	3417.4	1741.3	331.1	200.9
Legal and accounting activities	3542.3	26.7	2614.3	3.7	42.1	–	30.9	716.0	5.0	2.2	101.3
Activities of head offices; management consultancy activities	23867.8	7227.0	186.0	46.6	6.0	6.7	101.3	15433.5	8.3	1.9	850.3
Architectural and engineering activities; technical testing and analysis	25573.1	7502.5	1358.6	14.3	165.2	1.4	541.1	2848.9	50.0	515.9	12575.1
Scientific research and development	515314.9	438160.4	43165.9	403.5	967.3	653.0	12256.4	4131.1	249.4	126.2	15201.7

(continued)

	Innovation expenditure	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Advertising and market research	817.9	339.9	129.0	105.4	1.3	1.4	30.2	197.9	3.6	6.0	3.1
Other professional, scientific and technical activities	799.3	467.0	258.1	–	0.4	–	–	31.2	0.1	–	42.5
Human health and social work activities	34295.5	6845.5	17099.1	6.9	53.1	5.0	168.2	1831.2	603.4	70.5	7612.5
Agriculture – total	39692.8	1881.1	35376.2	128.6	1.7	1.0	823.5	126.1	67.8	0.3	1286.5
Growing of non-perennial crops	22553.6	946.6	21335.3	120.4	0.1	–	64.4	42.7	20.1	0.2	23.8
Growing of perennial crops	3560.5	–	3452.9	1.8	–	–	–	59.2	46.6	–	–
Plant propagation	36.5	10.3	26.1	–	–	–	–	–	–	–	–
Animal production	12936.8	718.8	10179.7	6.4	1.2	1.0	752.5	23.9	1.2	0.1	1252.2
Mixed farming	231.9	–	222.3	–	–	–	0.1	–	–	–	9.5
Support activities to agriculture and post-harvest crop activities	373.5	205.4	159.9	–	0.4	–	6.5	0.3	0.01	–	1.0
Construction – total	13520.9	1268.8	10327.4	13.5	33.4	0.5	98.2	126.3	1.8	0.7	1650.4

2.5. PERCENTAGE DISTRIBUTION OF INNOVATION EXPENDITURE BY TYPE OF INNOVATIVE AND ECONOMIC ACTIVITY: 2020

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Total	44.3	33.4	0.3	0.2	0.3	7.0	4.1	1.8	0.2	8.4
Industrial production – total	38.3	35.0	0.4	0.1	0.6	9.2	2.6	2.9	0.3	10.6
Mining and quarrying	17.2	61.9	0.01	0.04	–	4.7	1.7	0.2	0.1	14.2
Mining of coal and lignite	–	42.5	–	–	–	1.4	1.5	0.1	–	54.5
Extraction of crude petroleum and natural gas	21.4	58.7	0.0	0.04	–	1.9	2.2	0.2	0.1	15.4
Mining of metal ores	2.6	62.8	–	0.0	–	23.7	0.4	0.0	–	10.5
Other mining and quarrying	25.9	34.8	0.3	0.1	–	24.4	0.1	0.8	2.0	11.6
Mining support service activities	6.5	83.7	–	0.1	–	0.3	0.5	0.1	0.1	8.8
Manufacturing	42.1	31.0	0.5	0.1	0.7	8.7	2.7	3.5	0.2	10.6
High tech	55.7	19.3	1.6	0.1	1.0	5.0	2.2	12.1	0.02	3.1
Manufacture of basic pharmaceutical products and pharmaceutical preparations	15.8	14.5	1.5	0.05	0.01	0.9	1.2	66.0	0.0	0.1
Production of computer, electronic and optical products	59.4	24.7	3.3	0.1	1.3	3.9	3.9	0.5	0.03	2.9
Manufacture of air and spacecraft and related machinery	68.9	16.0	0.1	0.1	1.1	7.8	0.9	0.5	0.02	4.5

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Medium high tech	20.9	41.1	0.2	0.2	0.7	15.5	2.5	1.3	0.1	17.7
Production of chemicals and chemical products	5.7	49.0	0.1	0.02	0.03	22.6	3.1	0.6	0.02	18.8
Manufacture of electrical equipment	43.7	36.2	0.1	0.1	0.2	5.0	4.7	4.5	1.0	4.4
Manufacture of machinery and equipment not elsewhere classified	57.9	27.7	0.1	0.1	0.3	7.0	1.0	4.1	0.1	1.7
Manufacture of motor vehicles, trailers and semi-trailers	30.3	31.5	0.2	0.1	2.3	6.0	1.1	0.6	0.2	27.8
Manufacture of other transport equipment	44.4	26.2	1.6	1.0	3.3	18.3	2.2	0.3	0.05	2.7
Manufacture of medical and dental instruments and supplies	29.4	22.8	0.1	42.3	–	1.1	0.6	0.2	–	3.7
Medium low tech	48.0	26.7	0.1	0.1	0.3	8.1	3.3	0.8	0.3	12.4
Reproduction of recorded media	–	–	–	–	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	61.2	18.1	–	0.01	0.5	4.7	7.1	0.2	0.3	8.0
Manufacture of rubber and plastic products	11.0	68.0	0.2	0.02	1.5	13.9	0.5	3.3	0.0	1.7
Manufacture of other non-metallic mineral products	28.0	64.5	0.05	0.01	0.1	0.8	1.2	0.6	0.2	4.6
Manufacture of basic metals	28.1	35.0	0.2	0.04	0.02	10.4	0.9	1.4	0.2	23.9

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Manufacture of fabricated metal products, except machinery and equipment	61.2	19.5	0.2	0.1	0.04	12.4	1.0	1.0	0.4	4.2
Building of ships and boats	46.2	42.0	0.04	0.03	–	2.0	1.0	0.1	0.1	8.6
Repair and installation of machinery and equipment	33.5	23.2	0.1	5.7	–	7.2	6.3	0.9	1.8	21.4
Low tech	22.6	66.1	0.4	0.1	2.4	4.8	0.5	0.1	0.1	3.0
Manufacture of food products	41.1	47.1	0.6	0.1	2.4	1.8	0.5	0.1	0.1	6.1
Manufacture of beverages	15.4	41.7	4.1	0.2	11.3	14.5	2.0	0.7	0.04	10.1
Manufacture of tobacco products	70.9	1.0	–	–	28.1	0.02	–	0.0	–	0.0
Manufacture of textiles	32.0	43.2	0.5	0.3	4.3	5.6	5.9	1.0	–	7.1
Manufacture of wearing apparel	19.0	66.4	0.5	0.4	–	0.7	8.2	1.9	0.2	2.7
Manufacture of leather and related products	0.7	59.8	–	–	–	–	6.1	0.9	–	32.5
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	3.1	92.1	0.2	0.0	0.2	1.4	0.04	–	0.0	3.0
Manufacture of paper and paper products	3.7	87.3	0.03	0.0	0.0	8.7	0.1	0.03	0.1	0.01
Printing and reproduction of recorded media	0.8	98.9	–	–	0.01	–	0.01	–	–	0.3

(continued)

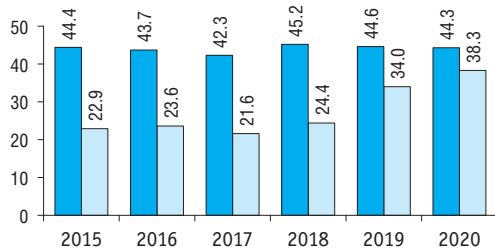
	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Manufacture of furniture	77.1	17.4	–	–	–	1.6	2.3	0.03	–	1.7
Other manufacturing	44.2	47.7	1.9	0.2	0.7	2.9	2.4	0.0	–	–
Electricity, gas, steam and air-conditioning supply	29.7	29.7	0.01	0.1	0.3	27.3	5.1	0.04	0.4	7.3
Water supply; sewerage, waste management, and remediation activities	13.8	79.7	0.1	0.01	–	1.2	0.3	0.02	3.8	1.1
Types of economic activity within services sector – total	54.2	28.4	0.1	0.3	0.1	4.6	6.2	0.4	0.1	5.7
Transportation and storage	4.8	90.5	0.01	0.5	0.01	0.8	0.9	0.1	0.02	2.4
Publishing activities	32.5	36.6	0.4	0.2	0.5	–	22.0	0.8	0.03	7.1
Telecommunications	7.0	13.6	0.05	0.1	0.0	52.8	24.7	0.1	0.1	1.6
Computer programming, consultancy and related activities	42.4	4.6	0.7	0.1	0.02	0.5	29.0	1.8	0.3	20.6
IT industry	17.8	7.7	0.3	0.4	0.1	2.1	43.0	21.9	4.2	2.5
Legal and accounting activities	0.8	73.8	0.1	1.2	–	0.9	20.2	0.1	0.1	2.9
Activities of head offices; management consultancy activities	30.3	0.8	0.2	0.03	0.03	0.4	64.7	0.03	0.01	3.6
Architectural and engineering activities; technical testing and analysis	29.3	5.3	0.1	0.6	0.01	2.1	11.1	0.2	2.0	49.2
Scientific research and development	85.0	8.4	0.1	0.2	0.1	2.4	0.8	0.05	0.02	2.9
Advertising and market research	41.6	15.8	12.9	0.2	0.2	3.7	24.2	0.4	0.7	0.4

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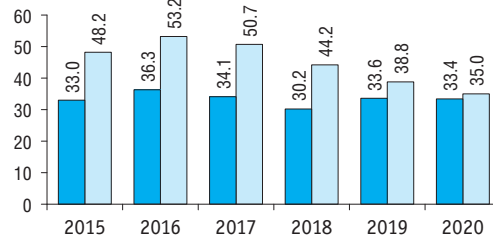
	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Other professional, scientific and technical activities	58.4	32.3	–	0.05	–	–	3.9	0.01	–	5.3
Human health and social work activities	20.0	49.9	0.02	0.2	0.01	0.5	5.3	1.8	0.2	22.2
Agriculture – total	4.7	89.1	0.3	0.0	0.0	2.1	0.3	0.2	0.0	3.2
Growing of non-perennial crops	4.2	94.6	0.5	0.0	–	0.3	0.2	0.1	0.0	0.1
Growing of perennial crops	–	97.0	0.05	–	–	–	1.7	1.3	–	–
Plant propagation	28.3	71.7	–	–	–	–	–	–	–	–
Animal production	5.6	78.7	0.05	0.01	0.01	5.8	0.2	0.01	0.0	9.7
Mixed farming	–	95.9	–	–	–	0.04	–	–	–	4.1
Support activities to agriculture and post-harvest crop activities	55.0	42.8	–	0.1	–	1.7	0.1	0.0	–	0.3
Construction – total	9.4	76.4	0.1	0.2	0.0	0.7	0.9	0.01	0.0	12.2

2.6. EXPENDITURE ON SELECTED TYPES OF INNOVATIVE ACTIVITIES AS A PERCENTAGE OF THE TOTAL INNOVATION EXPENDITURE*

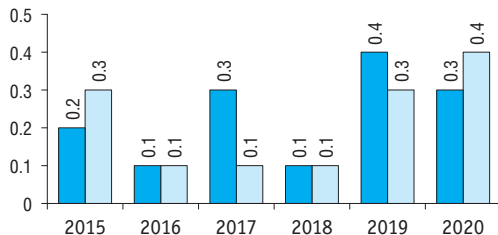
Research and development



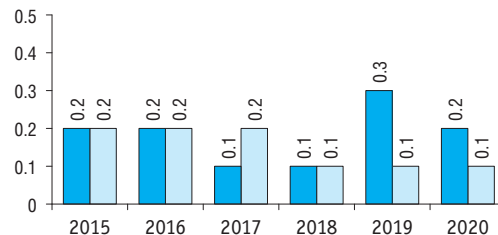
Purchase of machinery and equipment, or other fixed assets



Marketing and brand creation**



Education and training of personnel

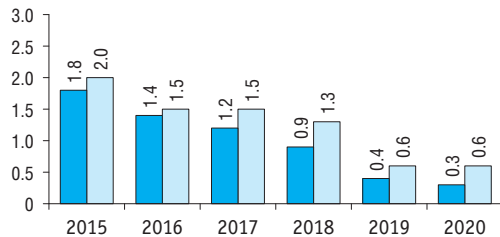


■ Total

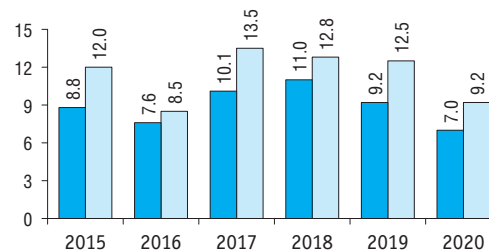
■ Industrial production

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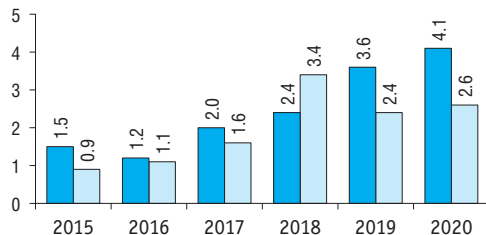
Design



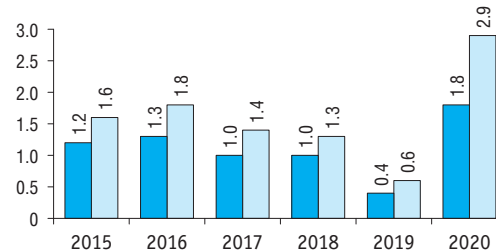
Engineering



Development and purchase of software and databases***



Acquisition of rights to the results of intellectual activity****



■ Total ■ Industrial production

* Until 2019, the indicator was calculated based on the data of expenditure on technological innovation.

** Until 2019, market research.

*** Until 2019, purchase of software.

**** Until 2019, acquisition of new technologies.

2.7. EXPENDITURE ON THIRD-PARTY SERVICES BY TYPE OF INNOVATIVE AND ECONOMIC ACTIVITY: 2020

(as a percentage of the total innovation expenditure on the corresponding innovative activity)

	Total on payment for services of third-party enterprises	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Total	44.6	37.9	53.0	37.5	76.9	32.3	51.6	67.2	14.7	79.6	35.8
Industrial production – total	43.9	45.6	44.4	38.2	53.5	34.1	42.6	71.1	12.8	89.1	38.9
Mining and quarrying	27.9	15.1	24.2	96.4	61.0	–	85.2	70.7	56.4	55.5	34.4
Mining of coal and lignite	65.1	–	41.3	–	–	–	100	97.9	–	–	81.9
Extraction of crude petroleum and natural gas	9.2	6.2	0.6	–	46.5	–	68.9	74.0	47.6	–	29.2
Mining of metal ores	56.5	96.1	37.5	–	100	–	89.0	34.9	–	–	87.7
Other mining and quarrying	55.1	59.7	14.0	100	100	–	100	69.4	99.5	100	61.2
Mining support service activities	88.8	95.4	97.7	–	83.6	–	99.8	12.4	81.7	100	3.4
Manufacturing	46.0	47.6	48.8	37.7	51.5	32.7	45.7	68.9	12.5	86.8	37.7
High tech	29.3	34.1	40.2	28.2	62.9	0.1	7.1	28.5	2.2	47.5	28.6
Manufacture of basic pharmaceutical products and pharmaceutical preparations	17.7	62.4	32.6	98.4	19.0	21.5	17.4	82.9	0.8	100	7.7
Production of computer, electronic and optical products	20.4	21.5	20.7	13.4	57.8	0.2	15.2	14.9	42.1	17.6	21.5
Manufacture of air and spacecraft and related machinery	42.9	41.8	71.8	89.4	80.5	0.04	2.7	55.6	35.0	100	33.2

(continued)

	Total on payment for services of third-party enterprises	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Medium high tech	38.9	30.0	32.8	56.7	14.4	17.4	62.5	40.9	21.5	61.6	44.7
Production of chemicals and chemical products	41.5	34.4	20.5	65.2	40.0	53.6	71.3	31.3	18.7	63.1	64.9
Manufacture of electrical equipment	36.4	23.3	46.5	76.2	70.5	41.9	13.7	73.5	17.9	99.6	73.4
Manufacture of machinery and equipment not elsewhere classified	15.9	11.1	16.3	48.4	50.0	3.5	43.0	25.9	6.5	38.3	75.4
Manufacture of motor vehicles, trailers and semi-trailers	45.0	48.1	78.8	56.1	14.8	17.7	14.6	72.0	89.1	–	10.7
Manufacture of other transport equipment	47.4	47.3	78.6	21.3	67.3	–	14.3	34.4	79.9	–	46.7
Manufacture of medical and dental instruments and supplies	4.9	3.8	14.4	6.7	0.04	–	–	–	30.8	–	13.7
Medium low tech	56.7	60.7	58.2	86.1	85.6	94.2	40.5	91.2	81.8	94.4	35.6
Reproduction of recorded media	–	–	–	–	–	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	79.7	69.0	96.0	–	100	100	100	99.8	96.9	100	92.6
Manufacture of rubber and plastic products	13.6	20.0	7.6	20.0	38.5	85.9	31.7	65.4	6.5	–	1.2
Manufacture of other non-metallic mineral products	24.7	21.9	24.7	68.3	40.7	70.7	52.0	19.0	51.8	34.8	33.9
Manufacture of basic metals	43.3	77.4	42.0	99.9	34.9	50.2	31.3	38.5	90.3	99.5	6.9

(continued)

	Total on payment for services of third-party enterprises	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Manufacture of furniture	78.4	89.2	42.7	–	–	–	12.3	87.0	–	–	2.3
Other manufacturing	24.5	12.6	27.6	95.2	81.3	100	24.0	100	–	–	–
Electricity, gas, steam and air-conditioning supply	45.9	31.2	73.1	84.9	69.9	86.1	14.0	88.2	36.5	91.2	79.9
Water supply; sewerage, waste management, and remediation activities	36.7	83.4	23.8	100	90.4	–	92.9	66.0	72.5	99.9	87.7
Types of economic activity within services sector – total	45.6	31.0	67.8	38.4	88.0	15.4	75.1	65.2	30.6	57.5	28.6
Transportation and storage	78.9	44.6	80.8	99.8	96.3	40.8	64.9	86.2	44.6	49.5	73.8
Publishing activities	10.0	0.3	2.0	3.0	55.1	21.4	–	7.4	32.7	14.0	99.6
Telecommunications	87.6	8.9	72.0	83.4	82.2	–	98.9	96.2	79.0	99.7	62.0
Computer programming, consultancy and related activities	17.1	8.1	27.3	31.3	46.3	18.0	1.8	17.2	95.7	84.9	25.2
IT industry	21.7	22.4	30.7	24.3	4.0	59.1	5.7	29.4	8.7	1.7	18.1
Legal and accounting activities	8.3	88.7	3.5	100	23.8	–	99.4	11.2	60.3	100	48.6
Activities of head offices; management consultancy activities	94.2	99.3	19.7	83.1	91.1	53.6	96.4	97.4	8.0	80.2	8.9
Architectural and engineering activities; technical testing and analysis	40.2	48.7	67.7	38.5	96.3	100	6.7	67.7	51.4	98.6	24.2
Scientific research and development	31.1	30.4	38.6	28.1	88.3	12.6	30.7	51.3	12.1	28.3	22.7
Advertising and market research	31.9	34.4	21.0	48.6	97.6	100	100	14.9	–	10.1	98.5

(continued)

	Total on payment for services of third-party enterprises	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Other professional, scientific and technical activities	7.3	1.0	1.4	–	41.4	–	–	28.5	24.8	–	96.0
Human health and social work activities	24.2	42.2	17.9	89.6	48.2	94.8	29.2	34.4	3.5	12.1	21.0
Agriculture – total	34.8	22.3	36.8	2.3	81.7	85.3	19.5	56.7	98.3	34.4	5.9
Growing of non-perennial crops	19.0	26.6	18.7	0.2	84.4	–	28.5	25.0	99.7	–	0.2
Growing of perennial crops	87.3	–	86.9	100	–	–	–	100	100	–	–
Plant propagation	–	–	–	–	–	–	–	–	–	–	–
Animal production	47.8	9.6	57.9	15.4	75.5	85.3	18.0	5.9	5.9	91.8	6.0
Mixed farming	8.0	–	8.3	–	–	–	100	–	–	–	0.2
Support activities to agriculture and post-harvest crop activities	52.8	47.6	57.0	–	98.3	–	100	64.4	100	–	100
Construction – total	68.0	28.0	76.7	91.3	16.0	99.2	72.8	44.8	37.6	63.6	46.3

2.8. INNOVATION EXPENDITURE BY SOURCE OF FUNDS AND TYPE OF ECONOMIC ACTIVITY: 2020

(million roubles)

	Innovation expenditure	Enterprises' own funds	Federal budget	Regional and local budgets of the Russian Federation	Foundations for S&T and innovation	Funds from abroad	Including from EU countries, EU candidate countries*, Liechtenstein, Norway, Switzerland, United Kingdom	Venture capital and private equity funds	Other
Total	2134038.4	1180507.6	498868.4	32304.6	13386.1	12980.0	611.2	137.7	395854.1
Industrial production – total	1168528.8	753270.4	133124.4	4541.8	1354.6	4799.5	432.7	71.2	271366.9
Mining and quarrying	121784.8	69614.6	216.0	–	–	15.2	–	–	51938.9
Mining of coal and lignite	1270.7	1109.7	–	–	–	–	–	–	161.0
Extraction of crude petroleum and natural gas	85987.0	36527.9	155.1	–	–	–	–	–	49303.9
Mining of metal ores	13119.5	11096.2	60.9	–	–	15.2	–	–	1947.2
Other mining and quarrying	3743.5	3451.9	–	–	–	–	–	–	291.6
Mining support service activities	17664.2	17428.9	–	–	–	–	–	–	235.2
Manufacturing	960723.3	633027.1	130434.7	857.1	1354.6	4784.2	432.7	71.2	190194.4
High tech	226546.7	132301.6	79696.3	666.0	339.7	–	–	71.2	13471.9
Manufacture of basic pharmaceutical products and pharmaceutical preparations	40052.5	36002.4	2247.6	0.3	108.4	–	–	–	1693.7
Production of computer, electronic and optical products	91419.9	47497.5	38806.9	659.0	231.3	–	–	–	4225.1
Manufacture of air and spacecraft and related machinery	95074.3	48801.6	38641.7	6.7	–	–	–	71.2	7553.1

* Here and below in table 2.9, Albania, Bosnia and Herzegovina, Kosovo, North Macedonia, Serbia, Türkiye, and Montenegro.

(continued)

	Innovation expenditure	Enterprises' own funds	Federal budget	Regional and local budgets of the Russian Federation	Foundations for S&T and innovation	Funds from abroad	Including from EU countries, EU candidate countries*, Liechtenstein, Norway, Switzerland, United Kingdom	Venture capital and private equity funds	Other
Medium high tech	203464.3	134407.8	8625.3	134.4	109.1	3552.8	–	–	56634.8
Production of chemicals and chemical products	113824.0	61078.5	1909.6	22.6	–	2823.3	–	–	47990.1
Manufacture of electrical equipment	13931.0	11937.2	1645.2	7.2	26.7	–	–	–	314.8
Manufacture of machinery and equipment not elsewhere classified	24305.3	12518.9	4017.0	38.8	–	162.4	–	–	7568.2
Manufacture of motor vehicles, trailers and semi-trailers	48904.1	46394.9	1053.2	65.9	82.4	567.1	–	–	740.5
Manufacture of other transport equipment	1933.5	1929.5	0.1	–	–	–	–	–	3.9
Manufacture of medical and dental instruments and supplies	566.4	548.9	0.1	–	–	–	–	–	17.3
Medium low tech	458341.8	302367.0	41820.9	12.7	166.5	370.6	120.3	–	113604.1
Reproduction of recorded media	–	–	–	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	176029.7	84488.1	–	–	–	–	–	–	91541.7
Manufacture of rubber and plastic products	9165.1	5242.9	958.3	–	–	–	–	–	2963.9
Manufacture of other non-metallic mineral products	6232.4	5948.9	143.0	0.3	–	–	–	–	140.2
Manufacture of basic metals	149874.1	144434.0	540.5	12.1	–	2.2	–	–	4885.3

(continued)

	Innovation expenditure	Enterprises' own funds	Federal budget	Regional and local budgets of the Russian Federation	Foundations for S&T and innovation	Funds from abroad	Including from EU countries, EU candidate countries*, Liechtenstein, Norway, Switzerland, United Kingdom	Venture capital and private equity funds	Other
Manufacture of fabricated metal products, except machinery and equipment	90748.7	40806.7	37833.8	0.3	166.5	368.4	120.3	–	11573.1
Building of ships and boats	23023.8	18438.4	2208.4	–	–	–	–	–	2377.0
Repair and installation of machinery and equipment	3267.9	3008.1	136.9	–	–	–	–	–	122.9
Low tech	72370.6	63950.8	292.2	43.9	739.2	860.8	312.4	–	6483.7
Manufacture of food products	28510.1	25565.7	65.3	36.2	0.2	683.7	312.4	–	2159.0
Manufacture of beverages	1156.3	1037.4	–	–	–	–	–	–	118.8
Manufacture of tobacco products	3166.1	3166.1	–	–	–	–	–	–	–
Manufacture of textiles	989.5	931.1	24.9	–	–	–	–	–	33.5
Manufacture of wearing apparel	506.2	407.4	91.1	7.6	–	–	–	–	–
Manufacture of leather and related products	42.0	42.0	–	–	–	–	–	–	–
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	5891.8	1205.0	–	–	739.0	–	–	–	3947.8
Manufacture of paper and paper products	30490.0	30203.1	–	–	–	177.1	–	–	109.7
Printing and reproduction of recorded media	606.2	606.1	–	0.1	–	–	–	–	–
Manufacture of furniture	98.7	98.7	–	–	–	–	–	–	–
Other manufacturing	913.7	688.0	110.9	–	–	–	–	–	114.8

(continued)

	Innovation expenditure	Enterprises' own funds	Federal budget	Regional and local budgets of the Russian Federation	Foundations for S&T and innovation	Funds from abroad	Including from EU countries, EU candidate countries*, Liechtenstein, Norway, Switzerland, United Kingdom	Venture capital and private equity funds	Other
Electricity, gas, steam and air-conditioning supply	65037.7	35339.4	149.1	1403.0	–	–	–	–	28146.3
Water supply; sewerage, waste management, and remediation activities	20983.0	15289.3	2324.7	2281.7	–	–	–	–	1087.3
Types of economic activity within services sector – total	912296.0	410051.0	364770.2	25573.1	12031.6	8164.4	162.5	66.5	91639.3
Transportation and storage	203748.5	194489.8	8245.3	252.7	–	–	–	–	760.8
Publishing activities	333.3	317.7	0.6	3.0	–	–	–	–	11.9
Telecommunications	50372.2	49694.9	673.9	–	–	–	–	–	3.4
Computer programming, consultancy and related activities	45680.2	41616.8	1761.7	512.6	142.9	326.5	–	–	1319.7
IT industry	7951.1	5353.9	1928.4	490.8	–	4.9	–	–	173.0
Legal and accounting activities	3542.3	2822.4	17.7	701.8	–	–	–	–	0.4
Activities of head offices; management consultancy activities	23867.8	8921.0	47.4	90.5	–	3.5	–	–	14805.4
Architectural and engineering activities; technical testing and analysis	25573.1	23629.8	889.9	80.3	–	–	–	–	973.1
Scientific research and development	515314.9	76246.2	339368.2	7798.0	11814.9	7827.7	162.5	60.5	72199.4
Advertising and market research	817.9	780.4	–	4.4	–	–	–	–	33.1
Other professional, scientific and technical activities	799.3	387.3	351.2	58.6	1.7	–	–	–	0.5
Human health and social work activities	34295.5	5790.9	11486.0	15580.4	72.0	1.7	–	6.0	1358.5

(continued)

	Innovation expenditure	Enterprises' own funds	Federal budget	Regional and local budgets of the Russian Federation	Foundations for S&T and innovation	Funds from abroad	Including from EU candidate countries*, Liechtenstein, Norway, Switzerland, United Kingdom	Venture capital and private equity funds	Other
Agriculture – total	39692.8	12141.8	478.6	318.9	–	16.1	16.1	–	26737.5
Growing of non-perennial crops	22553.6	5482.5	25.7	0.3	–	–	–	–	17045.0
Growing of perennial crops	3560.5	134.0	–	0.3	–	–	–	–	3426.3
Plant propagation	36.5	36.5	–	–	–	–	–	–	–
Animal production	12936.8	6319.6	388.8	298.1	–	–	–	–	5930.4
Mixed farming	231.9	95.0	–	19.2	–	–	–	–	117.6
Support activities to agriculture and post-harvest crop activities	373.5	74.2	64.1	1.0	–	16.1	16.1	–	218.1
Construction – total	13520.9	5044.5	495.2	1870.8	–	–	–	–	6110.4

2.9. INNOVATION EXPENDITURE BY SOURCE OF FUNDS AND TYPE OF ECONOMIC ACTIVITY: 2020

(percentage)

	Enterprises' own funds	Federal budget	Regional and local budgets of the Russian Federation	Foundations for S&T and innovation	Funds from abroad	Including from EU countries, EU candidate countries, Liechtenstein, Norway, Switzerland, United Kingdom	Venture capital and private equity funds	Other funds
Total	55.3	23.4	1.5	0.6	0.6	0.03	0.01	18.5
Industrial production – total	64.5	11.4	0.4	0.1	0.4	0.04	0.01	23.2
Mining and quarrying	57.2	0.2	–	–	0.01	–	–	42.6
Mining of coal and lignite	87.3	–	–	–	–	–	–	12.7
Extraction of crude petroleum and natural gas	42.5	0.2	–	–	–	–	–	57.3
Mining of metal ores	84.6	0.5	–	–	0.1	–	–	14.8
Other mining and quarrying	92.2	–	–	–	–	–	–	7.8
Mining support service activities	98.7	–	–	–	–	–	–	1.3
Manufacturing	65.9	13.6	0.1	0.1	0.5	0.05	0.01	19.8
High tech	58.4	35.2	0.3	0.1	–	–	0.03	5.9
Manufacture of basic pharmaceutical products and pharmaceutical preparations	89.9	5.6	0.0	0.3	–	–	–	4.2
Production of computer, electronic and optical products	52.0	42.4	0.7	0.3	–	–	–	4.6
Manufacture of air and spacecraft and related machinery	51.3	40.6	0.01	–	–	–	0.1	7.9

(continued)

	Enterprises' own funds	Federal budget	Regional and local budgets of the Russian Federation	Foundations for S&T and innovation	Funds from abroad	Including from EU countries, EU candidate countries, Liechtenstein, Norway, Switzerland, United Kingdom	Venture capital and private equity funds	Other funds
Medium high tech	66.1	4.2	0.1	0.1	1.7	–	–	27.8
Production of chemicals and chemical products	53.7	1.7	0.02	–	2.5	–	–	42.2
Manufacture of electrical equipment	85.7	11.8	0.1	0.2	–	–	–	2.3
Manufacture of machinery and equipment not elsewhere classified	51.5	16.5	0.2	–	0.7	–	–	31.1
Manufacture of motor vehicles, trailers and semi-trailers	94.9	2.2	0.1	0.2	1.2	–	–	1.5
Manufacture of other transport equipment	99.8	0.01	–	–	–	–	–	0.2
Manufacture of medical and dental instruments and supplies	96.9	0.02	–	–	–	–	–	3.1
Medium low tech	66.0	9.1	0.0	0.04	0.1	0.03	–	24.8
Reproduction of recorded media	–	–	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	48.0	–	–	–	–	–	–	52.0
Manufacture of rubber and plastic products	57.2	10.5	–	–	–	–	–	32.3
Manufacture of other non-metallic mineral products	95.5	2.3	0.0	–	–	–	–	2.2
Manufacture of basic metals	96.4	0.4	0.01	–	0.0	–	–	3.3

(continued)

	Enterprises' own funds	Federal budget	Regional and local budgets of the Russian Federation	Foundations for S&T and innovation	Funds from abroad	Including from EU countries, EU candidate countries, Liechtenstein, Norway, Switzerland, United Kingdom	Venture capital and private equity funds	Other funds
Manufacture of fabricated metal products, except machinery and equipment	45.0	41.7	0.0	0.2	0.4	0.1	–	12.8
Building of ships and boats	80.1	9.6	–	–	–	–	–	10.3
Repair and installation of machinery and equipment	92.0	4.2	–	–	–	–	–	3.8
Low tech	88.4	0.4	0.1	1.0	1.2	0.4	–	9.0
Manufacture of food products	89.7	0.2	0.1	0.0	2.4	1.1	–	7.6
Manufacture of beverages	89.7	–	–	–	–	–	–	10.3
Manufacture of tobacco products	100	–	–	–	–	–	–	–
Manufacture of textiles	94.1	2.5	–	–	–	–	–	3.4
Manufacture of wearing apparel	80.5	18.0	1.5	–	–	–	–	–
Manufacture of leather and related products	100	–	–	–	–	–	–	–
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	20.5	–	–	12.5	–	–	–	67.0
Manufacture of paper and paper products	99.1	–	–	–	0.6	–	–	0.4
Printing and reproduction of recorded media	100	–	0.01	–	–	–	–	–
Manufacture of furniture	100	–	–	–	–	–	–	–
Other manufacturing	75.3	12.1	–	–	–	–	–	12.6

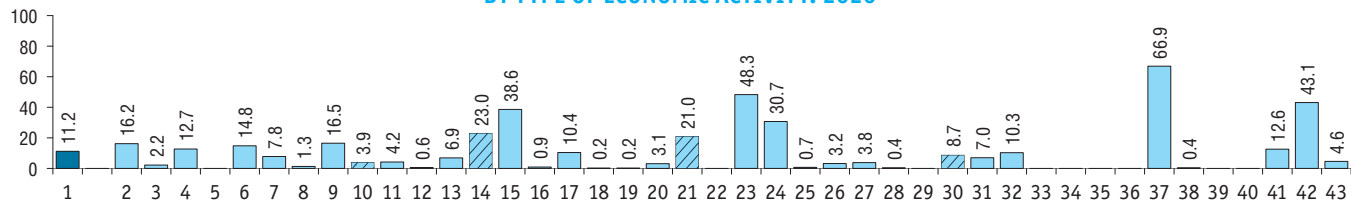
(continued)

	Enterprises' own funds	Federal budget	Regional and local budgets of the Russian Federation	Foundations for S&T and innovation	Funds from abroad	Including from EU countries, EU candidate countries, Liechtenstein, Norway, Switzerland, United Kingdom	Venture capital and private equity funds	Other funds
Electricity, gas, steam and air-conditioning supply	54.3	0.2	2.2	–	–	–	–	43.3
Water supply; sewerage, waste management, and remediation activities	72.9	11.1	10.9	–	–	–	–	5.2
Types of economic activity within services sector – total	44.9	40.0	2.8	1.3	0.9	0.02	0.01	10.0
Transportation and storage	95.5	4.0	0.1	–	–	–	–	0.4
Publishing activities	95.3	0.2	0.9	–	–	–	–	3.6
Telecommunications	98.7	1.3	–	–	–	–	–	0.01
Computer programming, consultancy and related activities	91.1	3.9	1.1	0.3	0.7	–	–	2.9
IT industry	67.3	24.3	6.2	–	0.1	–	–	2.2
Legal and accounting activities	79.7	0.5	19.8	–	–	–	–	0.01
Activities of head offices; management consultancy activities	37.4	0.2	0.4	–	0.01	–	–	62.0
Architectural and engineering activities; technical testing and analysis	92.4	3.5	0.3	–	–	–	–	3.8
Scientific research and development	14.8	65.9	1.5	2.3	1.5	0.03	0.01	14.0
Advertising and market research	95.4	–	0.5	–	–	–	–	4.0
Other professional, scientific and technical activities	48.5	43.9	7.3	0.2	–	–	–	0.1
Human health and social work activities	16.9	33.5	45.4	0.2	0.01	–	0.02	4.0

(continued)

	Enterprises' own funds	Federal budget	Regional and local budgets of the Russian Federation	Foundations for S&T and innovation	Funds from abroad	Including from EU countries, EU candidate countries, Liechtenstein, Norway, Switzerland, United Kingdom	Venture capital and private equity funds	Other funds
Agriculture – total	30.6	1.2	0.8	–	0.04	0.04	–	67.4
Growing of non-perennial crops	24.3	0.1	0.0	–	–	–	–	75.6
Growing of perennial crops	3.8	–	0.01	–	–	–	–	96.2
Plant propagation	100	–	–	–	–	–	–	–
Animal production	48.8	3.0	2.3	–	–	–	–	45.8
Mixed farming	41.0	–	8.3	–	–	–	–	50.7
Support activities to agriculture and post-harvest crop activities	19.9	17.2	0.3	–	4.3	4.3	–	58.4
Construction – total	37.3	3.7	13.8	–	–	–	–	45.2

2.10. LOANS AND BORROWINGS AS A PERCENTAGE OF THE TOTAL INNOVATION EXPENDITURE BY TYPE OF ECONOMIC ACTIVITY: 2020



1 – total

2 – industrial production – total

3 – mining and quarrying

4 – mining of coal and lignite

5 – extraction of crude petroleum and natural gas

6 – mining of metal ores

7 – other mining and quarrying

8 – mining support service activities

9 – manufacturing

10 – high tech

11 – manufacture of basic pharmaceutical products
and pharmaceutical preparations

12 – manufacture of computer, electronic and optical products

13 – manufacture of air and spacecraft and related machinery

14 – medium high tech

15 – production of chemicals and chemical products

16 – manufacture of electrical equipment

17 – manufacture of machinery and equipment
not elsewhere classified

18 – manufacture of motor vehicles, trailers and semi-trailers

19 – manufacture of other transport equipment

20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

22 – reproduction of recorded media

23 – manufacture of coke and refined petroleum products

24 – manufacture of rubber and plastic products

25 – manufacture of other non-metallic mineral products

26 – manufacture of basic metals

27 – manufacture of fabricated metal products, except machinery and equipment

28 – building of ships and boats

29 – repair and installation of machinery and equipment

30 – low tech

31 – manufacture of food products

32 – manufacture of beverages

33 – manufacture of tobacco products

34 – manufacture of textiles

35 – manufacture of wearing apparel

36 – manufacture of leather and related products

37 – manufacture of wood and of products of wood and cork, except furniture;
manufacture of articles of straw and plaiting materials

38 – printing and reproduction of recorded media

39 – printing and reproduction of recorded media

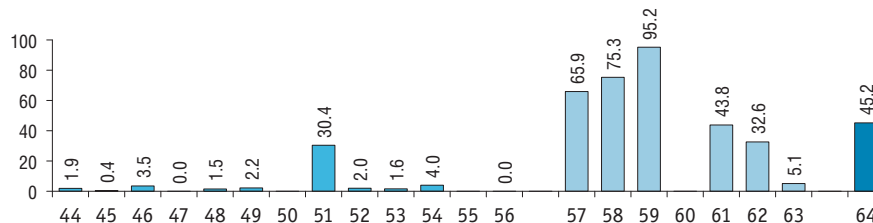
40 – manufacture of furniture

41 – other manufacturing

42 – electricity, gas, steam and air conditioning supply

43 – water supply; sewerage, waste management and remediation activities

(continued)

**44 – types of economic activity within services sector – total**

45 – transportation and storage

46 – publishing activities

47 – telecommunications

48 – computer programming, consultancy and related activities

49 – IT industry

50 – legal and accounting activities

51 – activities of head offices; management consultancy activities

52 – architectural and engineering activities; technical testing and analysis

53 – scientific research and development

54 – advertising and market research

55 – other professional, scientific and technical activities

56 – human health and social work activities

57 – agriculture – total

58 – growing of non-perennial crops

59 – growing of perennial crops

60 – plant propagation

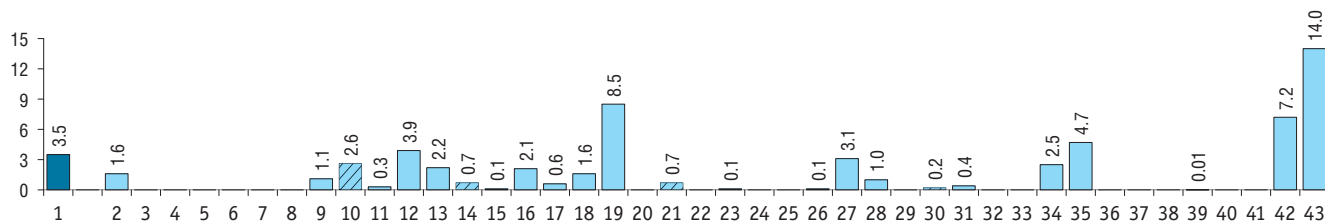
61 – animal production

62 – mixed farming

63 – support activities to agriculture and post-harvest crop activities

64 – construction – total

2.11. SUBSIDIES AS A PERCENTAGE OF THE TOTAL INNOVATION EXPENDITURE BY TYPE OF ECONOMIC ACTIVITY: 2020



1 – total – total

2 – industrial production

3 – mining and quarrying

4 – mining of coal and lignite

5 – extraction of crude petroleum and natural gas

6 – mining of metal ores

7 – other mining and quarrying

8 – mining support service activities

9 – manufacturing

10 – high tech

11 – manufacture of basic pharmaceutical products and pharmaceutical preparations

12 – manufacture of computer, electronic and optical products

13 – manufacture of air and spacecraft and related machinery

14 – medium high tech

15 – production of chemicals and chemical products

16 – manufacture of electrical equipment

17 – manufacture of machinery and equipment not elsewhere classified

18 – manufacture of motor vehicles, trailers and semi-trailers

19 – manufacture of other transport equipment

20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

22 – reproduction of recorded media

23 – manufacture of coke and refined petroleum products

24 – manufacture of rubber and plastic products

25 – manufacture of other non-metallic mineral products

26 – manufacture of basic metals

27 – manufacture of fabricated metal products, except machinery and equipment

28 – building of ships and boats

29 – repair and installation of machinery and equipment

30 – low tech

31 – manufacture of food products

32 – manufacture of beverages

33 – manufacture of tobacco products

34 – manufacture of textiles

35 – manufacture of wearing apparel

36 – manufacture of leather and related products

37 – manufacture of wood and of products of wood and cork, except furniture;

manufacture of articles of straw and plaiting materials

38 – printing and reproduction of recorded media

39 – printing and reproduction of recorded media

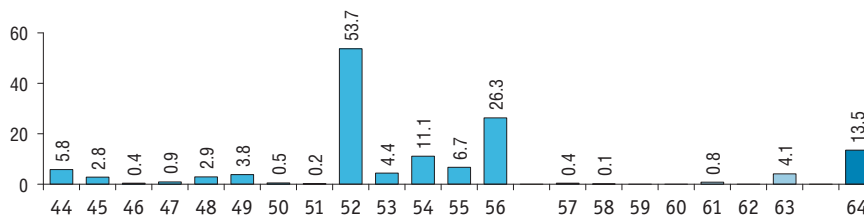
40 – manufacture of furniture

41 – other manufacturing

42 – electricity, gas, steam and air conditioning supply

43 – water supply; sewerage, waste management and remediation activities

(continued)

**44 – types of economic activity within services sector – total**

- 45 – transportation and storage
- 46 – publishing activities
- 47 – telecommunications
- 48 – computer programming, consultancy and related activities
- 49 – IT industry
- 50 – legal and accounting activities
- 51 – activities of head offices; management consultancy activities
- 52 – architectural and engineering activities; technical testing and analysis

53 – scientific research and development

- 54 – advertising and market research
- 55 – other professional, scientific and technical activities
- 56 – human health and social work activities

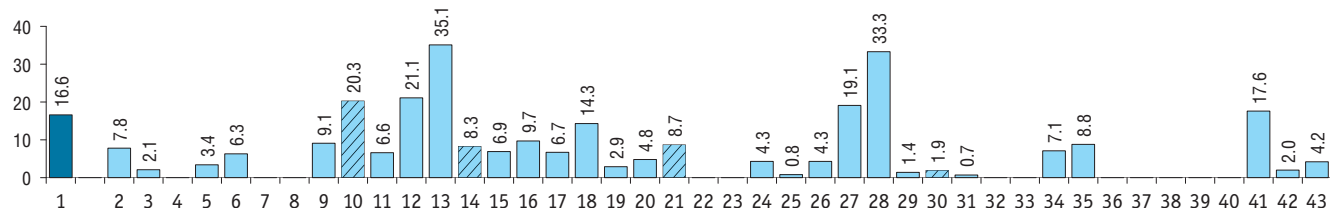
57 – agriculture – total

- 58 – growing of non-perennial crops
- 59 – growing of perennial crops
- 60 – plant propagation
- 61 – animal production
- 62 – mixed farming
- 63 – support activities to agriculture and post-harvest crop activities

64 – construction – total

2.12. ENTERPRISES THAT RECEIVED FUNDS FROM FEDERAL BUDGETS BY TYPE OF ECONOMIC ACTIVITY: 2020

(as a percentage of all enterprises that have had innovation expenditure)



1 – total

2 – industrial production – total

3 – mining and quarrying

4 – mining of coal and lignite

5 – extraction of crude petroleum and natural gas

6 – mining of metal ores

7 – other mining and quarrying

8 – mining support service activities

9 – manufacturing

10 – high tech

11 – manufacture of basic pharmaceutical products and pharmaceutical preparations

12 – manufacture of computer, electronic and optical products

13 – manufacture of air and spacecraft and related machinery

14 – medium high tech

15 – production of chemicals and chemical products

16 – manufacture of electrical equipment

17 – manufacture of machinery and equipment not elsewhere classified

18 – manufacture of motor vehicles, trailers and semi-trailers

19 – manufacture of other transport equipment

20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

22 – reproduction of recorded media

23 – manufacture of coke and refined petroleum products

24 – manufacture of rubber and plastic products

25 – manufacture of other non-metallic mineral products

26 – manufacture of basic metals

27 – manufacture of fabricated metal products, except machinery and equipment

28 – building of ships and boats

29 – repair and installation of machinery and equipment

30 – low tech

31 – manufacture of food products

32 – manufacture of beverages

33 – manufacture of tobacco products

34 – manufacture of textiles

35 – manufacture of wearing apparel

36 – manufacture of leather and related products

37 – manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials

38 – printing and reproduction of recorded media

39 – printing and reproduction of recorded media

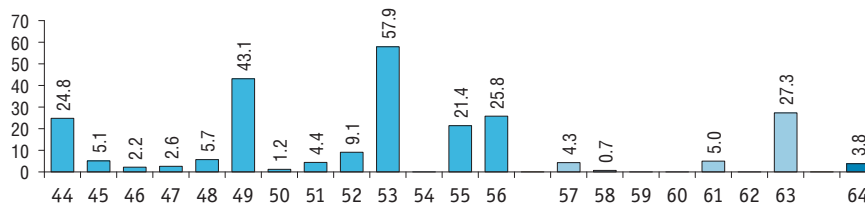
40 – manufacture of furniture

41 – other manufacturing

42 – electricity, gas, steam and air conditioning supply

43 – water supply; sewerage, waste management and remediation activities

(continued)

**44 – types of economic activity within services sector – total**

- 45 – transportation and storage
- 46 – publishing activities
- 47 – telecommunications
- 48 – computer programming, consultancy and related activities
- 49 – IT industry
- 50 – legal and accounting activities
- 51 – activities of head offices; management consultancy activities
- 52 – architectural and engineering activities; technical testing and analysis

53 – scientific research and development

54 – advertising and market research

55 – other professional, scientific and technical activities

56 – human health and social work activities

57 – agriculture – total

58 – growing of non-perennial crops

59 – growing of perennial crops

60 – plant propagation

61 – animal production

62 – mixed farming

63 – support activities to agriculture and post-harvest crop activities

64 – construction – total



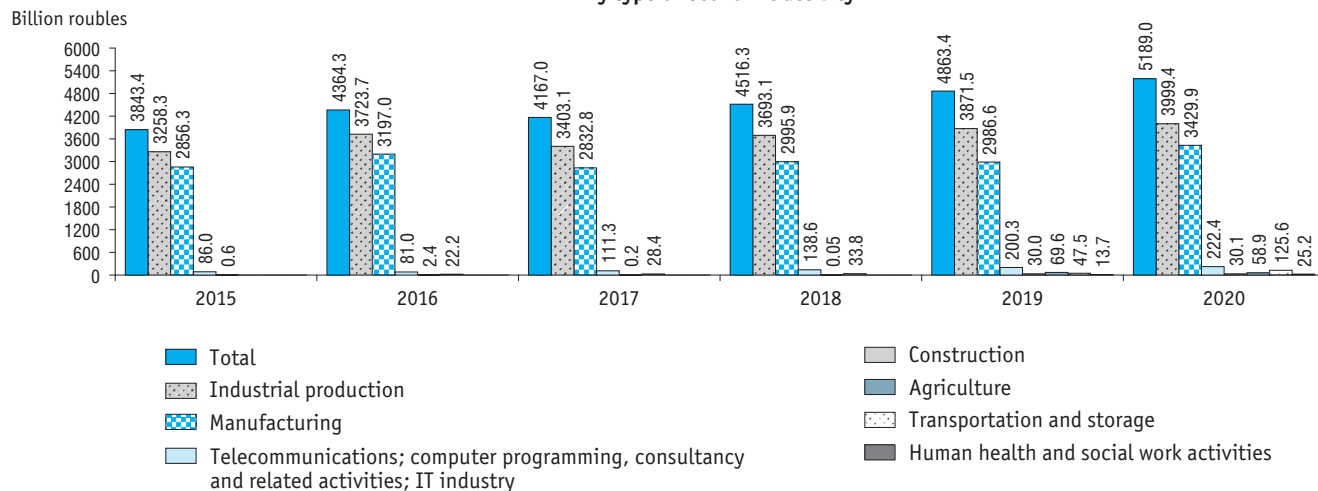
3

INNOVATION OUTPUT

3.1. SALES OF INNOVATIVE GOODS AND SERVICES

	2015	2016	2017	2018	2019	2020
Sales of innovative goods and services – total:						
at current prices, <i>million roubles</i>	3843428.7	4364321.7	4166998.7	4516276.4	4863381.9	5189046.2
at constant 2010 prices, <i>million roubles*</i>	2509256.8	2771701.8	2513116.6	2476164.5	2586355.0	2734963.5
as a percentage of 2010	201.8	222.9	202.1	199.1	208.0	219.9
as a percentage of total sales	8.4	8.5	7.2	6.5	5.3	5.7

By type of economic activity



* Here and below in table 3.9, the data are calculated taking into account the GDP deflator as of April 01, 2021.

3.2. SALES OF INNOVATIVE GOODS AND SERVICES BY DEGREE OF NOVELTY AND TYPE OF ECONOMIC ACTIVITY: 2020

	Million roubles			As a percentage of total sales		
	total	new or technologically new	significantly improved	total	new or technologically new	significantly improved
Total	5189046.2	2925556.9	2263489.4	5.7	3.2	2.5
Industrial production – total	3999391.8	2088151.4	1911240.4	6.4	3.3	3.0
Mining and quarrying	485835.2	97938.1	387897.1	3.1	0.6	2.5
Mining of coal and lignite	910.6	574.9	335.8	0.1	0.1	0.03
Extraction of crude petroleum and natural gas	393139.0	36148.6	356990.4	4.3	0.4	3.9
Mining of metal ores	74725.3	44329.4	30395.9	2.6	1.5	1.1
Other mining and quarrying	493.7	432.4	61.3	0.1	0.1	0.02
Mining support service activities	16566.7	16452.9	113.8	0.7	0.7	0.0
Manufacturing	3429907.2	1940743.3	1489163.9	8.5	4.8	3.7
High tech	499880.2	350068.5	149811.7	13.1	9.2	3.9
Manufacture of basic pharmaceutical products and pharmaceutical preparations	92525.3	90576.1	1949.2	12.2	11.9	0.3
Production of computer, electronic and optical products	217782.5	128870.0	88912.5	9.5	5.6	3.9
Manufacture of air and spacecraft and related machinery	189572.4	130622.4	58950.0	24.8	17.1	7.7
Medium high tech	937787.5	395294.7	542492.8	11.8	5.0	6.8
Production of chemicals and chemical products	261987.0	120927.8	141059.2	8.7	4.0	4.7
Manufacture of electrical equipment	95110.0	59341.7	35768.2	11.4	7.1	4.3
Manufacture of machinery and equipment not elsewhere classified	101921.2	50543.2	51378.0	10.2	5.1	5.1

(continued)

	Million roubles			As a percentage of total sales		
	total	new or technologically new	significantly improved	total	new or technologically new	significantly improved
Manufacture of motor vehicles, trailers and semi-trailers	396291.0	99079.5	297211.5	17.2	4.3	12.9
Manufacture of other transport equipment	77653.5	64208.4	13445.1	10.0	8.2	1.7
Manufacture of medical and dental instruments and supplies	4824.8	1194.1	3630.8	18.7	4.6	14.0
Medium low tech	1679266.5	966665.6	712600.9	8.1	4.7	3.4
Reproduction of recorded media	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	552670.4	249465.6	303204.8	6.5	3.0	3.6
Manufacture of rubber and plastic products	46252.3	28417.7	17834.6	5.1	3.2	2.0
Manufacture of other non-metallic mineral products	44396.1	24241.9	20154.2	3.5	1.9	1.6
Manufacture of basic metals	510536.0	274197.9	236338.1	7.2	3.9	3.3
Manufacture of fabricated metal products, except machinery and equipment	302076.1	178673.2	123402.9	16.2	9.6	6.6
Building of ships and boats	196399.3	187377.9	9021.3	41.9	40.0	1.9
Repair and installation of machinery and equipment	26936.2	24291.4	2644.8	4.2	3.8	0.4
Low tech	312973.1	228714.5	84258.6	3.9	2.8	1.0
Manufacture of food products	245560.2	190758.9	54801.3	5.0	3.9	1.1
Manufacture of beverages	18119.5	8525.6	9593.9	2.5	1.2	1.3
Manufacture of tobacco products	4343.9	4343.9	–	1.7	1.7	–
Manufacture of textiles	4200.0	2034.4	2165.6	2.3	1.1	1.2
Manufacture of wearing apparel	263.3	247.5	15.7	0.3	0.3	0.02
Manufacture of leather and related products	656.2	555.1	101.1	1.6	1.3	0.2

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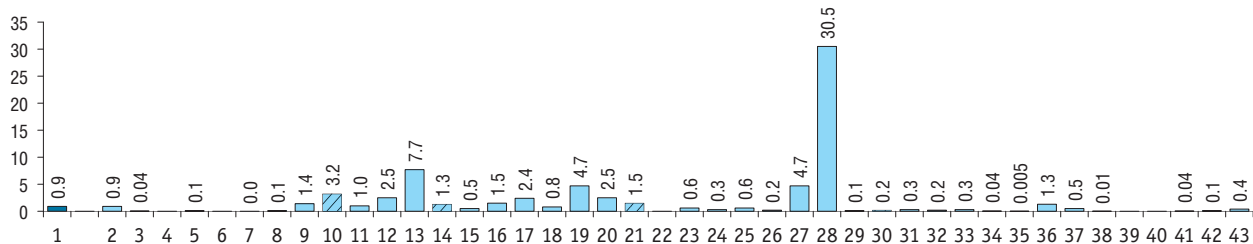
	Million roubles			As a percentage of total sales		
	total	new or technologically new	significantly improved	total	new or technologically new	significantly improved
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	9944.4	5191.9	4752.6	1.9	1.0	0.9
Manufacture of paper and paper products	14055.7	5746.0	8309.7	1.5	0.6	0.9
Printing and reproduction of recorded media	10852.5	7533.7	3318.8	7.0	4.9	2.2
Manufacture of furniture	3536.6	2515.8	1020.8	2.4	1.7	0.7
Other manufacturing	1440.7	1261.7	179.0	1.4	1.2	0.2
Electricity, gas, steam and air-conditioning supply	60650.4	30955.1	29695.3	1.1	0.6	0.5
Water supply; sewerage, waste management, and remediation activities	22999.0	18514.9	4484.0	2.3	1.8	0.4
Types of economic activity within services sector – total	1100718.7	778873.9	321844.8	5.2	3.7	1.5
Transportation and storage	125550.2	98154.3	27395.9	1.2	1.0	0.3
Publishing activities	183.0	156.4	26.6	0.1	0.1	0.02
Telecommunications	96084.3	82569.3	13515.0	4.8	4.2	0.7
Computer programming, consultancy and related activities	115166.1	70626.9	44539.2	9.2	5.7	3.6
IT industry	11138.7	3459.2	7679.4	2.4	0.8	1.7
Legal and accounting activities	5547.8	5504.4	43.4	0.8	0.8	0.01

(continued)

	Million roubles			As a percentage of total sales		
	total	new or technologically new	significantly improved	total	new or technologically new	significantly improved
Activities of head offices; management consultancy activities	4675.9	1790.9	2885.1	0.7	0.3	0.4
Architectural and engineering activities; technical testing and analysis	18329.9	6069.1	12260.7	1.3	0.4	0.9
Scientific research and development	620139.3	495527.6	124611.8	43.4	34.7	8.7
Advertising and market research	77902.0	1402.4	76499.6	12.3	0.2	12.1
Other professional, scientific and technical activities	751.7	270.0	481.7	2.9	1.0	1.9
Human health and social work activities	25249.8	13343.4	11906.4	1.2	0.6	0.5
Agriculture – total	58855.8	38217.8	20638.0	2.3	1.5	0.8
Growing of non-perennial crops	30502.3	21714.1	8788.2	3.2	2.3	0.9
Growing of perennial crops	1022.7	–	1022.7	3.6	–	3.6
Plant propagation	0.1	0.1	–	0.01	0.01	–
Animal production	26049.5	15482.5	10567.0	1.8	1.1	0.7
Mixed farming	618.4	362.5	255.9	2.3	1.4	1.0
Support activities to agriculture and post-harvest crop activities	662.7	658.6	4.1	0.9	0.9	0.01
Construction – total	30079.9	20313.7	9766.2	0.6	0.4	0.2

3.3. NEW OR TECHNOLOGICALLY NEW INNOVATIVE GOODS AND SERVICES INTRODUCED TO THE MARKET OF THE ENTERPRISE BY TYPE OF ECONOMIC ACTIVITY: 2020

(as a percentage of total sales)



1 – total

2 – industrial production – total

3 – mining and quarrying

4 – mining of coal and lignite

5 – extraction of crude petroleum and natural gas

6 – mining of metal ores

7 – other mining and quarrying

8 – mining support service activities

9 – manufacturing

10 – high tech

11 – manufacture of basic pharmaceutical products and pharmaceutical preparations

12 – manufacture of computer, electronic and optical products

13 – manufacture of air and spacecraft and related machinery

14 – medium high tech

15 – production of chemicals and chemical products

16 – manufacture of electrical equipment

17 – manufacture of machinery and equipment not elsewhere classified

18 – manufacture of motor vehicles, trailers and semi-trailers

19 – manufacture of other transport equipment

20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

22 – reproduction of recorded media

23 – manufacture of coke and refined petroleum products

24 – manufacture of rubber and plastic products

25 – manufacture of other non-metallic mineral products

26 – manufacture of basic metals

27 – manufacture of fabricated metal products, except machinery and equipment

28 – building of ships and boats

29 – repair and installation of machinery and equipment

30 – low tech

31 – manufacture of food products

32 – manufacture of beverages

33 – manufacture of tobacco products

34 – manufacture of textiles

35 – manufacture of wearing apparel

36 – manufacture of leather and related products

37 – manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials

38 – printing and reproduction of recorded media

39 – printing and reproduction of recorded media

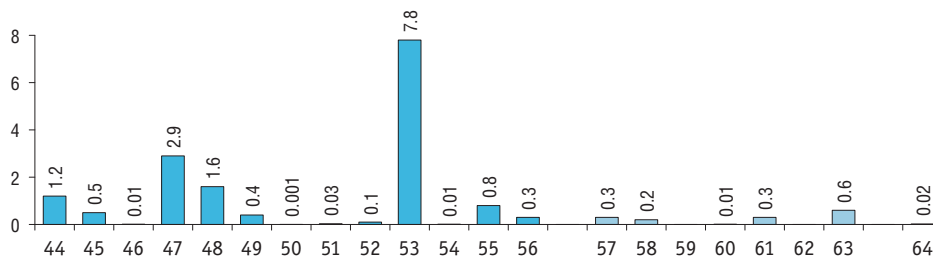
40 – manufacture of furniture

41 – other manufacturing

42 – electricity, gas, steam and air conditioning supply

43 – water supply; sewerage, waste management and remediation activities

(continued)

**44 – types of economic activity within services sector – total**

45 – transportation and storage

46 – publishing activities

47 – telecommunications

48 – computer programming, consultancy and related activities

49 – IT industry

50 – legal and accounting activities

51 – activities of head offices; management consultancy activities

52 – architectural and engineering activities; technical testing and analysis

53 – scientific research and development

54 – advertising and market research

55 – other professional, scientific and technical activities

56 – human health and social work activities

57 – agriculture – total

58 – growing of non-perennial crops

59 – growing of perennial crops

60 – plant propagation

61 – animal production

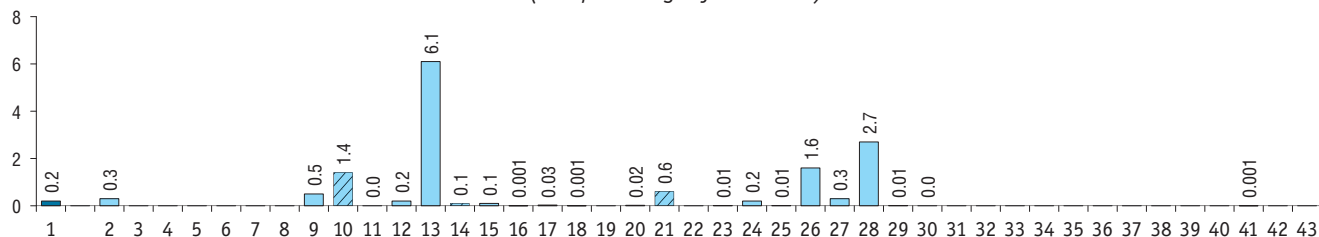
62 – mixed farming

63 – support activities to agriculture and post-harvest crop activities

64 – construction – total

3.4. NEW OR TECHNOLOGICALLY NEW INNOVATIVE GOODS AND SERVICES INTRODUCED TO THE GLOBAL MARKET OF THE ENTERPRISE BY TYPE OF ECONOMIC ACTIVITY: 2020

(as a percentage of total sales)



1 – total – total

2 – industrial production

3 – mining and quarrying

4 – mining of coal and lignite

5 – extraction of crude petroleum and natural gas

6 – mining of metal ores

7 – other mining and quarrying

8 – mining support service activities

9 – manufacturing

10 – high tech

11 – manufacture of basic pharmaceutical products
and pharmaceutical preparations

12 – manufacture of computer, electronic and optical products

13 – manufacture of air and spacecraft and related machinery

14 – medium high tech

15 – production of chemicals and chemical products

16 – manufacture of electrical equipment

17 – manufacture of machinery and equipment
not elsewhere classified

18 – manufacture of motor vehicles, trailers and semi-trailers

19 – manufacture of other transport equipment

20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

22 – reproduction of recorded media

23 – manufacture of coke and refined petroleum products

24 – manufacture of rubber and plastic products

25 – manufacture of other non-metallic mineral products

26 – manufacture of basic metals

27 – manufacture of fabricated metal products, except machinery and equipment

28 – building of ships and boats

29 – repair and installation of machinery and equipment

30 – low tech

31 – manufacture of food products

32 – manufacture of beverages

33 – manufacture of tobacco products

34 – manufacture of textiles

35 – manufacture of wearing apparel

36 – manufacture of leather and related products

37 – manufacture of wood and of products of wood and cork, except furniture;
manufacture of articles of straw and plaiting materials

38 – printing and reproduction of recorded media

39 – printing and reproduction of recorded media

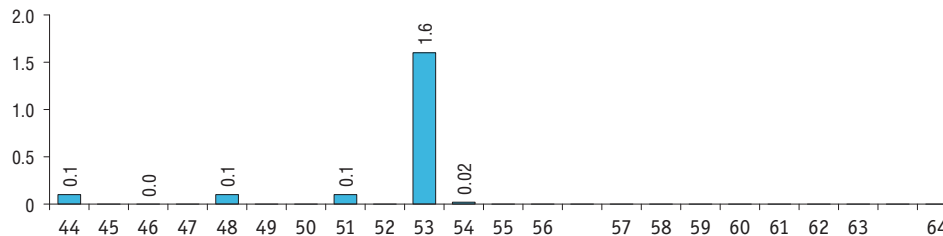
40 – manufacture of furniture

41 – other manufacturing

42 – electricity, gas, steam and air conditioning supply

43 – water supply; sewerage, waste management and remediation activities

(continued)

**44 – types of economic activity within services sector – total**

45 – transportation and storage

46 – publishing activities

47 – telecommunications

48 – computer programming, consultancy and related activities

49 – IT industry

50 – legal and accounting activities

51 – activities of head offices; management consultancy activities

52 – architectural and engineering activities; technical testing and analysis

53 – scientific research and development

54 – advertising and market research

55 – other professional, scientific and technical activities

56 – human health and social work activities

57 – agriculture – total

58 – growing of non-perennial crops

59 – growing of perennial crops

60 – plant propagation

61 – animal production

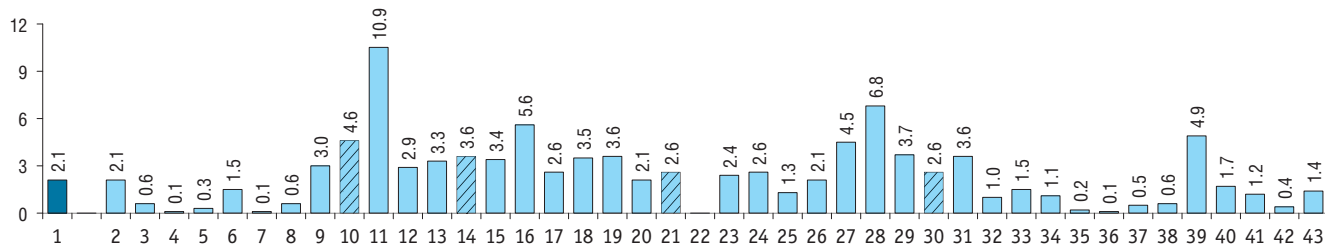
62 – mixed farming

63 – support activities to agriculture and post-harvest crop activities

64 – construction – total

3.5. NEW OR TECHNOLOGICALLY NEW INNOVATIVE GOODS AND SERVICES NEW TO THE ENTERPRISE BUT NOT TO THE MARKET BY TYPE OF ECONOMIC ACTIVITY: 2020

(as a percentage of total sales)



1 – total

2 – industrial production – total

3 – mining and quarrying

- 4 – mining of coal and lignite
- 5 – extraction of crude petroleum and natural gas
- 6 – mining of metal ores
- 7 – other mining and quarrying
- 8 – mining support service activities

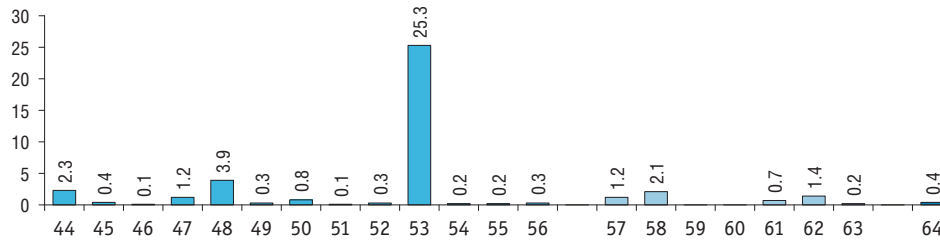
9 – manufacturing

- 10 – high tech
 - 11 – manufacture of basic pharmaceutical products and pharmaceutical preparations
 - 12 – manufacture of computer, electronic and optical products
 - 13 – manufacture of air and spacecraft and related machinery
- 14 – medium high tech
- 15 – production of chemicals and chemical products
- 16 – manufacture of electrical equipment
- 17 – manufacture of machinery and equipment not elsewhere classified
- 18 – manufacture of motor vehicles, trailers and semi-trailers
- 19 – manufacture of other transport equipment
- 20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

- 22 – reproduction of recorded media
- 23 – manufacture of coke and refined petroleum products
- 24 – manufacture of rubber and plastic products
- 25 – manufacture of other non-metallic mineral products
- 26 – manufacture of basic metals
- 27 – manufacture of fabricated metal products, except machinery and equipment
- 28 – building of ships and boats
- 29 – repair and installation of machinery and equipment
- 30 – low tech
- 31 – manufacture of food products
- 32 – manufacture of beverages
- 33 – manufacture of tobacco products
- 34 – manufacture of textiles
- 35 – manufacture of wearing apparel
- 36 – manufacture of leather and related products
- 37 – manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
- 38 – printing and reproduction of recorded media
- 39 – printing and reproduction of recorded media
- 40 – manufacture of furniture
- 41 – other manufacturing
- 42 – electricity, gas, steam and air conditioning supply
- 43 – water supply; sewerage, waste management and remediation activities

(continued)

**44 – types of economic activity within services sector – total**

45 – transportation and storage

46 – publishing activities

47 – telecommunications

48 – computer programming, consultancy and related activities

49 – IT industry

50 – legal and accounting activities

51 – activities of head offices; management consultancy activities

52 – architectural and engineering activities; technical testing and analysis

53 – scientific research and development

54 – advertising and market research

55 – other professional, scientific and technical activities

56 – human health and social work activities

57 – agriculture – total

58 – growing of non-perennial crops

59 – growing of perennial crops

60 – plant propagation

61 – animal production

62 – mixed farming

63 – support activities to agriculture and post-harvest crop activities

64 – construction – total

3.6. SALES OF INNOVATIVE GOODS AND SERVICES UNDER STATE AND MUNICIPAL CONTRACTS BY TYPE OF ECONOMIC ACTIVITY: 2020

	Million roubles	As a percentage of total sales of innovative goods and services
Total	508319.1	9.8
Industrial production – total	260523.0	6.5
Mining and quarrying	59.5	0.01
Mining of coal and lignite	–	–
Extraction of crude petroleum and natural gas	–	–
Mining of metal ores	–	–
Other mining and quarrying	59.5	12.0
Mining support service activities	0.0	0.0
Manufacturing	256253.7	7.5
High tech	111200.1	22.2
Manufacture of basic pharmaceutical products and pharmaceutical preparations	178.6	0.2
Production of computer, electronic and optical products	46717.5	21.5
Manufacture of air and spacecraft and related machinery	64304.0	33.9
Medium high tech	22144.4	2.4
Production of chemicals and chemical products	4921.5	1.9
Manufacture of electrical equipment	1749.2	1.8
Manufacture of machinery and equipment not elsewhere classified	7456.9	7.3
Manufacture of motor vehicles, trailers and semi-trailers	7194.9	1.8
Manufacture of other transport equipment	152.7	0.2
Manufacture of medical and dental instruments and supplies	669.3	13.9
Medium low tech	122787.5	7.3
Reproduction of recorded media	–	–

(continued)

	Million roubles	As a percentage of total sales of innovative goods and services
Manufacture of coke and refined petroleum products	–	–
Manufacture of rubber and plastic products	1636.2	3.5
Manufacture of other non-metallic mineral products	5.3	0.01
Manufacture of basic metals	–	–
Manufacture of fabricated metal products, except machinery and equipment	93607.8	31.0
Building of ships and boats	26633.4	13.6
Repair and installation of machinery and equipment	904.9	3.4
Low tech	121.6	0.04
Manufacture of food products	–	–
Manufacture of beverages	–	–
Manufacture of tobacco products	–	–
Manufacture of textiles	40.1	1.0
Manufacture of wearing apparel	–	–
Manufacture of leather and related products	–	–
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	3.1	0.03
Manufacture of paper and paper products	–	–
Printing and reproduction of recorded media	–	–
Manufacture of furniture	–	–
Other manufacturing	78.5	5.4
Electricity, gas, steam and air-conditioning supply	123.1	0.2
Water supply; sewerage, waste management, and remediation activities	4086.8	17.8

(continued)

	Million roubles	As a percentage of total sales of innovative goods and services
Types of economic activity within services sector – total	237128.8	21.5
Transportation and storage	1416.6	1.1
Publishing activities	13.0	7.1
Telecommunications	388.8	0.4
Computer programming, consultancy and related activities	11332.0	9.8
IT industry	106.6	1.0
Legal and accounting activities	–	–
Activities of head offices; management consultancy activities	2603.8	55.7
Architectural and engineering activities; technical testing and analysis	1267.6	6.9
Scientific research and development	215877.2	34.8
Advertising and market research	2.2	0.0
Other professional, scientific and technical activities	385.0	51.2
Human health and social work activities	3736.1	14.8
Agriculture – total	2220.6	3.8
Growing of non-perennial crops	2213.1	7.3
Growing of perennial crops	–	–
Plant propagation	–	–
Animal production	–	–
Mixed farming	–	–
Support activities to agriculture and post-harvest crop activities	7.5	1.1
Construction – total	8446.7	28.1

3.7. SALES OF INNOVATIVE GOODS AND SERVICES CREATED USING RESULTS OF INTELLECTUAL ACTIVITY THAT HAVE RUSSIAN COPYRIGHT HOLDERS BY TYPE OF ECONOMIC ACTIVITY: 2020

	Million roubles	As a percentage of total sales of innovative goods and services
Total	1260508.4	24.3
Industrial production – total	1001211.3	25.0
Mining and quarrying	316378.7	65.1
Mining of coal and lignite	–	–
Extraction of crude petroleum and natural gas	284825.4	72.4
Mining of metal ores	30395.9	40.7
Other mining and quarrying	–	–
Mining support service activities	1157.3	7.0
Manufacturing	672105.5	19.6
High tech	152815.5	30.6
Manufacture of basic pharmaceutical products and pharmaceutical preparations	3902.1	4.2
Production of computer, electronic and optical products	78251.6	35.9
Manufacture of air and spacecraft and related machinery	70661.8	37.3
Medium high tech	53703.6	5.7
Production of chemicals and chemical products	26275.1	10.0
Manufacture of electrical equipment	6500.4	6.8
Manufacture of machinery and equipment not elsewhere classified	11784.5	11.6
Manufacture of motor vehicles, trailers and semi-trailers	4477.5	1.1
Manufacture of other transport equipment	4586.8	5.9
Manufacture of medical and dental instruments and supplies	79.3	1.6

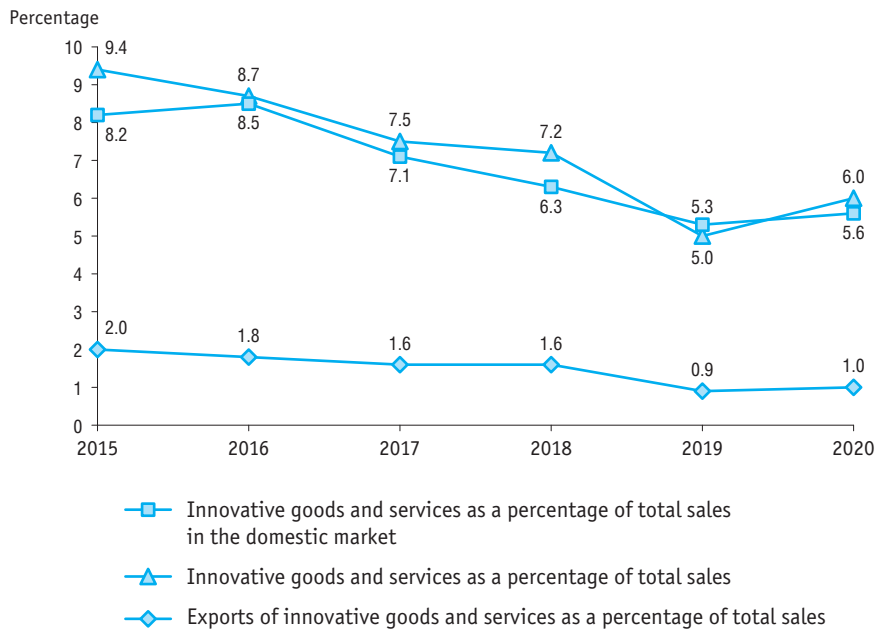
(continued)

	Million roubles	As a percentage of total sales of innovative goods and services
Medium low tech	451058.7	26.9
Reproduction of recorded media	–	–
Manufacture of coke and refined petroleum products	92801.3	16.8
Manufacture of rubber and plastic products	2246.7	4.9
Manufacture of other non-metallic mineral products	227.5	0.5
Manufacture of basic metals	129798.3	25.4
Manufacture of fabricated metal products, except machinery and equipment	139221.3	46.1
Building of ships and boats	86665.2	44.1
Repair and installation of machinery and equipment	98.4	0.4
Low tech	14527.7	4.6
Manufacture of food products	3465.1	1.4
Manufacture of beverages	17.6	0.1
Manufacture of tobacco products	–	–
Manufacture of textiles	1744.0	41.5
Manufacture of wearing apparel	–	–
Manufacture of leather and related products	531.9	81.1
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	–	–
Manufacture of paper and paper products	–	–
Printing and reproduction of recorded media	8769.0	80.8
Manufacture of furniture	–	–
Other manufacturing	–	–
Electricity, gas, steam and air-conditioning supply	6524.3	10.8
Water supply; sewerage, waste management, and remediation activities	6202.9	27.0

(continued)

	Million roubles	As a percentage of total sales of innovative goods and services
Types of economic activity within services sector – total	258360.0	23.5
Transportation and storage	37651.0	30.0
Publishing activities	77.8	42.5
Telecommunications	88.6	0.1
Computer programming, consultancy and related activities	40465.0	35.1
IT industry	6783.9	60.9
Legal and accounting activities	0.02	0.0
Activities of head offices; management consultancy activities	570.7	12.2
Architectural and engineering activities; technical testing and analysis	12116.9	66.1
Scientific research and development	156970.7	25.3
Advertising and market research	2.2	0.0
Other professional, scientific and technical activities	–	–
Human health and social work activities	3633.2	14.4
Agriculture – total	784.4	1.3
Growing of non-perennial crops	0.2	0.0
Growing of perennial crops	–	–
Plant propagation	–	–
Animal production	780.6	3.0
Mixed farming	–	–
Support activities to agriculture and post-harvest crop activities	3.7	0.6
Construction – total	152.7	0.5

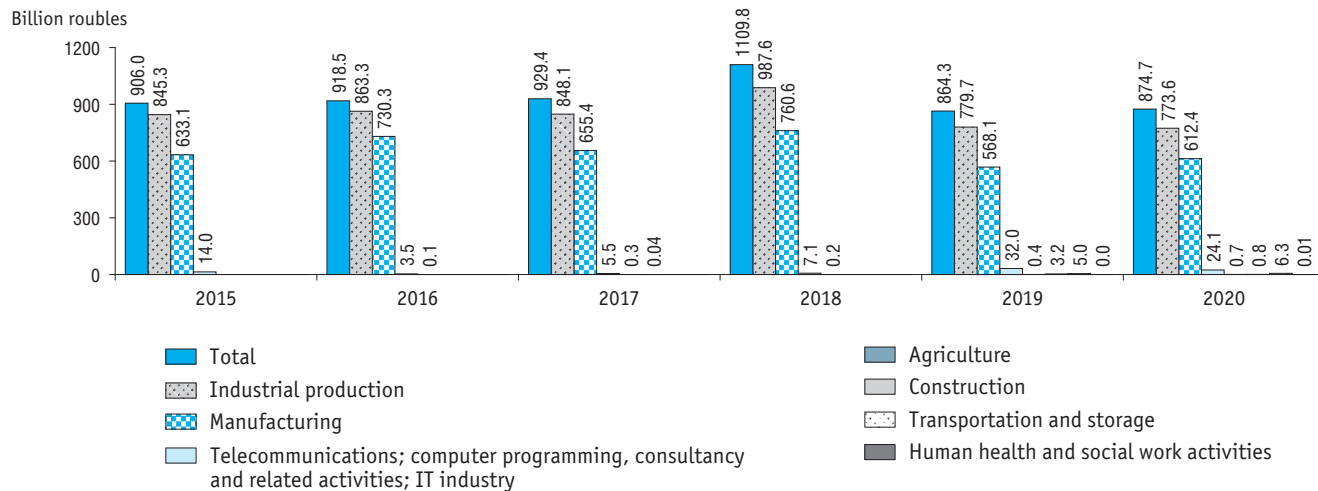
3.8. SALES OF INNOVATIVE GOODS AND SERVICES IN DOMESTIC AND FOREIGN MARKETS



3.9. EXPORTS OF INNOVATIVE GOODS AND SERVICES

	2015	2016	2017	2018	2019	2020
Exports of innovative goods and services – total:						
at current prices, <i>million roubles</i>	906019.1	918541.0	929442.9	1109780.2	864329.5	874672.3
at constant 2010 prices, <i>million roubles</i>	591512.1	583348.8	560546.9	608465.5	459651.9	461009.0
as a percentage of 2010	253.4	249.9	240.1	260.6	196.9	197.5

By type of economic activity



3.10. EXPORTS OF INNOVATIVE GOODS AND SERVICES BY TYPE OF ECONOMIC ACTIVITY: 2020

	Million roubles	As a percentage of total sales of innovative goods and services	As a percentage of total exports of innovative goods and services
Total	874672.3	16.9	6.0
Industrial production – total	773586.3	19.3	6.2
Mining and quarrying	161061.3	33.2	4.5
Mining of coal and lignite	730.4	80.2	0.1
Extraction of crude petroleum and natural gas	133656.3	34.0	5.3
Mining of metal ores	26674.7	35.7	8.3
Other mining and quarrying	–	–	–
Mining support service activities	–	–	–
Manufacturing	612402.5	17.9	6.9
High tech	118723.8	23.8	30.9
Manufacture of basic pharmaceutical products and pharmaceutical preparations	2988.9	3.2	13.7
Production of computer, electronic and optical products	45852.9	21.1	39.0
Manufacture of air and spacecraft and related machinery	69882.0	36.9	28.5
Medium high tech	96774.5	10.3	6.9
Production of chemicals and chemical products	47510.4	18.1	4.5
Manufacture of electrical equipment	4709.6	5.0	4.5
Manufacture of machinery and equipment not elsewhere classified	6084.6	6.0	8.1
Manufacture of motor vehicles, trailers and semi-trailers	25073.0	6.3	22.5
Manufacture of other transport equipment	12942.5	16.7	29.9
Manufacture of medical and dental instruments and supplies	454.4	9.4	59.8

(continued)

	Million roubles	As a percentage of total sales of innovative goods and services	As a percentage of total exports of innovative goods and services
Medium low tech	369823.2	22.0	6.0
Reproduction of recorded media	–	–	–
Manufacture of coke and refined petroleum products	95103.5	17.2	3.3
Manufacture of rubber and plastic products	4271.5	9.2	5.9
Manufacture of other non-metallic mineral products	6018.1	13.6	7.6
Manufacture of basic metals	183085.0	35.9	6.5
Manufacture of fabricated metal products, except machinery and equipment	74640.0	24.7	29.5
Building of ships and boats	5846.1	3.0	21.1
Repair and installation of machinery and equipment	858.9	3.2	3.6
Low tech	27081.0	8.7	2.8
Manufacture of food products	8176.4	3.3	2.2
Manufacture of beverages	619.4	3.4	1.9
Manufacture of tobacco products	3455.6	79.5	7.9
Manufacture of textiles	8.5	0.2	0.1
Manufacture of wearing apparel	6.7	2.5	0.2
Manufacture of leather and related products	1.8	0.3	0.1
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	4452.6	44.8	1.7
Manufacture of paper and paper products	3627.3	25.8	1.9
Printing and reproduction of recorded media	5821.1	53.6	41.6
Manufacture of furniture	687.4	19.4	6.2
Other manufacturing	224.5	15.6	0.8
Electricity, gas, steam and air-conditioning supply	28.3	0.05	0.1
Water supply; sewerage, waste management, and remediation activities	94.1	0.4	0.7

(continued)

	Million roubles	As a percentage of total sales of innovative goods and services	As a percentage of total exports of innovative goods and services
Types of economic activity within services sector – total	99603.9	9.0	5.1
Transportation and storage	6251.4	5.0	0.4
Publishing activities	16.4	9.0	1.0
Telecommunications	43.9	0.05	0.2
Computer programming, consultancy and related activities	23529.4	20.4	13.2
IT industry	567.7	5.1	4.2
Legal and accounting activities	–	–	–
Activities of head offices; management consultancy activities	805.1	17.2	2.8
Architectural and engineering activities; technical testing and analysis	456.7	2.5	1.3
Scientific research and development	67387.0	10.9	66.1
Advertising and market research	539.5	0.7	1.0
Other professional, scientific and technical activities	–	–	–
Human health and social work activities	6.7	0.03	0.1
Agriculture – total	669.6	1.1	1.0
Growing of non-perennial crops	546.4	1.8	1.7
Growing of perennial crops	–	–	–
Plant propagation	–	–	–
Animal production	–	–	–
Mixed farming	–	–	–
Support activities to agriculture and post-harvest crop activities	123.2	18.6	4.5
Construction – total	812.5	2.7	1.3

3.11. EXPORTS OF INNOVATIVE GOODS AND SERVICES BY COUNTRY AND TYPE OF ECONOMIC ACTIVITY: 2020

	Total, <i>million roubles</i>	EAEU countries*		Foreign countries excluding the CIS countries, Baltic States, Republic of Georgia	
		Million roubles	Percentage	Million roubles	Percentage
Total	874672.3	104918.3	12.0	769754.0	88.0
Industrial production – total	773586.3	103608.6	13.4	669977.7	86.6
Mining and quarrying	161061.3	12278.81	7.6	148782.5	92.4
Mining of coal and lignite	730.4	–	–	730.4	100
Extraction of crude petroleum and natural gas	133656.3	11213.21	8.4	122443.1	91.6
Mining of metal ores	26674.7	1065.6	4.0	25609.1	96.0
Other mining and quarrying	–	–	–	–	–
Mining support service activities	–	–	–	–	–
Manufacturing	612402.5	91329.8	14.9	521072.8	85.1
High tech	118723.8	5944.5	5.0	112779.3	95.0
Manufacture of basic pharmaceutical products and pharmaceutical preparations	2988.9	2542.0	85.0	446.9	15.0
Production of computer, electronic and optical products	45852.9	3355.1	7.3	42497.9	92.7
Manufacture of air and spacecraft and related machinery	69882.0	47.4	0.1	69834.6	99.9
Medium high tech	96774.5	29202.8	30.2	67571.7	69.8
Production of chemicals and chemical products	47510.4	6376.5	13.4	41134.0	86.6
Manufacture of electrical equipment	4709.6	817.7	17.4	3891.9	82.6
Manufacture of machinery and equipment not elsewhere classified	6084.6	903.7	14.9	5180.9	85.1
Manufacture of motor vehicles, trailers and semi-trailers	25073.0	20576.7	82.1	4496.3	17.9
Manufacture of other transport equipment	12942.5	461.7	3.6	12480.8	96.4
Manufacture of medical and dental instruments and supplies	454.4	66.5	14.6	387.9	85.4
Medium low tech	369823.2	51896.5	14.0	317926.6	86.0
Reproduction of recorded media	–	–	–	–	–

* Here and below in table 3.12, Armenia, Belarus, Kazakhstan, and Kyrgyzstan.

(continued)

	Total, <i>million roubles</i>	EAEU countries*		Foreign countries excluding the CIS countries, Baltic States, Republic of Georgia	
		Million roubles	Percentage	Million roubles	Percentage
Manufacture of coke and refined petroleum products	95103.5	8525.8	9.0	86577.7	91.0
Manufacture of rubber and plastic products	4271.5	1438.9	33.7	2832.6	66.3
Manufacture of other non-metallic mineral products	6018.1	1997.4	33.2	4020.7	66.8
Manufacture of basic metals	183085.0	32860.5	17.9	150224.5	82.1
Manufacture of fabricated metal products, except machinery and equipment	74640.0	6956.3	9.3	67683.7	90.7
Building of ships and boats	5846.1	0.8	0.01	5845.3	100
Repair and installation of machinery and equipment	858.9	116.9	13.6	742.0	86.4
Low tech	27081.0	4285.9	15.8	22795.1	84.2
Manufacture of food products	8176.4	3441.9	42.1	4734.5	57.9
Manufacture of beverages	619.4	198.5	32.0	420.9	68.0
Manufacture of tobacco products	3455.6	–	–	3455.6	100
Manufacture of textiles	8.5	8.5	100	–	–
Manufacture of wearing apparel	6.7	–	–	6.7	100
Manufacture of leather and related products	1.8	0.5	25.7	1.3	74.3
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	4452.6	133.1	3.0	4319.5	97.0
Manufacture of paper and paper products	3627.3	285.7	7.9	3341.6	92.1
Printing and reproduction of recorded media	5821.1	52.7	0.9	5768.3	99.1
Manufacture of furniture	687.4	2.3	0.3	685.1	99.7
Other manufacturing	224.5	162.9	72.6	61.6	27.4
Electricity, gas, steam and air-conditioning supply	28.3	–	–	28.3	100
Water supply; sewerage, waste management, and remediation activities	94.1	–	–	94.1	100

(continued)

	Total, <i>million roubles</i>	EAEU countries*		Foreign countries excluding the CIS countries, Baltic States, Republic of Georgia	
		Million roubles	Percentage	Million roubles	Percentage
Types of economic activity within services sector – total	99603.9	1281.3	1.3	98322.5	98.7
Transportation and storage	6251.4	32.3	0.5	6219.2	99.5
Publishing activities	16.4	0.2	1.2	16.2	98.8
Telecommunications	43.9	–	–	43.9	100
Computer programming, consultancy and related activities	23529.4	248.4	1.1	23281.0	98.9
IT industry	567.7	37.9	6.7	529.9	93.3
Legal and accounting activities	–	–	–	–	–
Activities of head offices; management consultancy activities	805.1	–	–	805.1	100
Architectural and engineering activities; technical testing and analysis	456.7	27.7	6.1	429.1	93.9
Scientific research and development	67387.0	930.6	1.4	66456.4	98.6
Advertising and market research	539.5	0.9	0.2	538.6	99.8
Other professional, scientific and technical activities	–	–	–	–	–
Human health and social work activities	6.7	3.5	52.8	3.1	47.2
Agriculture – total	669.6	28.4	4.2	641.2	95.8
Growing of non-perennial crops	546.4	28.4	5.2	518.0	94.8
Growing of perennial crops	–	–	–	–	–
Plant propagation	–	–	–	–	–
Animal production	–	–	–	–	–
Mixed farming	–	–	–	–	–
Support activities to agriculture and post-harvest crop activities	123.2	–	–	123.2	100
Construction – total	812.5	–	–	812.5	100

3.12. ASSESSMENT OF INNOVATION OUTCOMES: 2018–2020

	Enterprises indicating impact of the following innovation outcomes on their development, <i>percentage</i>			
	high	medium	low	no impact
Expansion of goods and services range	29.6	24.8	9.5	36.1
Retaining traditional sales markets	29.7	25.4	10.9	34.0
Market expansion:	22.1	26.7	11.6	39.6
in Russia	23.1	25.6	10.8	40.6
in EAEU countries	5.6	11.7	13.7	69.1
in EU countries, EU candidate countries*, Great Britain, Liechtenstein, Norway, Switzerland	2.1	5.5	8.8	83.6
in BRICS countries**	2.2	5.4	8.6	83.8
in the United States and Canada	1.4	4.0	8.2	86.4
in other countries	3.5	6.3	10.4	79.8
Goods and services quality improvement	34.5	29.1	7.7	28.7
Higher manufacturing flexibility	16.2	30.0	12.3	41.5
Production capacity increase	18.3	27.8	12.7	41.1
Lower salary costs	4.9	17.3	20.6	57.2
Lower inventory and/or material costs	8.7	25.8	19.3	46.2
Better energy efficiency in production processes (lower energy consumption or energy losses)	11.1	23.7	18.7	46.5
Better working environment and occupational health and safety	15.6	27.9	14.7	41.7
More rapid customer and supplier interaction	13.3	23.9	17.0	45.7
Improvements in internal and external communications	20.3	28.7	13.6	37.4
Expanding opportunities for data survey, processing, and analysis	20.3	29.2	13.8	36.7

(continued)

	Enterprises indicating impact of the following innovation outcomes on their development, <i>percentage</i>			
	high	medium	low	no impact
Compliance with advanced technical standards, rules, and regulations and with sanitation, veterinary and phytosanitary requirements	16.6	22.0	10.0	51.3
Higher yield and/or productivity of livestock, poultry, and aquaculture	2.7	5.7	5.2	86.4
Preservation, restoration and improvement of soil fertility of agricultural lands	2.5	5.6	5.0	86.9
Lower effects of seasonality on agricultural production; reducing dependence on weather, climate, and other environmental conditions	2.0	5.4	5.5	87.1
Minimisation of losses of nutrition value when storing, transporting, and processing agricultural products	2.2	6.5	5.4	85.8

* Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, Serbia, and Türkiye.

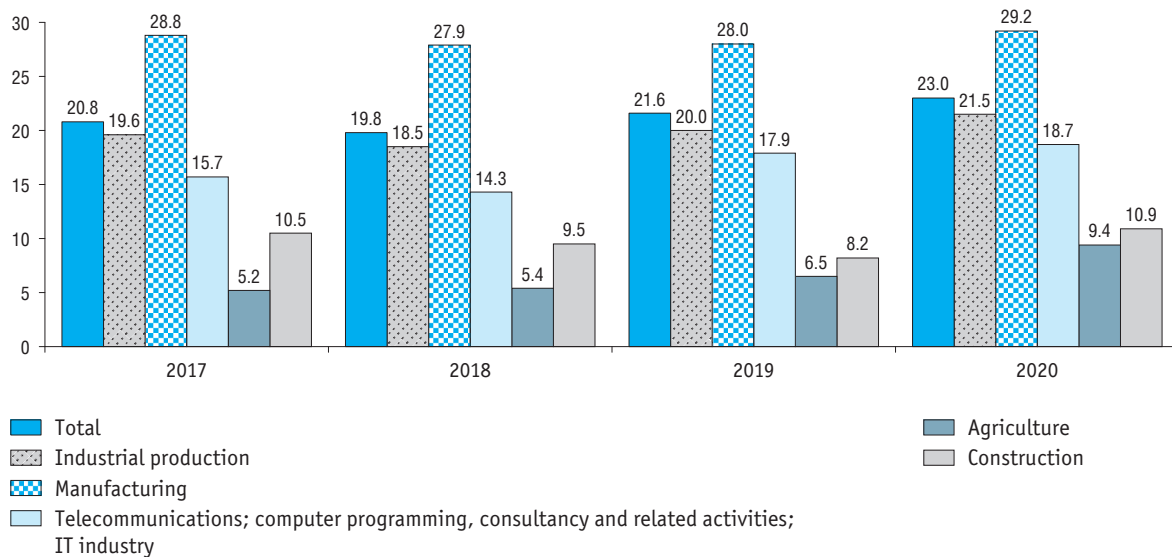
** Brazil, India, China, and South Africa.



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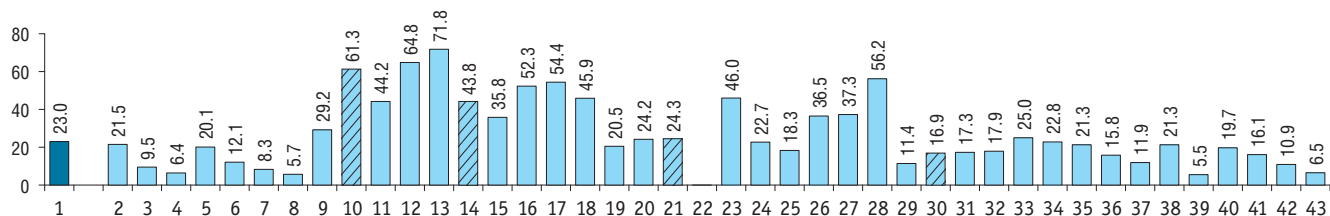
**TECHNOLOGICAL
INNOVATION**

4.1. ENTERPRISES ENGAGED IN TECHNOLOGICAL INNOVATION AS A PERCENTAGE OF THE TOTAL NUMBER OF ENTERPRISES*



* Here and in figure 4.2, the data are calculated according to the methodology approved by Order no. 788 of Rosstat of December 20, 2019, with amendments no. 813 of December 18, 2020.

4.2. ENTERPRISES ENGAGED IN TECHNOLOGICAL INNOVATION AS A PERCENTAGE OF THE TOTAL NUMBER OF ENTERPRISES BY TYPE OF ECONOMIC ACTIVITY: 2020



1 – total

2 – industrial production – total

3 – mining and quarrying

4 – mining of coal and lignite

5 – extraction of crude petroleum and natural gas

6 – mining of metal ores

7 – other mining and quarrying

8 – mining support service activities

9 – manufacturing

10 – high tech

11 – manufacture of basic pharmaceutical products and pharmaceutical preparations

12 – manufacture of computer, electronic and optical products

13 – manufacture of air and spacecraft and related machinery

14 – medium high tech

15 – production of chemicals and chemical products

16 – manufacture of electrical equipment

17 – manufacture of machinery and equipment not elsewhere classified

18 – manufacture of motor vehicles, trailers and semi-trailers

19 – manufacture of other transport equipment

20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

22 – reproduction of recorded media

23 – manufacture of coke and refined petroleum products

24 – manufacture of rubber and plastic products

25 – manufacture of other non-metallic mineral products

26 – manufacture of basic metals

27 – manufacture of fabricated metal products, except machinery and equipment

28 – building of ships and boats

29 – repair and installation of machinery and equipment

30 – low tech

31 – manufacture of food products

32 – manufacture of beverages

33 – manufacture of tobacco products

34 – manufacture of textiles

35 – manufacture of wearing apparel

36 – manufacture of leather and related products

37 – manufacture of wood and of products of wood and cork, except furniture;

manufacture of articles of straw and plaiting materials

38 – printing and reproduction of recorded media

39 – printing and reproduction of recorded media

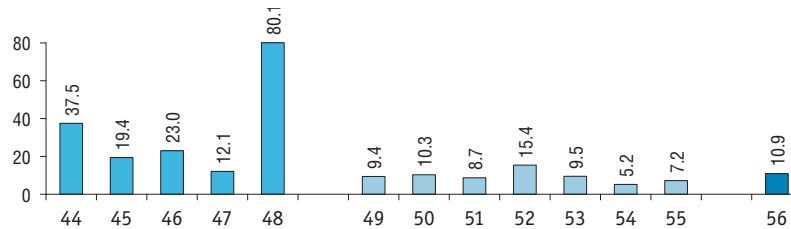
40 – manufacture of furniture

41 – other manufacturing

42 – electricity, gas, steam and air conditioning supply

43 – water supply; sewerage, waste management and remediation activities

(continued)

**44 – types of economic activity within services sector – total**

45 – telecommunications

46 – computer programming, consultancy and related activities

47 – IT industry

48 – scientific research and development

49 – agriculture – total

50 – growing of non-perennial crops

51 – growing of perennial crops

52 – plant propagation

53 – animal production

54 – mixed farming

55 – support activities to agriculture and post-harvest crop activities

56 – construction – total

4.3. ENTERPRISES ENGAGED IN TECHNOLOGICAL INNOVATION BY TYPE OF INNOVATIVE AND ECONOMIC ACTIVITY: 2020

(as a percentage of enterprises that had expenditure on technological innovation)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Education and training of personnel	Design	Engineering	Other activities related to introducing technological innovations*
Total	51.4	53.3	16.6	4.2	16.3	15.0
Industrial production – total	50.5	53.1	15.4	5.8	19.0	15.0
Mining and quarrying	45.1	41.6	16.8	–	15.9	17.7
Mining of coal and lignite	–	75.0	–	–	25.0	25.0
Extraction of crude petroleum and natural gas	51.9	27.8	24.1	–	13.0	16.7
Mining of metal ores	42.9	50.0	7.1	–	28.6	14.3
Other mining and quarrying	35.0	60.0	10.0	–	20.0	25.0
Mining support service activities	47.6	47.6	14.3	–	9.5	14.3
Manufacturing	53.4	52.6	15.7	6.9	19.6	15.4
High tech	71.4	49.0	24.0	5.1	19.9	18.6
Manufacture of basic pharmaceutical products and pharmaceutical preparations	72.2	40.3	12.5	4.2	18.1	16.7
Production of computer, electronic and optical products	71.4	48.1	23.7	4.9	20.7	17.7
Manufacture of air and spacecraft and related machinery	70.4	64.8	40.7	7.4	18.5	25.9

* Here and below, marketing and brand creation, development and purchase of software and databases, acquisition of patent rights (alienation), licenses, industrial designs, utility models, selection achievements, integrated circuit designs, etc.; patenting (registration) of the results of intellectual activity; other activities, related to introducing new or significantly improved products or services, new or significantly improved processes or methods of production (transfer) of services.

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Education and training of personnel	Design	Engineering	Other activities related to introducing technological innovations*
Medium high tech	59.0	48.5	14.9	6.6	23.4	16.9
Production of chemicals and chemical products	52.0	58.0	14.7	6.0	26.0	20.7
Manufacture of electrical equipment	67.6	44.1	14.0	5.1	27.2	15.4
Manufacture of machinery and equipment not elsewhere classified	61.8	42.7	15.7	8.4	18.5	16.9
Manufacture of motor vehicles, trailers and semi-trailers	57.9	51.6	12.6	8.4	24.2	14.7
Manufacture of other transport equipment	46.9	46.9	15.6	3.1	28.1	15.6
Manufacture of medical and dental instruments and supplies	52.6	47.4	26.3	–	10.5	10.5
Medium low tech	51.1	56.5	16.8	3.2	21.7	15.7
Reproduction of recorded media	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	54.1	64.9	21.6	5.4	37.8	21.6
Manufacture of rubber and plastic products	42.7	58.5	6.1	3.7	15.9	6.1
Manufacture of other non-metallic mineral products	42.9	63.8	4.8	2.9	10.5	4.8
Manufacture of basic metals	59.5	48.8	21.4	3.6	29.8	22.6
Manufacture of fabricated metal products, except machinery and equipment	55.1	58.4	25.3	3.9	28.7	19.1
Building of ships and boats	58.3	54.2	25.0	–	20.8	29.2
Repair and installation of machinery and equipment	48.2	41.1	14.3	–	7.1	19.6

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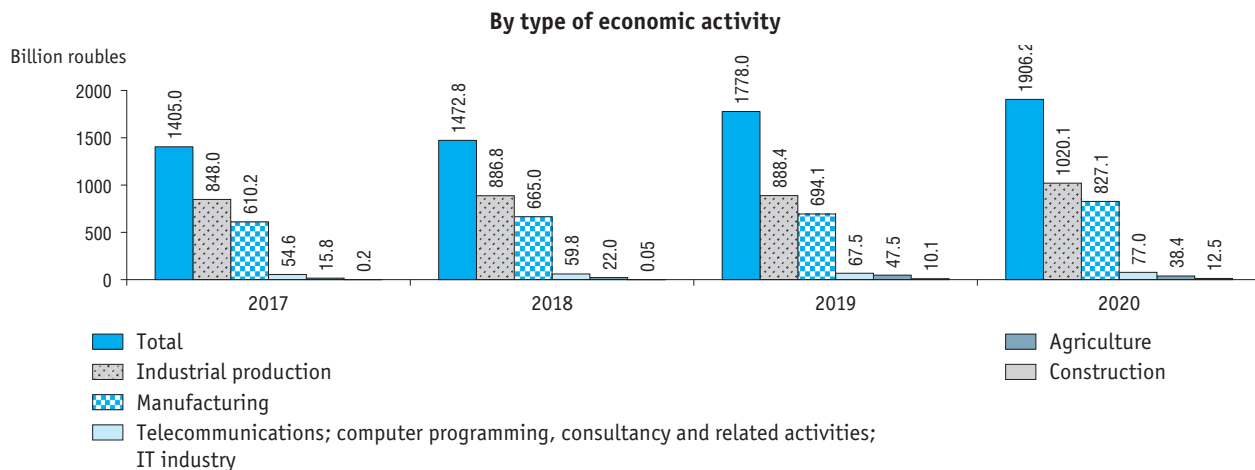
	Research and development	Purchase of machinery and equipment, or other fixed assets	Education and training of personnel	Design	Engineering	Other activities related to introducing technological innovations*
Low tech	33.4	56.3	8.1	13.4	11.6	10.1
Manufacture of food products	32.7	53.5	8.5	16.2	10.8	8.8
Manufacture of beverages	41.0	38.5	12.8	30.8	30.8	20.5
Manufacture of tobacco products	50.0	25.0	–	25.0	25.0	–
Manufacture of textiles	59.3	44.4	7.4	3.7	3.7	11.1
Manufacture of wearing apparel	24.1	69.0	13.8	–	10.3	10.3
Manufacture of leather and related products	25.0	62.5	–	–	–	25.0
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	20.0	84.0	4.0	8.0	8.0	8.0
Manufacture of paper and paper products	23.3	73.3	3.3	3.3	6.7	3.3
Printing and reproduction of recorded media	12.5	75.0	–	12.5	–	12.5
Manufacture of furniture	37.5	50.0	–	–	25.0	25.0
Other manufacturing	47.1	64.7	11.8	5.9	11.8	5.9
Electricity, gas, steam and air-conditioning supply	35.5	58.0	14.7	1.3	17.7	13.9
Water supply; sewerage, waste management, and remediation activities	30.0	66.7	8.9	–	12.2	5.6

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Education and training of personnel	Design	Engineering	Other activities related to introducing technological innovations*
Types of economic activity within services sector – total	62.4	46.2	22.4	2.0	14.1	17.7
Telecommunications	15.0	55.0	35.5	0.5	41.4	26.8
Computer programming, consultancy and related activities	46.2	53.3	22.4	3.3	4.8	22.9
IT industry	33.3	56.8	14.4	2.7	6.3	30.6
Research and development	87.4	39.4	19.5	2.1	9.4	11.1
Agriculture – total	17.7	82.9	4.1	0.9	3.8	4.4
Growing of non-perennial crops	16.0	83.2	2.3	–	1.5	4.6
Growing of perennial crops	–	100	–	–	–	12.5
Plant propagation	50.0	50.0	–	–	–	–
Animal production	16.3	83.0	4.8	2.0	5.4	4.1
Mixed farming	–	100	–	–	14.3	–
Support activities to agriculture and post-harvest crop activities	47.6	71.4	14.3	–	4.8	4.8
Construction – total	25.0	50.0	6.3	–	12.5	18.8

4.4. EXPENDITURE ON TECHNOLOGICAL INNOVATION

	2017	2018	2019	2020
Expenditure on technological innovation – total:				
at current prices, <i>million roubles</i>	1404985.3	1472822.3	1777978.0	1906233.7
at constant 2010 prices, <i>million roubles*</i>	847346.5	807512.7	945531.8	1004708.6
as a percentage of 2010	211.4	201.5	235.9	250.7
as a percentage of total sales	2.4	2.1	1.9	2.1



* The data are calculated taking into account the GDP deflator as of April 01, 2021.

4.5. EXPENDITURE ON TECHNOLOGICAL INNOVATION BY TYPE OF INNOVATIVE AND ECONOMIC ACTIVITY: 2020

(million roubles)

	Expenditure on technological innovation	Research and development	Purchase of machinery and equipment, or other fixed assets	Education and training of personnel	Design	Engineering	Other activities related to the process of introducing technological innovations
Total	1906233.7	945623.9	713523.8	3572.8	7359.7	149772.7	86380.8
Industrial production – total	1020141.1	447839.4	408973.2	1074.6	6650.8	107020.4	48582.6
Mining and quarrying	112592.4	20891.5	75339.0	46.2	–	5722.4	10593.2
Mining of coal and lignite	1140.0	–	540.3	–	–	17.2	582.5
Extraction of crude petroleum and natural gas	80168.4	18426.6	50481.0	30.4	–	1623.4	9607.0
Mining of metal ores	11697.1	346.3	8237.7	0.2	–	3108.9	4.0
Other mining and quarrying	3566.5	969.7	1303.4	4.9	–	911.7	376.7
Mining support service activities	16020.4	1148.9	14776.6	10.6	–	61.2	23.1
Manufacturing	827101.2	404753.7	297590.8	937.8	6477.2	83294.9	34046.8
High tech	190097.0	126120.8	43630.3	172.1	2220.0	11337.8	6616.1
Manufacture of basic pharmaceutical products and pharmaceutical preparations	12741.5	6327.3	5810.7	18.7	4.6	348.1	232.1
Production of computer, electronic and optical products	85965.4	54279.8	22567.8	82.9	1179.9	3537.0	4318.0
Manufacture of air and spacecraft and related machinery	91390.2	65513.8	15251.8	70.4	1035.5	7452.7	2066.0
Medium high tech	176919.3	42422.9	83563.3	382.7	1323.8	31445.2	17781.4
Production of chemicals and chemical products	90346.1	6435.0	55765.5	23.8	30.0	25770.8	2321.0
Manufacture of electrical equipment	12878.0	6089.2	5044.1	15.4	29.3	701.5	998.5
Manufacture of machinery and equipment not elsewhere classified	23273.8	14069.3	6723.6	24.3	74.0	1695.0	687.6

(continued)

	Expenditure on technological innovation	Research and development	Purchase of machinery and equipment, or other fixed assets	Education and training of personnel	Design	Engineering	Other activities related to the process of introducing technological innovations
Manufacture of motor vehicles, trailers and semi-trailers	48054.8	14803.7	15395.6	59.1	1126.0	2917.9	13752.5
Manufacture of other transport equipment	1819.9	859.1	505.7	20.3	64.5	354.1	16.3
Manufacture of medical and dental instruments and supplies	546.8	166.6	128.9	239.8	–	6.0	5.6
Medium low tech	389493.0	219860.4	122573.0	332.6	1164.9	37008.0	8554.2
Reproduction of recorded media	–	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	150941.2	107781.5	31830.2	17.3	962.0	8213.4	2136.8
Manufacture of rubber and plastic products	8799.2	1007.9	6232.6	2.1	134.0	1272.7	149.8
Manufacture of other non-metallic mineral products	5848.7	1744.1	4018.8	0.9	6.9	52.6	25.5
Manufacture of basic metals	112800.1	42064.1	52395.3	54.3	24.6	15545.0	2716.8
Manufacture of fabricated metal products, except machinery and equipment	85853.1	55539.4	17672.1	64.1	37.3	11228.1	1312.1
Building of ships and boats	22769.4	10627.5	9665.2	7.6	–	462.5	2006.7
Repair and installation of machinery and equipment	2481.3	1096.1	758.7	186.3	–	233.7	206.4
Low tech	70591.9	16349.5	47824.3	50.4	1768.6	3503.9	1095.1
Manufacture of food products	27318.1	11718.4	13435.6	41.1	686.8	511.8	924.5
Manufacture of beverages	1033.5	177.6	481.9	1.8	130.6	167.7	73.8
Manufacture of tobacco products	3165.8	2244.3	30.5	–	890.4	0.6	–
Manufacture of textiles	848.6	316.4	427.9	2.9	42.6	55.6	3.3
Manufacture of wearing apparel	454.8	96.4	336.0	2.2	–	3.6	16.6

(continued)

	Expenditure on technological innovation	Research and development	Purchase of machinery and equipment, or other fixed assets	Education and training of personnel	Design	Engineering	Other activities related to the process of introducing technological innovations
Manufacture of leather and related products	39.4	0.3	25.1	–	–	–	13.9
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	5729.0	182.8	5427.9	0.1	10.5	79.5	28.1
Manufacture of paper and paper products	30395.7	1128.5	26607.0	0.4	1.2	2656.8	1.8
Printing and reproduction of recorded media	604.5	4.7	599.7	–	0.05	–	0.02
Manufacture of furniture	95.1	76.0	17.1	–	–	1.5	0.4
Other manufacturing	907.4	404.0	435.5	2.0	6.5	26.8	32.7
Electricity, gas, steam and air-conditioning supply	60495.8	19288.8	19329.7	87.8	173.5	17759.7	3856.3
Water supply; sewerage, waste management, and remediation activities	19951.6	2905.5	16713.6	2.8	–	243.4	86.3
Types of economic activity within services sector – total	835184.3	494634.5	258847.0	2463.1	707.4	41830.6	36701.5
Transportation and storage	199884.5	9685.1	184342.0	1072.5	25.1	1698.0	3061.8
Publishing activities	286.4	108.3	121.9	0.7	1.6	–	53.9
Telecommunications	42302.5	3506.2	6864.3	53.9	0.2	26592.2	5285.8
Computer programming, consultancy and related activities	30735.6	19348.3	2092.2	66.9	6.9	245.8	8975.4
IT industry	3951.0	1417.6	615.5	33.6	6.0	166.5	1711.8

(continued)

	Expenditure on technological innovation	Research and development	Purchase of machinery and equipment, or other fixed assets	Education and training of personnel	Design	Engineering	Other activities related to the process of introducing technological innovations
Legal and accounting activities	2732.8	26.7	2614.3	42.1	–	30.9	18.7
Activities of head offices; management consultancy activities	8063.5	7227.0	186.0	6.0	6.7	101.3	536.5
Architectural and engineering activities; technical testing and analysis	21811.3	7502.5	1358.6	165.2	1.4	541.1	12242.5
Research and development	498696.1	438160.4	43165.9	967.3	653.0	12256.4	3493.0
Advertising and market research	615.4	339.9	129.0	1.3	1.4	30.2	113.5
Other professional, scientific and technical activities	725.5	467.0	258.1	0.4	–	–	0.02
Health and social services activities	25379.7	6845.5	17099.1	53.1	5.0	168.2	1208.8
Agriculture – total	38397.5	1881.1	35376.2	1.7	1.0	823.5	314.0
Growing of non-perennial crops	22389.3	946.6	21335.3	0.1	–	64.4	42.9
Growing of perennial crops	3559.4	–	3452.9	–	–	–	106.5
Plant propagation	36.5	10.3	26.1	–	–	–	–
Animal production	11817.7	718.8	10179.7	1.2	1.0	752.5	164.6
Mixed farming	222.4	–	222.3	–	–	0.1	–
Support activities to agriculture and post-harvest crop activities	372.3	205.4	159.9	0.4	–	6.5	0.03
Construction – total	12510.9	1268.8	10327.4	33.4	0.5	98.2	782.7

4.6. PERCENTAGE DISTRIBUTION OF EXPENDITURE ON TECHNOLOGICAL INNOVATION BY TYPE OF INNOVATIVE AND ECONOMIC ACTIVITY: 2020

	Research and development	Purchase of machinery and equipment, or other fixed assets	Education and training of personnel	Design	Engineering	Other activities related to introducing technological innovations
Total	49.6	37.4	0.2	0.4	7.9	4.5
Industrial production – total	43.9	40.1	0.1	0.7	10.5	4.8
Mining and quarrying	18.6	66.9	0.04	–	5.1	9.4
Mining of coal and lignite	–	47.4	–	–	1.5	51.1
Extraction of crude petroleum and natural gas	23.0	63.0	0.04	–	2.0	12.0
Mining of metal ores	3.0	70.4	0.0	–	26.6	0.03
Other mining and quarrying	27.2	36.5	0.1	–	25.6	10.6
Mining support service activities	7.2	92.2	0.1	–	0.4	0.1
Manufacturing	48.9	36.0	0.1	0.8	10.1	4.1
High tech	66.3	23.0	0.1	1.2	6.0	3.5
Manufacture of basic pharmaceutical products and pharmaceutical preparations	49.7	45.6	0.1	0.04	2.7	1.8
Production of computer, electronic and optical products	63.1	26.3	0.1	1.4	4.1	5.0
Manufacture of air and spacecraft and related machinery	71.7	16.7	0.1	1.1	8.2	2.3
Medium high tech	24.0	47.2	0.2	0.7	17.8	10.1
Production of chemicals and chemical products	7.1	61.7	0.03	0.03	28.5	2.6

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Education and training of personnel	Design	Engineering	Other activities related to introducing technological innovations
Manufacture of electrical equipment	47.3	39.2	0.1	0.2	5.4	7.8
Manufacture of machinery and equipment not elsewhere classified	60.5	28.9	0.1	0.3	7.3	3.0
Manufacture of motor vehicles, trailers and semi-trailers	30.8	32.0	0.1	2.3	6.1	28.6
Manufacture of other transport equipment	47.2	27.8	1.1	3.5	19.5	0.9
Manufacture of medical and dental instruments and supplies	30.5	23.6	43.8	–	1.1	1.0
Medium low tech	56.4	31.5	0.1	0.3	9.5	2.2
Reproduction of recorded media	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	71.4	21.1	0.01	0.6	5.4	1.4
Manufacture of rubber and plastic products	11.5	70.8	0.02	1.5	14.5	1.7
Manufacture of other non-metallic mineral products	29.8	68.7	0.01	0.1	0.9	0.4
Manufacture of basic metals	37.3	46.4	0.05	0.02	13.8	2.4
Manufacture of fabricated metal products, except machinery and equipment	64.7	20.6	0.1	0.04	13.1	1.5
Building of ships and boats	46.7	42.4	0.03	–	2.0	8.8
Repair and installation of machinery and equipment	44.2	30.6	7.5	–	9.4	8.3

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Education and training of personnel	Design	Engineering	Other activities related to introducing technological innovations
Low tech	23.2	67.7	0.1	2.5	5.0	1.6
Manufacture of food products	42.9	49.2	0.2	2.5	1.9	3.4
Manufacture of beverages	17.2	46.6	0.2	12.6	16.2	7.1
Manufacture of tobacco products	70.9	1.0	–	28.1	0.02	–
Manufacture of textiles	37.3	50.4	0.3	5.0	6.6	0.4
Manufacture of wearing apparel	21.2	73.9	0.5	–	0.8	3.7
Manufacture of leather and related products	0.8	63.8	–	–	–	35.4
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	3.2	94.7	0.0	0.2	1.4	0.5
Manufacture of paper and paper products	3.7	87.5	0.0	0.0	8.7	0.01
Printing and reproduction of recorded media	0.8	99.2	–	0.01	–	0.0
Manufacture of furniture	80.0	18.0	–	–	1.6	0.4
Other manufacturing	44.5	48.0	0.2	0.7	3.0	3.6
Electricity, gas, steam and air-conditioning supply	31.9	32.0	0.1	0.3	29.4	6.4
Water supply; sewerage, waste management, and remediation activities	14.6	83.8	0.01	–	1.2	0.4

(continued)

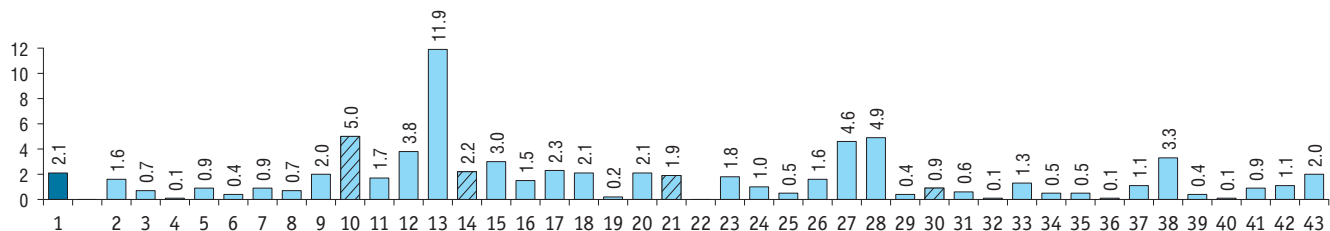
	Research and development	Purchase of machinery and equipment, or other fixed assets	Education and training of personnel	Design	Engineering	Other activities related to introducing technological innovations
Types of economic activity within services sector – total	59.2	31.0	0.3	0.1	5.0	4.4
Transportation and storage	4.8	92.2	0.5	0.01	0.8	1.5
Publishing activities	37.8	42.6	0.2	0.6	–	18.8
Telecommunications	8.3	16.2	0.1	0.0	62.9	12.5
Computer programming, consultancy and related activities	63.0	6.8	0.2	0.02	0.8	29.2
IT industry	35.9	15.6	0.9	0.2	4.2	43.3
Legal and accounting activities	1.0	95.7	1.5	–	1.1	0.7
Activities of head offices; management consultancy activities	89.6	2.3	0.1	0.1	1.3	6.7
Architectural and engineering activities; technical testing and analysis	34.4	6.2	0.8	0.01	2.5	56.1
Research and development	87.9	8.7	0.2	0.1	2.5	0.7
Advertising and market research	55.2	21.0	0.2	0.2	4.9	18.4

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Education and training of personnel	Design	Engineering	Other activities related to introducing technological innovations
Other professional, scientific and technical activities	64.4	35.6	0.1	–	–	0.0
Health and social services activities	27.0	67.4	0.2	0.02	0.7	4.8
Agriculture – total	4.9	92.1	0.0	0.0	2.1	0.8
Growing of non-perennial crops	4.2	95.3	0.0	–	0.3	0.2
Growing of perennial crops	–	97.0	–	–	–	3.0
Plant propagation	28.3	71.7	–	–	–	–
Animal production	6.1	86.1	0.01	0.01	6.4	1.4
Mixed farming	–	100	–	–	0.05	–
Support activities to agriculture and post-harvest crop activities	55.2	43.0	0.1	–	1.8	0.01
Construction – total	10.1	82.5	0.3	0.0	0.8	6.3

4.7. INTENSITY OF EXPENDITURE ON TECHNOLOGICAL INNOVATION BY TYPE OF ECONOMIC ACTIVITY: 2020

(expenditure on technological innovation as a percentage of total sales)



1 – total

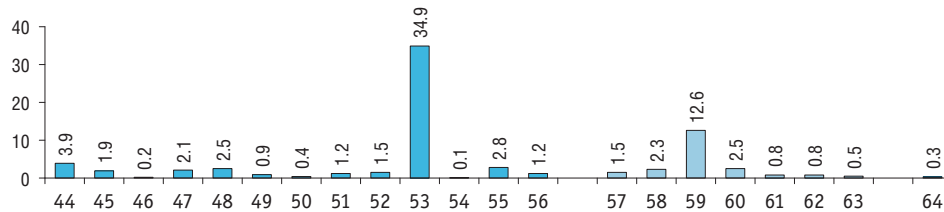
2 – industrial production – total

- 3 – mining and quarrying
 - 4 – mining of coal and lignite
 - 5 – extraction of crude petroleum and natural gas
 - 6 – mining of metal ores
 - 7 – other mining and quarrying
 - 8 – mining support service activities
- 9 – manufacturing
 - 10 – high tech
 - 11 – manufacture of basic pharmaceutical products and pharmaceutical preparations
 - 12 – manufacture of computer, electronic and optical products
 - 13 – manufacture of air and spacecraft and related machinery
 - 14 – medium high tech
 - 15 – production of chemicals and chemical products
 - 16 – manufacture of electrical equipment
 - 17 – manufacture of machinery and equipment not elsewhere classified
 - 18 – manufacture of motor vehicles, trailers and semi-trailers
 - 19 – manufacture of other transport equipment
 - 20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

- 22 – reproduction of recorded media
- 23 – manufacture of coke and refined petroleum products
- 24 – manufacture of rubber and plastic products
- 25 – manufacture of other non-metallic mineral products
- 26 – manufacture of basic metals
- 27 – manufacture of fabricated metal products, except machinery and equipment
- 28 – building of ships and boats
- 29 – repair and installation of machinery and equipment
- 30 – low tech
 - 31 – manufacture of food products
 - 32 – manufacture of beverages
 - 33 – manufacture of tobacco products
 - 34 – manufacture of textiles
 - 35 – manufacture of wearing apparel
 - 36 – manufacture of leather and related products
 - 37 – manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
 - 38 – printing and reproduction of recorded media
 - 39 – printing and reproduction of recorded media
 - 40 – manufacture of furniture
 - 41 – other manufacturing
- 42 – electricity, gas, steam and air conditioning supply
- 43 – water supply; sewerage, waste management and remediation activities

(continued)

**44 – types of economic activity within services sector – total**

- 45 – transportation and storage
- 46 – publishing activities
- 47 – telecommunications
- 48 – computer programming, consultancy and related activities
- 49 – IT industry
- 50 – legal and accounting activities
- 51 – activities of head offices; management consultancy activities
- 52 – architectural and engineering activities; technical testing and analysis

53 – scientific research and development

54 – advertising and market research

55 – other professional, scientific and technical activities

56 – human health and social work activities

57 – agriculture – total

58 – growing of non-perennial crops

59 – growing of perennial crops

60 – plant propagation

61 – animal production

62 – mixed farming

63 – support activities to agriculture and post-harvest crop activities

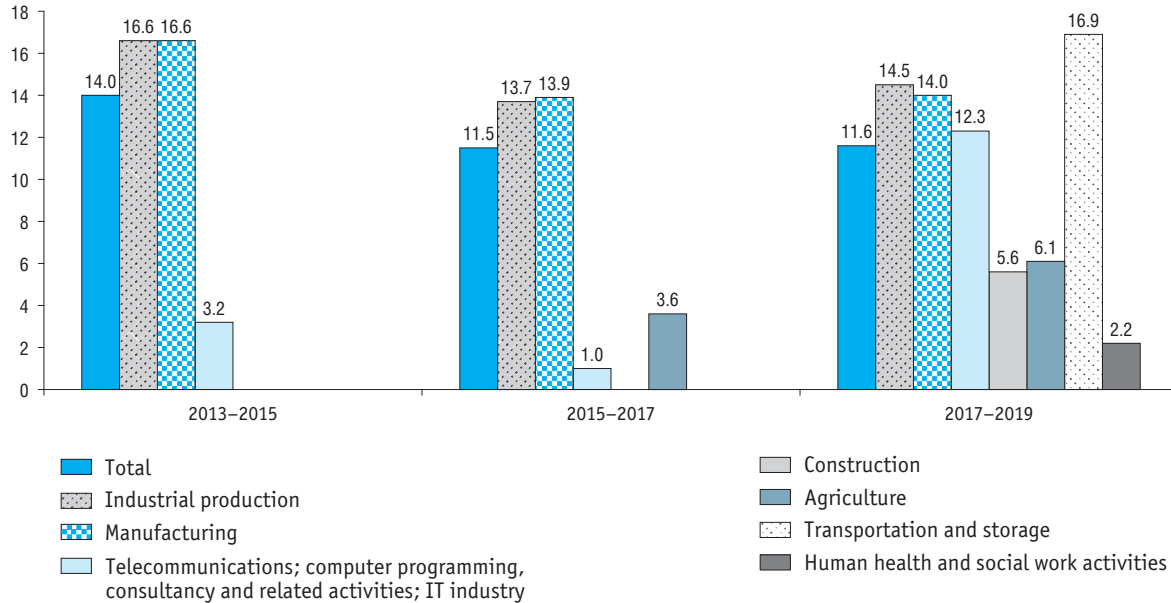
64 – construction – total



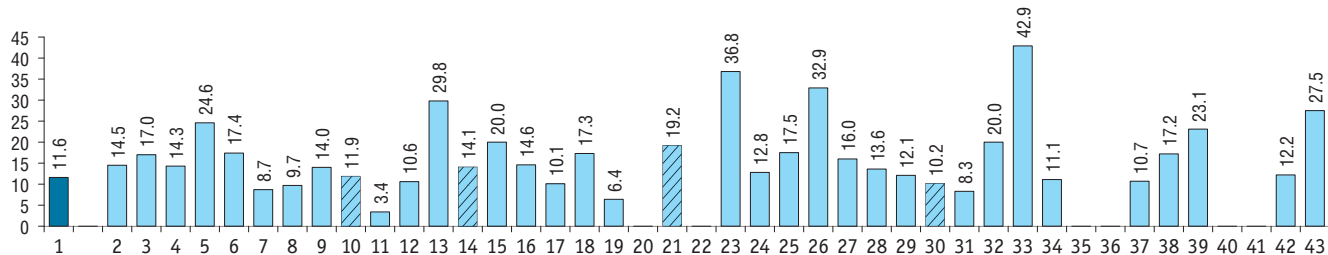
5

**ENVIRONMENTAL
INNOVATION**

5.1. ENTERPRISES ENGAGED IN ENVIRONMENTAL INNOVATION AS A PERCENTAGE OF THE TOTAL NUMBER OF ENTERPRISES THAT COMPLETED INNOVATIVE ACTIVITIES



5.2. ENTERPRISES ENGAGED IN ENVIRONMENTAL INNOVATION AS A PERCENTAGE OF THE TOTAL NUMBER OF ENTERPRISES THAT COMPLETED INNOVATIVE ACTIVITIES BY TYPE OF ECONOMIC ACTIVITY: 2017–2019



1 – total

2 – industrial production – total

3 – mining and quarrying

4 – mining of coal and lignite

5 – extraction of crude petroleum and natural gas

6 – mining of metal ores

7 – other mining and quarrying

8 – mining support service activities

9 – manufacturing

10 – high tech

11 – manufacture of basic pharmaceutical products and pharmaceutical preparations

12 – manufacture of computer, electronic and optical products

13 – manufacture of air and spacecraft and related machinery

14 – medium high tech

15 – production of chemicals and chemical products

16 – manufacture of electrical equipment

17 – manufacture of machinery and equipment not elsewhere classified

18 – manufacture of motor vehicles, trailers and semi-trailers

19 – manufacture of other transport equipment

20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

22 – reproduction of recorded media

23 – manufacture of coke and refined petroleum products

24 – manufacture of rubber and plastic products

25 – manufacture of other non-metallic mineral products

26 – manufacture of basic metals

27 – manufacture of fabricated metal products, except machinery and equipment

28 – building of ships and boats

29 – repair and installation of machinery and equipment

30 – low tech

31 – manufacture of food products

32 – manufacture of beverages

33 – manufacture of tobacco products

34 – manufacture of textiles

35 – manufacture of wearing apparel

36 – manufacture of leather and related products

37 – manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials

38 – printing and reproduction of recorded media

39 – printing and reproduction of recorded media

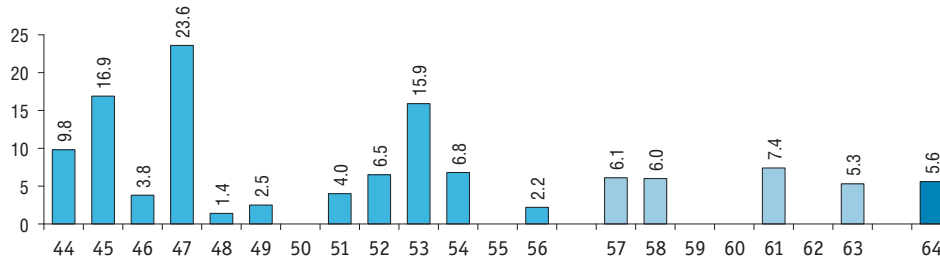
40 – manufacture of furniture

41 – other manufacturing

42 – electricity, gas, steam and air conditioning supply

43 – water supply; sewerage, waste management and remediation activities

(continued)

**44 – types of economic activity within services sector – total**

- 45 – transportation and storage
- 46 – publishing activities
- 47 – telecommunications
- 48 – computer programming, consultancy and related activities
- 49 – IT industry
- 50 – legal and accounting activities
- 51 – activities of head offices; management consultancy activities
- 52 – architectural and engineering activities; technical testing and analysis

53 – scientific research and development

54 – advertising and market research

55 – other professional, scientific and technical activities

56 – human health and social work activities

57 – agriculture – total

58 – growing of non-perennial crops

59 – growing of perennial crops

60 – plant propagation

61 – animal production

62 – mixed farming

63 – support activities to agriculture and post-harvest crop activities

64 – construction – total

5.3. ENTERPRISES ENGAGED IN INNOVATION THAT IMPROVED ENVIRONMENTAL PROTECTION DURING THE PRODUCTION OF GOODS AND SERVICES: 2017–2019

(as a percentage of all enterprises that engaged in environmental innovation)

	Reducing material costs per unit of goods and services output	Reducing power consumption per unit of goods and services output	Reducing carbon dioxide emission	Replacing materials with less hazardous or non-hazardous substitutes	Reducing environmental pollution (air, soil, water or noise pollution)	Recycling waste, water or materials	Conserving and reproducing used natural resources
Total	44.5	54.5	35.6	33.3	68.7	38.9	30.6
Industrial production – total	53.5	52.7	41.6	35.1	78.7	53.0	34.5
Mining and quarrying	79.2	20.8	25.0	16.7	91.7	79.2	75.0
Mining of coal and lignite	–	–	–	–	100	100	100
Extraction of crude petroleum and natural gas	100	7.1	7.1	–	100	85.7	85.7
Mining of metal ores	50.0	75.0	75.0	50.0	75.0	50.0	25.0
Other mining and quarrying	50.0	50.0	100	100	100	100	100
Mining support service activities	66.7	–	–	–	66.7	66.7	66.7
Manufacturing	53.4	57.7	45.6	39.0	78.0	55.1	34.1
High tech	58.1	48.8	37.2	27.9	69.8	32.6	16.3
Manufacture of basic pharmaceutical products and pharmaceutical preparations	50.0	50.0	–	–	100	–	–
Production of computer, electronic and optical products	59.3	51.9	40.7	33.3	63.0	44.4	22.2
Manufacture of air and spacecraft and related machinery	57.1	42.9	35.7	21.4	78.6	14.3	7.1

(continued)

	Reducing material costs per unit of goods and services output	Reducing power consumption per unit of goods and services output	Reducing carbon dioxide emission	Replacing materials with less hazardous or non-hazardous substitutes	Reducing environmental pollution (air, soil, water or noise pollution)	Recycling waste, water or materials	Conserving and reproducing used natural resources
Medium high tech	52.1	62.8	44.7	42.6	76.6	58.5	34.0
Production of chemicals and chemical products	53.1	59.4	34.4	34.4	78.1	59.4	43.8
Manufacture of electrical equipment	54.5	72.7	59.1	50.0	77.3	68.2	36.4
Manufacture of machinery and equipment not elsewhere classified	42.1	57.9	36.8	47.4	63.2	57.9	15.8
Manufacture of motor vehicles, trailers and semi-trailers	55.6	61.1	55.6	44.4	88.9	55.6	38.9
Manufacture of other transport equipment	66.7	66.7	33.3	33.3	66.7	–	–
Manufacture of medical and dental instruments and supplies	–	–	–	–	–	–	–
Medium low tech	45.0	50.5	44.0	33.0	76.1	59.6	37.6
Reproduction of recorded media	–	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	35.7	50.0	50.0	35.7	100	57.1	42.9
Manufacture of rubber and plastic products	63.6	54.5	54.5	54.5	63.6	90.9	18.2
Manufacture of other non-metallic mineral products	27.8	33.3	38.9	27.8	66.7	55.6	27.8
Manufacture of basic metals	46.4	50.0	42.9	25.0	82.1	67.9	42.9

(continued)

	Reducing material costs per unit of goods and services output	Reducing power consumption per unit of goods and services output	Reducing carbon dioxide emission	Replacing materials with less hazardous or non-hazardous substitutes	Reducing environmental pollution (air, soil, water or noise pollution)	Recycling waste, water or materials	Conserving and reproducing used natural resources
Manufacture of fabricated metal products, except machinery and equipment	50.0	57.1	39.3	35.7	67.9	53.6	50.0
Building of ships and boats	33.3	66.7	33.3	–	100	–	33.3
Repair and installation of machinery and equipment	57.1	57.1	57.1	42.9	71.4	42.9	14.3
Low tech	67.8	69.5	55.9	52.5	89.8	57.6	40.7
Manufacture of food products	72.4	72.4	44.8	51.7	89.7	51.7	34.5
Manufacture of beverages	76.9	76.9	84.6	76.9	92.3	76.9	76.9
Manufacture of tobacco products	100	100	100	–	100	100	33.3
Manufacture of textiles	–	–	–	–	66.7	–	–
Manufacture of wearing apparel	–	–	–	–	–	–	–
Manufacture of leather and related products	–	–	–	–	–	–	–
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	100	100	100	66.7	100	66.7	33.3
Manufacture of paper and paper products	40.0	60.0	40.0	60.0	80.0	40.0	20.0
Printing and reproduction of recorded media	33.3	33.3	33.3	33.3	100	66.7	33.3
Manufacture of furniture	–	–	–	–	–	–	–
Other manufacturing	–	–	–	–	–	–	–

(continued)

	Reducing material costs per unit of goods and services output	Reducing power consumption per unit of goods and services output	Reducing carbon dioxide emission	Replacing materials with less hazardous or non-hazardous substitutes	Reducing environmental pollution (air, soil, water or noise pollution)	Recycling waste, water or materials	Conserving and reproducing used natural resources
Electricity, gas, steam and air-conditioning supply	35.5	29.0	25.8	16.1	64.5	19.4	16.1
Water supply; sewerage, waste management, and remediation activities	52.0	52.0	28.0	28.0	92.0	44.0	24.0
Types of economic activity within services sector – total	32.3	57.0	27.0	29.0	55.0	21.3	23.7
Transportation and storage	22.9	35.7	21.4	21.4	84.3	12.9	7.1
Publishing activities	100	50.0	–	50.0	50.0	50.0	50.0
Telecommunications	2.7	100	1.4	1.4	4.1	1.4	–
Computer programming, consultancy and related activities	100	100	33.3	66.7	100	100	100
IT industry	–	66.7	–	33.3	–	33.3	–
Legal and accounting activities	–	–	–	–	–	–	–
Activities of head offices; management consultancy activities	50.0	50.0	25.0	25.0	75.0	50.0	75.0
Architectural and engineering activities; technical testing and analysis	63.6	45.5	54.5	36.4	54.5	27.3	36.4
Scientific research and development	49.6	43.4	43.4	46.9	69.0	37.2	43.4
Advertising and market research	66.7	66.7	100	66.7	100	33.3	66.7
Other professional, scientific and technical activities	–	–	–	–	–	–	–
Human health and social work activities	41.2	47.1	29.4	41.2	52.9	5.9	23.5

(continued)

	Reducing material costs per unit of goods and services output	Reducing power consumption per unit of goods and services output	Reducing carbon dioxide emission	Replacing materials with less hazardous or non-hazardous substitutes	Reducing environmental pollution (air, soil, water or noise pollution)	Recycling waste, water or materials	Conserving and reproducing used natural resources
Agriculture – total	54.5	54.5	63.6	63.6	81.8	18.2	63.6
Growing of non-perennial crops	75.0	75.0	75.0	75.0	100	25.0	100
Growing of perennial crops	–	–	–	–	–	–	–
Plant propagation	–	–	–	–	–	–	–
Animal production	50.0	33.3	50.0	66.7	66.7	16.7	50.0
Mixed farming	–	–	–	–	–	–	–
Support activities to agriculture and post-harvest crop activities	–	100	100	–	100	–	–
Construction – total	55.6	44.4	33.3	66.7	77.8	44.4	55.6

**5.4. ENTERPRISES THAT ENGAGED IN INNOVATION IMPROVING ENVIRONMENTAL PROTECTION
AS A RESULT OF THE CUSTOMER'S USE OF INNOVATIVE GOODS AND SERVICES: 2017–2019**
(as a percentage of all enterprises that engaged in environmental innovation)

	Reduction of energy consumption or loss of energy resources	Reducing environmental pollution (air, soil, water or noise pollution)	Improving the possibilities of recycling goods after use
Total	57.2	55.3	27.0
Industrial production – total	52.7	64.4	34.8
Mining and quarrying	87.5	79.2	75.0
Mining of coal and lignite	100	100	100
Extraction of crude petroleum and natural gas	92.9	85.7	85.7
Mining of metal ores	50.0	50.0	25.0
Other mining and quarrying	100	100	100
Mining support service activities	100	66.7	66.7
Manufacturing	52.8	63.6	33.8
High tech	48.8	65.1	11.6
Manufacture of basic pharmaceutical products and pharmaceutical preparations	50.0	50.0	–
Production of computer, electronic and optical products	51.9	70.4	18.5
Manufacture of air and spacecraft and related machinery	42.9	57.1	–
Medium high tech	53.2	58.5	41.5
Production of chemicals and chemical products	46.9	50.0	46.9
Manufacture of electrical equipment	59.1	77.3	50.0
Manufacture of machinery and equipment not elsewhere classified	52.6	47.4	31.6
Manufacture of motor vehicles, trailers and semi-trailers	55.6	66.7	33.3
Manufacture of other transport equipment	66.7	33.3	33.3
Manufacture of medical and dental instruments and supplies	–	–	–
Medium low tech	51.4	65.1	30.3
Reproduction of recorded media	–	–	–

(continued)

	Reduction of energy consumption or loss of energy resources	Reducing environmental pollution (air, soil, water or noise pollution)	Improving the possibilities of recycling goods after use
Manufacture of coke and refined petroleum products	57.1	71.4	28.6
Manufacture of rubber and plastic products	54.5	72.7	54.5
Manufacture of other non-metallic mineral products	44.4	55.6	27.8
Manufacture of basic metals	50.0	60.7	17.9
Manufacture of fabricated metal products, except machinery and equipment	57.1	67.9	35.7
Building of ships and boats	66.7	100	33.3
Repair and installation of machinery and equipment	28.6	57.1	28.6
Low tech	57.6	67.8	44.1
Manufacture of food products	65.5	75.9	27.6
Manufacture of beverages	76.9	84.6	76.9
Manufacture of tobacco products	100	100	100
Manufacture of textiles	–	33.3	33.3
Manufacture of wearing apparel	–	–	–
Manufacture of leather and related products	–	–	–
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	33.3	66.7	66.7
Manufacture of paper and paper products	20.0	20.0	20.0
Printing and reproduction of recorded media	–	–	33.3
Manufacture of furniture	–	–	–
Other manufacturing	–	–	–
Electricity, gas, steam and air-conditioning supply	38.7	54.8	16.1
Water supply; sewerage, waste management, and remediation activities	36.0	72.0	32.0

(continued)

	Reduction of energy consumption or loss of energy resources	Reducing environmental pollution (air, soil, water or noise pollution)	Improving the possibilities of recycling goods after use
Types of economic activity within services sector – total	63.3	42.0	16.7
Transportation and storage	40.0	45.7	5.7
Publishing activities	50.0	50.0	50.0
Telecommunications	97.3	1.4	–
Computer programming, consultancy and related activities	100	100	66.7
IT industry	33.3	–	–
Legal and accounting activities	–	–	–
Activities of head offices; management consultancy activities	50.0	50.0	25.0
Architectural and engineering activities; technical testing and analysis	36.4	45.5	36.4
Scientific research and development	58.4	61.9	31.0
Advertising and market research	66.7	66.7	33.3
Other professional, scientific and technical activities	–	–	–
Human health and social work activities	64.7	58.8	11.8
Agriculture – total	54.5	81.8	18.2
Growing of non-perennial crops	75.0	100	25.0
Growing of perennial crops	–	–	–
Plant propagation	–	–	–
Animal production	33.3	66.7	16.7
Mixed farming	–	–	–
Support activities to agriculture and post-harvest crop activities	100	100	–
Construction – total	44.4	77.8	44.4

5.5. PERCENTAGE DISTRIBUTION OF ENTERPRISES THAT ENGAGED IN ENVIRONMENTAL INNOVATION BY OBJECTIVE AND TYPE OF ECONOMIC ACTIVITY: 2017–2019

	Enterprises that engaged in environmental innovation by objective					
	ensuring compliance with modern technical regulations, rules, and standards	ensuring compliance with expected tightening of legal provisions	availability of government grants, subsidies, or other financial incentives following introduction of environmental innovation	compliance with the market (consumers) requirements that force to introduce environmental innovations	voluntary adherence to the general principles of environmental protection	minimisation of the consequences of adverse climate changes, as well as the consequences of natural and man-made emergencies
Total	87.5	48.2	12.3	43.7	83.5	47.9
Industrial production – total	88.3	54.8	11.4	51.2	84.4	49.4
Mining and quarrying	91.7	16.7	4.2	8.3	87.5	83.3
Mining of coal and lignite	–	100	100	–	–	–
Extraction of crude petroleum and natural gas	100	–	–	–	92.9	92.9
Mining of metal ores	100	25.0	–	25.0	100	75.0
Other mining and quarrying	100	100	–	–	100	100
Mining support service activities	66.7	–	–	33.3	66.7	66.7
Manufacturing	88.5	58.4	11.8	54.8	85.6	49.2
High tech	88.4	48.8	7.0	32.6	86.0	34.9
Manufacture of basic pharmaceutical products and pharmaceutical preparations	100	–	–	50.0	100	50.0
Production of computer, electronic and optical products	92.6	59.3	11.1	40.7	88.9	33.3
Manufacture of air and spacecraft and related machinery	78.6	35.7	–	14.3	78.6	35.7

(continued)

	Enterprises that engaged in environmental innovation by objective					
	ensuring compliance with modern technical regulations, rules, and standards	ensuring compliance with expected tightening of legal provisions	availability of government grants, subsidies, or other financial incentives following introduction of environmental innovation	compliance with the market (consumers) requirements that force to introduce environmental innovations	voluntary adherence to the general principles of environmental protection	minimisation of the consequences of adverse climate changes, as well as the consequences of natural and man-made emergencies
Medium high tech	90.4	61.7	10.6	56.4	88.3	50.0
Production of chemicals and chemical products	84.4	56.3	6.3	56.3	87.5	46.9
Manufacture of electrical equipment	95.5	72.7	9.1	63.6	90.9	68.2
Manufacture of machinery and equipment not elsewhere classified	89.5	47.4	10.5	36.8	89.5	36.8
Manufacture of motor vehicles, trailers and semi-trailers	94.4	72.2	16.7	66.7	88.9	50.0
Manufacture of other transport equipment	100	66.7	33.3	66.7	66.7	33.3
Manufacture of medical and dental instruments and supplies	–	–	–	–	–	–
Medium low tech	87.2	55.0	8.3	56.9	80.7	49.5
Reproduction of recorded media	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	85.7	64.3	14.3	85.7	85.7	57.1
Manufacture of rubber and plastic products	72.7	36.4	18.2	36.4	90.9	54.5
Manufacture of other non-metallic mineral products	77.8	44.4	–	55.6	72.2	44.4
Manufacture of basic metals	96.4	64.3	10.7	60.7	89.3	50.0

(continued)

	Enterprises that engaged in environmental innovation by objective					
	ensuring compliance with modern technical regulations, rules, and standards	ensuring compliance with expected tightening of legal provisions	availability of government grants, subsidies, or other financial incentives following introduction of environmental innovation	compliance with the market (consumers) requirements that force to introduce environmental innovations	voluntary adherence to the general principles of environmental protection	minimisation of the consequences of adverse climate changes, as well as the consequences of natural and man-made emergencies
Manufacture of fabricated metal products, except machinery and equipment	85.7	50.0	7.1	50.0	71.4	50.0
Building of ships and boats	100	100	–	100	100	33.3
Repair and installation of machinery and equipment	100	57.1	–	28.6	71.4	42.9
Low tech	88.1	66.1	23.7	64.4	89.8	57.6
Manufacture of food products	86.2	62.1	10.3	58.6	93.1	55.2
Manufacture of beverages	92.3	76.9	76.9	92.3	92.3	76.9
Manufacture of tobacco products	100	66.7	–	100	100	100
Manufacture of textiles	66.7	33.3	–	33.3	66.7	66.7
Manufacture of wearing apparel	–	–	–	–	–	–
Manufacture of leather and related products	–	–	–	–	–	–
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	100	66.7	33.3	66.7	66.7	33.3
Manufacture of paper and paper products	80.0	80.0	–	40.0	100	20.0
Printing and reproduction of recorded media	100	66.7	–	33.3	66.7	33.3
Manufacture of furniture	–	–	–	–	–	–
Other manufacturing	–	–	–	–	–	–

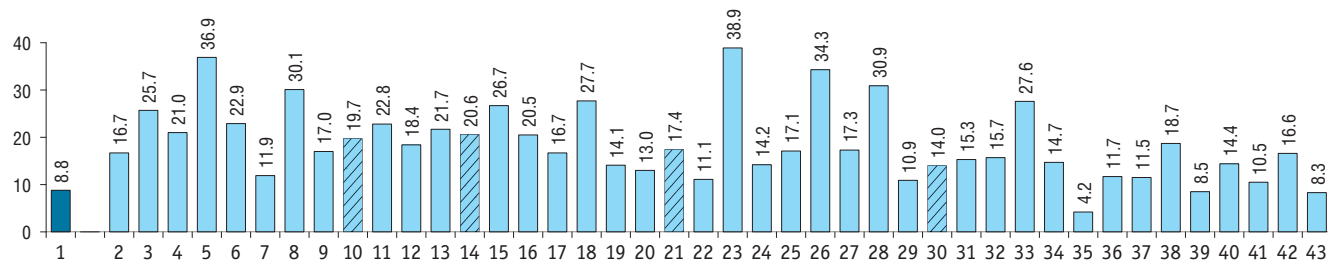
(continued)

	Enterprises that engaged in environmental innovation by objective					
	ensuring compliance with modern technical regulations, rules, and standards	ensuring compliance with expected tightening of legal provisions	availability of government grants, subsidies, or other financial incentives following introduction of environmental innovation	compliance with the market (consumers) requirements that force to introduce environmental innovations	voluntary adherence to the general principles of environmental protection	minimisation of the consequences of adverse climate changes, as well as the consequences of natural and man-made emergencies
Electricity, gas, steam and air-conditioning supply	83.9	38.7	9.7	45.2	67.7	29.0
Water supply; sewerage, waste management, and remediation activities	88.0	68.0	16.0	56.0	88.0	44.0
Types of economic activity within services sector – total	86.7	38.7	11.3	32.7	82.7	44.7
Transportation and storage	92.9	67.1	–	15.7	85.7	70.0
Publishing activities	100	50.0	50.0	50.0	100	100
Telecommunications	97.3	1.4	1.4	2.7	98.6	1.4
Computer programming, consultancy and related activities	66.7	66.7	33.3	66.7	100	100
IT industry	33.3	–	–	33.3	33.3	33.3
Legal and accounting activities	–	–	–	–	–	–
Activities of head offices; management consultancy activities	100	75.0	25.0	50.0	100	50.0
Architectural and engineering activities; technical testing and analysis	72.7	36.4	36.4	72.7	90.9	45.5
Scientific research and development	80.5	46.0	20.4	54.9	70.8	54.9
Advertising and market research	100	66.7	33.3	100	100	66.7
Other professional, scientific and technical activities	–	–	–	–	–	–
Human health and social work activities:	70.6	23.5	11.8	35.3	70.6	41.2

(continued)

	Enterprises that engaged in environmental innovation by objective					
	ensuring compliance with modern technical regulations, rules, and standards	ensuring compliance with expected tightening of legal provisions	availability of government grants, subsidies, or other financial incentives following introduction of environmental innovation	compliance with the market (consumers) requirements that force to introduce environmental innovations	voluntary adherence to the general principles of environmental protection	minimisation of the consequences of adverse climate changes, as well as the consequences of natural and man-made emergencies
Agriculture – total	90.9	72.7	54.5	63.6	81.8	81.8
Growing of non-perennial crops	100	100	75.0	75.0	100	100
Growing of perennial crops	–	–	–	–	–	–
Plant propagation	–	–	–	–	–	–
Animal production	83.3	50.0	33.3	50.0	66.7	66.7
Mixed farming	–	–	–	–	–	–
Support activities to agriculture and post-harvest crop activities	100	100	100	100	100	100
Construction – total	77.8	55.6	33.3	66.7	77.8	55.6

5.6. ENTERPRISES THAT USE ENVIRONMENTAL POLLUTION CONTROL SYSTEM AS A PERCENTAGE OF THE TOTAL NUMBER OF ENTERPRISES BY TYPE OF ECONOMIC ACTIVITY: 2019



1 – total

2 – industrial production – total

3 – mining and quarrying

4 – mining of coal and lignite

5 – extraction of crude petroleum and natural gas

6 – mining of metal ores

7 – other mining and quarrying

8 – mining support service activities

9 – manufacturing

10 – high tech

11 – manufacture of basic pharmaceutical products
and pharmaceutical preparations

12 – manufacture of computer, electronic and optical products

13 – manufacture of air and spacecraft and related machinery

14 – medium high tech

15 – production of chemicals and chemical products

16 – manufacture of electrical equipment

17 – manufacture of machinery and equipment
not elsewhere classified

18 – manufacture of motor vehicles, trailers and semi-trailers

19 – manufacture of other transport equipment

20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

22 – reproduction of recorded media

23 – manufacture of coke and refined petroleum products

24 – manufacture of rubber and plastic products

25 – manufacture of other non-metallic mineral products

26 – manufacture of basic metals

27 – manufacture of fabricated metal products, except machinery and equipment

28 – building of ships and boats

29 – repair and installation of machinery and equipment

30 – low tech

31 – manufacture of food products

32 – manufacture of beverages

33 – manufacture of tobacco products

34 – manufacture of textiles

35 – manufacture of wearing apparel

36 – manufacture of leather and related products

37 – manufacture of wood and of products of wood and cork, except furniture;
manufacture of articles of straw and plaiting materials

38 – printing and reproduction of recorded media

39 – printing and reproduction of recorded media

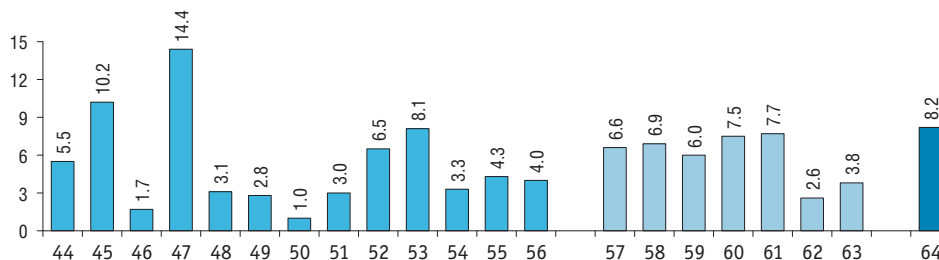
40 – manufacture of furniture

41 – other manufacturing

42 – electricity, gas, steam and air conditioning supply

43 – water supply; sewerage, waste management and remediation activities

(continued)



44 – types of economic activity within services sector – total

- 45 – transportation and storage
- 46 – publishing activities
- 47 – telecommunications
- 48 – computer programming, consultancy and related activities
- 49 – IT industry
- 50 – legal and accounting activities
- 51 – activities of head offices; management consultancy activities
- 52 – architectural and engineering activities; technical testing and analysis

53 – scientific research and development

- 54 – advertising and market research
- 55 – other professional, scientific and technical activities
- 56 – human health and social work activities

57 – agriculture – total

- 58 – growing of non-perennial crops
- 59 – growing of perennial crops
- 60 – plant propagation
- 61 – animal production
- 62 – mixed farming
- 63 – support activities to agriculture and post-harvest crop activities

64 – construction – total

5.7. SPECIAL EXPENDITURE RELATED TO ENVIRONMENTAL INNOVATION BY TYPE OF ECONOMIC ACTIVITY: 2019

	Million roubles	Percentage
Total	27073.0	100
Industrial production – total	26019.9	96.1
Mining and quarrying	499.5	1.8
Mining of coal and lignite	–	–
Extraction of crude petroleum and natural gas	420.2	1.6
Mining of metal ores	23.0	0.1
Other mining and quarrying	56.0	0.2
Mining support service activities	0.3	0.0
Manufacturing	22098.2	81.6
High tech	3761.4	13.9
Manufacture of basic pharmaceutical products and pharmaceutical preparations	11.1	0.04
Production of computer, electronic and optical products	66.2	0.2
Manufacture of air and spacecraft and related machinery	3684.2	13.6
Medium high tech	3828.9	14.1
Production of chemicals and chemical products	2934.2	10.8
Manufacture of electrical equipment	57.7	0.2
Manufacture of machinery and equipment not elsewhere classified	15.2	0.1
Manufacture of motor vehicles, trailers and semi-trailers	781.5	2.9
Manufacture of other transport equipment	39.8	0.1
Manufacture of medical and dental instruments and supplies	0.6	0.0
Medium low tech	10662.1	39.4
Reproduction of recorded media	–	–
Manufacture of coke and refined petroleum products	3324.2	12.3

(continued)

	Million roubles	Percentage
Manufacture of rubber and plastic products	78.2	0.3
Manufacture of other non-metallic mineral products	346.9	1.3
Manufacture of basic metals	6836.9	25.3
Manufacture of fabricated metal products, except machinery and equipment	38.1	0.1
Building of ships and boats	32.7	0.1
Repair and installation of machinery and equipment	5.0	0.02
Low tech	3845.9	14.2
Manufacture of food products	522.9	1.9
Manufacture of beverages	0.01	0.0
Manufacture of tobacco products	23.0	0.1
Manufacture of textiles	0.1	0.0
Manufacture of wearing apparel	–	–
Manufacture of leather and related products	0.0	0.0
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	2.1	0.01
Manufacture of paper and paper products	3233.1	11.9
Printing and reproduction of recorded media	64.5	0.2
Manufacture of furniture	–	–
Other manufacturing	–	–
Electricity, gas, steam and air-conditioning supply	56.8	0.2
Water supply; sewerage, waste management, and remediation activities	3365.4	12.4

(continued)

	Million roubles	Percentage
Types of economic activity within services sector – total	904.0	3.3
Transportation and storage	395.9	1.5
Publishing activities	–	–
Telecommunications	0.0	0.0
Computer programming, consultancy and related activities	0.8	0.0
IT industry	0.01	0.0
Legal and accounting activities	0.0	0.0
Activities of head offices; management consultancy activities	86.9	0.3
Architectural and engineering activities; technical testing and analysis	105.9	0.4
Scientific research and development	312.4	1.2
Advertising and market research	0.2	0.0
Other professional, scientific and technical activities	–	–
Human health and social work activities	2.0	0.01
Agriculture – total	137.0	0.5
Growing of non-perennial crops	–	–
Growing of perennial crops	–	–
Plant propagation	–	–
Animal production	137.0	0.5
Mixed farming	–	–
Support activities to agriculture and post-harvest crop activities	–	–
Construction – total	12.0	0.04



6

COOPERATION AND OPEN INNOVATIONS

6.1. COOPERATION IN PRODUCT AND BUSINESS PROCESS INNOVATION DEVELOPMENT BY TYPE OF ECONOMIC ACTIVITY: 2018–2020

(as a percentage of all enterprises that completed innovation activities of each type)

	Enterprises for which product innovations were developed				Enterprises for which business process innovations were developed			
	mostly by other enterprises	jointly with other enterprises	by changing or modifying products developed by another enterprise	mostly through their own efforts	mostly by other enterprises	jointly with other enterprises	by changing or modifying products developed by another enterprise	mostly through their own efforts
Total	31.2	28.1	7.7	51.1	45.4	28.1	8.7	35.2
Industrial production – total	23.9	29.8	8.2	55.0	37.5	33.0	7.9	37.6
Mining and quarrying	55.2	33.3	3.4	27.6	54.5	35.1	5.2	14.9
Mining of coal and lignite	33.3	33.3	16.7	16.7	80.0	–	–	20.0
Extraction of crude petroleum and natural gas	60.9	30.4	4.3	17.4	63.3	33.3	3.3	10.0
Mining of metal ores	30.0	40.0	–	40.0	40.9	50.0	4.5	18.2
Other mining and quarrying	60.0	10.0	–	30.0	52.6	31.6	5.3	10.5
Mining support service activities	60.5	39.5	2.6	31.6	42.9	35.7	10.7	25.0
Manufacturing	20.3	30.8	8.5	56.8	31.9	33.2	8.1	43.2
High tech	11.1	38.8	8.0	55.1	23.0	31.5	8.1	47.7
Manufacture of basic pharmaceutical products and pharmaceutical preparations	15.6	40.6	9.4	40.6	23.1	30.8	3.8	44.2
Production of computer, electronic and optical products	10.5	35.9	6.0	63.7	21.2	30.1	6.8	52.7
Manufacture of air and spacecraft and related machinery	8.2	51.0	16.3	30.6	29.7	37.8	18.9	32.4

(continued)

	Enterprises for which product innovations were developed				Enterprises for which business process innovations were developed			
	mostly by other enterprises	jointly with other enterprises	by changing or modifying products developed by another enterprise	mostly through their own efforts	mostly by other enterprises	jointly with other enterprises	by changing or modifying products developed by another enterprise	mostly through their own efforts
Medium high tech	20.9	25.7	10.1	61.1	32.5	35.0	10.6	45.6
Production of chemicals and chemical products	18.8	31.6	8.3	60.2	36.1	36.1	8.3	41.7
Manufacture of electrical equipment	17.9	18.5	8.6	68.9	31.8	25.9	9.4	48.2
Manufacture of machinery and equipment not elsewhere classified	18.3	22.3	9.6	66.0	30.3	29.4	11.9	50.5
Manufacture of motor vehicles, trailers and semi-trailers	27.3	25.3	13.1	52.5	31.6	52.6	8.8	36.8
Manufacture of other transport equipment	29.7	54.1	21.6	40.5	32.1	46.4	25.0	53.6
Manufacture of medical and dental instruments and supplies	38.9	22.2	–	38.9	30.0	30.0	–	40.0
Medium low tech	24.5	34.1	8.6	51.1	32.8	36.9	7.1	38.5
Reproduction of recorded media	–	–	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	29.4	35.3	–	35.3	22.5	65.0	–	12.5
Manufacture of rubber and plastic products	27.4	23.8	11.9	53.6	37.0	24.1	9.3	42.6
Manufacture of other non-metallic mineral products	33.7	27.2	7.6	50.0	38.7	28.0	6.7	36.0
Manufacture of basic metals	18.8	49.3	11.6	39.1	23.7	42.1	6.6	40.8

(continued)

	Enterprises for which product innovations were developed				Enterprises for which business process innovations were developed			
	mostly by other enterprises	jointly with other enterprises	by changing or modifying products developed by another enterprise	mostly through their own efforts	mostly by other enterprises	jointly with other enterprises	by changing or modifying products developed by another enterprise	mostly through their own efforts
Manufacture of fabricated metal products, except machinery and equipment	16.2	37.6	4.0	59.0	28.3	38.6	6.3	41.7
Building of ships and boats	39.1	43.5	17.4	17.4	42.9	28.6	4.8	38.1
Repair and installation of machinery and equipment	29.8	25.5	19.1	66.0	51.2	32.6	16.3	48.8
Low tech	21.8	28.2	6.9	58.5	36.0	27.9	6.8	43.4
Manufacture of food products	22.2	28.4	7.1	56.8	36.5	27.5	8.5	44.5
Manufacture of beverages	23.1	26.9	7.7	69.2	26.1	32.6	4.3	52.2
Manufacture of tobacco products	20.0	40.0	–	60.0	20.0	40.0	–	40.0
Manufacture of textiles	25.0	35.0	5.0	60.0	42.9	28.6	7.1	42.9
Manufacture of wearing apparel	15.0	30.0	10.0	65.0	69.2	15.4	7.7	15.4
Manufacture of leather and related products	11.1	44.4	–	44.4	20.0	40.0	–	40.0
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	19.0	19.0	14.3	52.4	25.0	25.0	–	50.0
Manufacture of paper and paper products	13.0	34.8	–	60.9	36.0	40.0	–	28.0
Printing and reproduction of recorded media	28.6	42.9	–	42.9	33.3	33.3	–	33.3
Manufacture of furniture	28.6	7.1	14.3	57.1	60.0	–	20.0	30.0
Other manufacturing	25.0	12.5	6.3	75.0	35.7	21.4	7.1	57.1

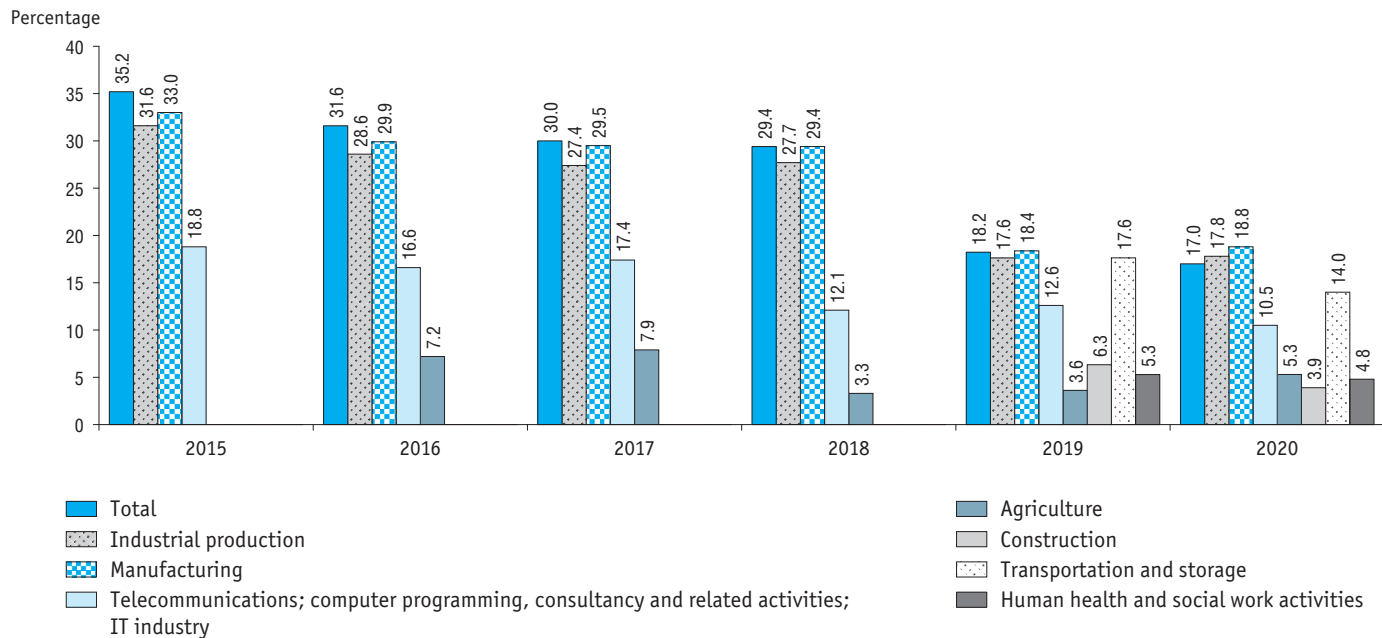
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	Enterprises for which product innovations were developed				Enterprises for which business process innovations were developed			
	mostly by other enterprises	jointly with other enterprises	by changing or modifying products developed by another enterprise	mostly through their own efforts	mostly by other enterprises	jointly with other enterprises	by changing or modifying products developed by another enterprise	mostly through their own efforts
Electricity, gas, steam and air-conditioning supply	49.6	14.7	3.9	44.2	53.6	30.0	6.4	23.6
Water supply; sewerage, waste management, and remediation activities	42.9	22.2	11.1	55.6	55.7	34.0	10.4	21.7
Types of economic activity within services sector – total	36.0	27.3	6.8	47.9	49.5	25.2	8.9	34.0
Transportation and storage	55.1	34.7	6.5	18.8	53.9	27.3	7.6	28.7
Publishing activities	53.5	25.6	7.0	37.2	57.8	21.9	12.5	28.1
Telecommunications	26.5	15.9	1.9	57.2	54.1	21.8	–	24.1
Computer programming, consultancy and related activities	15.8	23.4	7.5	68.3	18.7	24.2	26.9	53.3
IT industry	24.7	17.4	5.3	62.6	41.7	28.1	6.5	38.8
Legal and accounting activities	44.3	19.7	8.2	49.2	64.7	23.5	14.1	24.7
Activities of head offices; management consultancy activities	30.6	27.8	9.7	37.5	44.4	27.8	5.6	38.9

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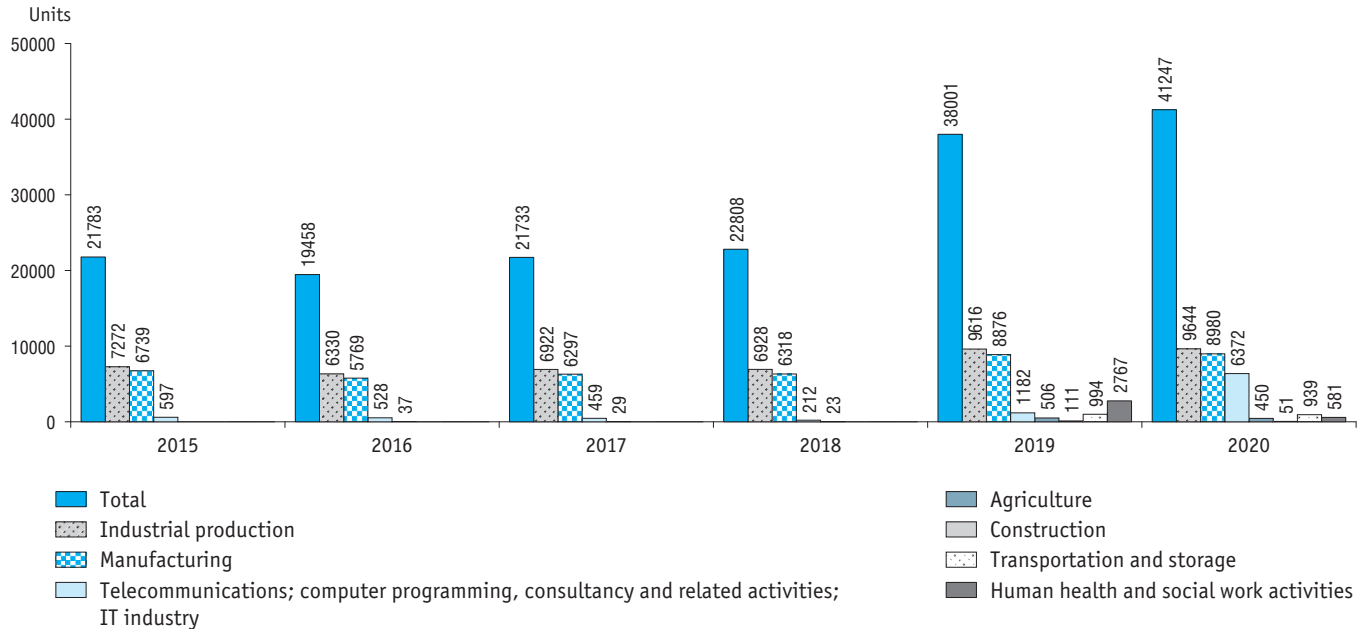
	Enterprises for which product innovations were developed				Enterprises for which business process innovations were developed			
	mostly by other enterprises	jointly with other enterprises	by changing or modifying products developed by another enterprise	mostly through their own efforts	mostly by other enterprises	jointly with other enterprises	by changing or modifying products developed by another enterprise	mostly through their own efforts
Architectural and engineering activities; technical testing and analysis	54.1	25.2	13.8	38.4	49.4	24.1	13.3	31.9
Research and development	11.0	37.0	4.0	69.2	22.2	27.0	7.1	61.6
Advertising and market research	51.7	31.0	13.8	17.2	46.2	28.2	7.7	35.9
Other professional, scientific and technical activities	25.0	16.7	–	66.7	36.4	27.3	–	36.4
Health and social services activities	57.4	24.8	9.1	33.0	63.5	24.6	8.8	24.7
Agriculture – total	44.8	21.0	14.7	49.7	52.8	22.5	11.0	34.4
Growing of non-perennial crops	43.4	11.3	20.8	52.8	47.5	17.5	8.8	46.3
Growing of perennial crops	–	–	–	100	–	80.0	40.0	60.0
Plant propagation	–	–	–	–	100	100	–	–
Animal production	38.8	29.9	11.9	53.7	51.0	26.0	14.4	29.8
Mixed farming	62.5	25.0	12.5	–	75.0	25.0	–	–
Support activities to agriculture and post-harvest crop activities	76.9	15.4	7.7	38.5	83.3	8.3	–	16.7
Construction – total	46.2	23.8	12.3	49.2	61.7	28.9	12.8	25.5

6.2. ENTERPRISES THAT ENGAGED IN JOINT R&D PROJECTS*



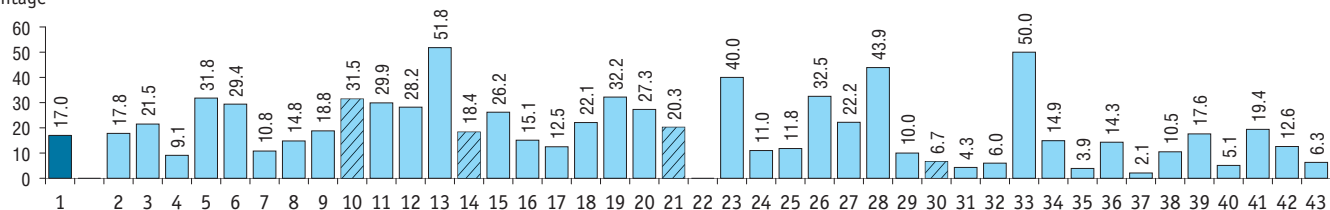
* Here and below in figures 6.3, 6.4, 6.10, tables 6.5, 6.6, 6.7, 6.8, 6.9, the indicators are calculated for enterprises that engaged in innovative activities; until 2019, the indicators are calculated for enterprises that engaged in technological innovation.

6.3. JOINT R&D PROJECTS



6.4. ENTERPRISES THAT ENGAGED IN JOINT R&D PROJECTS BY TYPE OF ECONOMIC ACTIVITY: 2020

Percentage



1 – total

2 – industrial production – total

3 – mining and quarrying

4 – mining of coal and lignite

5 – extraction of crude petroleum and natural gas

6 – mining of metal ores

7 – other mining and quarrying

8 – mining support service activities

9 – manufacturing

10 – high tech

11 – manufacture of basic pharmaceutical products and pharmaceutical preparations

12 – manufacture of computer, electronic and optical products

13 – manufacture of air and spacecraft and related machinery

14 – medium high tech

15 – production of chemicals and chemical products

16 – manufacture of electrical equipment

17 – manufacture of machinery and equipment not elsewhere classified

18 – manufacture of motor vehicles, trailers and semi-trailers

19 – manufacture of other transport equipment

20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

22 – reproduction of recorded media

23 – manufacture of coke and refined petroleum products

24 – manufacture of rubber and plastic products

25 – manufacture of other non-metallic mineral products

26 – manufacture of basic metals

27 – manufacture of fabricated metal products, except machinery and equipment

28 – building of ships and boats

29 – repair and installation of machinery and equipment

30 – low tech

31 – manufacture of food products

32 – manufacture of beverages

33 – manufacture of tobacco products

34 – manufacture of textiles

35 – manufacture of wearing apparel

36 – manufacture of leather and related products

37 – manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials

38 – printing and reproduction of recorded media

39 – printing and reproduction of recorded media

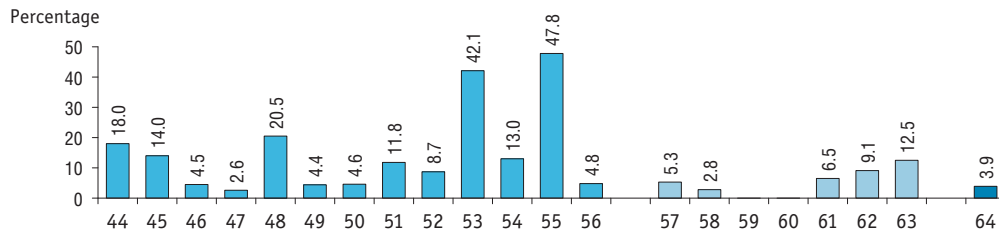
40 – manufacture of furniture

41 – other manufacturing

42 – electricity, gas, steam and air conditioning supply

43 – water supply; sewerage, waste management and remediation activities

(continued)

**44 – types of economic activity within services sector – total**

- 45 – transportation and storage
- 46 – publishing activities
- 47 – telecommunications
- 48 – computer programming, consultancy and related activities
- 49 – IT industry
- 50 – legal and accounting activities
- 51 – activities of head offices; management consultancy activities
- 52 – architectural and engineering activities; technical testing and analysis

53 – scientific research and development

54 – advertising and market research

55 – other professional, scientific and technical activities

56 – human health and social work activities

57 – agriculture – total

58 – growing of non-perennial crops

59 – growing of perennial crops

60 – plant propagation

61 – animal production

62 – mixed farming

63 – support activities to agriculture and post-harvest crop activities

64 – construction – total

6.5. PERCENTAGE DISTRIBUTION OF ENTERPRISES THAT ENGAGED IN JOINT R&D PROJECTS BY PARTNER AND TYPE OF ECONOMIC ACTIVITY: 2020

	Enterprises within a single network (group of companies, holding company, consortium, association, etc.)	Consumers of goods and services	Suppliers of equipment, materials, components, software	Competitors in the industry	Consulting firms, IT services providers	Research institutes	Higher education institutions
Total	36.3	34.3	30.8	7.1	11.3	49.0	29.8
Industrial production – total	40.3	27.2	35.5	5.4	11.4	43.8	26.6
Mining and quarrying	53.3	4.4	35.6	–	6.7	62.2	20.0
Mining of coal and lignite	–	–	–	–	–	100	–
Extraction of crude petroleum and natural gas	57.1	4.8	47.6	–	–	57.1	19.0
Mining of metal ores	50.0	–	40.0	–	10.0	90.0	40.0
Other mining and quarrying	50.0	–	–	–	50.0	50.0	25.0
Mining support service activities	55.6	11.1	22.2	–	–	44.4	–
Manufacturing	40.9	30.4	35.4	6.2	11.8	42.8	27.3
High tech	46.6	39.7	32.4	9.8	4.9	45.6	33.8
Manufacture of basic pharmaceutical products and pharmaceutical preparations	27.6	13.8	20.7	–	3.4	55.2	34.5
Production of computer, electronic and optical products	45.0	45.8	32.8	10.7	3.8	42.7	29.0
Manufacture of air and spacecraft and related machinery	63.6	38.6	38.6	13.6	9.1	47.7	47.7

(continued)

	Enterprises within a single network (group of companies, holding company, consortium, association, etc.)	Consumers of goods and services	Suppliers of equipment, materials, components, software	Competitors in the industry	Consulting firms, IT services providers	Research institutes	Higher education institutions
Medium high tech	35.3	30.7	29.5	4.6	12.4	39.4	22.0
Production of chemicals and chemical products	38.5	20.0	24.6	1.5	16.9	55.4	26.2
Manufacture of electrical equipment	27.9	39.5	23.3	4.7	11.6	41.9	25.6
Manufacture of machinery and equipment not elsewhere classified	35.0	35.0	31.7	5.0	8.3	25.0	16.7
Manufacture of motor vehicles, trailers and semi-trailers	33.3	35.6	31.1	6.7	8.9	28.9	20.0
Manufacture of other transport equipment	47.4	36.8	36.8	5.3	26.3	52.6	26.3
Manufacture of medical and dental instruments and supplies	33.3	–	55.6	11.1	–	33.3	11.1
Medium low tech	46.1	25.3	40.0	6.1	17.1	49.0	30.2
Reproduction of recorded media	–	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	45.8	4.2	33.3	–	33.3	62.5	37.5
Manufacture of rubber and plastic products	35.3	47.1	35.3	5.9	17.6	29.4	–
Manufacture of other non-metallic mineral products	40.0	8.0	52.0	–	4.0	28.0	16.0
Manufacture of basic metals	37.3	11.8	27.5	2.0	27.5	62.7	47.1

(continued)

	Enterprises within a single network (group of companies, holding company, consortium, association, etc.)	Consumers of goods and services	Suppliers of equipment, materials, components, software	Competitors in the industry	Consulting firms, IT services providers	Research institutes	Higher education institutions
Manufacture of fabricated metal products, except machinery and equipment	50.0	37.2	47.9	10.6	14.9	51.1	30.9
Building of ships and boats	50.0	38.9	33.3	16.7	5.6	44.4	27.8
Repair and installation of machinery and equipment	68.8	18.8	37.5	–	6.3	31.3	18.8
Low tech	20.8	17.0	52.8	–	11.3	18.9	13.2
Manufacture of food products	16.7	22.2	61.1	–	11.1	11.1	11.1
Manufacture of beverages	25.0	25.0	100	–	25.0	–	–
Manufacture of tobacco products	–	–	100	–	–	–	–
Manufacture of textiles	–	28.6	28.6	–	–	71.4	14.3
Manufacture of wearing apparel	–	–	–	–	–	100	50.0
Manufacture of leather and related products	50.0	–	50.0	–	50.0	–	50.0
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	100	–	–	–	–	–	–
Manufacture of paper and paper products	16.7	16.7	50.0	–	33.3	–	–
Printing and reproduction of recorded media	33.3	–	33.3	–	–	–	66.7
Manufacture of furniture	50.0	50.0	50.0	–	–	–	–
Other manufacturing	33.3	–	50.0	–	–	16.7	–

(continued)

	Enterprises within a single network (group of companies, holding company, consortium, association, etc.)	Consumers of goods and services	Suppliers of equipment, materials, components, software	Competitors in the industry	Consulting firms, IT services providers	Research institutes	Higher education institutions
Electricity, gas, steam and air-conditioning supply	27.6	5.2	36.2	–	12.1	37.9	24.1
Water supply; sewerage, waste management, and remediation activities	16.7	16.7	41.7	–	–	66.7	16.7
Types of economic activity within services sector – total	33.3	40.7	26.4	8.7	11.1	54.3	33.3
Transportation and storage	24.2	6.1	45.5	1.5	16.7	18.2	21.2
Publishing activities	75.0	25.0	–	–	–	–	–
Telecommunications	25.0	25.0	75.0	12.5	25.0	25.0	12.5
Computer programming, consultancy and related activities	46.4	48.8	21.4	6.0	17.9	9.5	14.3
IT industry	58.3	33.3	33.3	–	16.7	8.3	8.3
Legal and accounting activities	22.2	22.2	33.3	–	55.6	–	11.1
Activities of head offices; management consultancy activities	50.0	35.0	35.0	5.0	35.0	10.0	10.0

(continued)

	Enterprises within a single network (group of companies, holding company, consortium, association, etc.)	Consumers of goods and services	Suppliers of equipment, materials, components, software	Competitors in the industry	Consulting firms, IT services providers	Research institutes	Higher education institutions
Architectural and engineering activities; technical testing and analysis	44.4	29.6	29.6	14.8	16.7	35.2	27.8
Research and development	32.0	46.1	23.0	9.4	6.8	70.8	39.2
Advertising and market research	42.9	14.3	14.3	–	42.9	–	14.3
Other professional, scientific and technical activities	45.5	45.5	27.3	9.1	9.1	45.5	36.4
Health and social services activities	19.4	29.2	37.5	11.1	18.1	36.1	33.3
Agriculture – total	21.7	26.1	39.1	4.3	8.7	34.8	8.7
Growing of non-perennial crops	–	–	40.0	–	–	60.0	–
Growing of perennial crops	–	–	–	–	–	–	–
Plant propagation	–	–	–	–	–	–	–
Animal production	30.8	15.4	53.8	7.7	15.4	30.8	15.4
Mixed farming	100	–	–	–	–	–	–
Support activities to agriculture and post-harvest crop activities	–	100	–	–	–	25.0	–
Construction – total	26.7	20.0	53.3	–	20.0	6.7	6.7

6.6. JOINT R&D PROJECTS BY PARTNER AND TYPE OF ECONOMIC ACTIVITY: 2020

	Joint projects – total	Of which by partner						
		enterprises within a single network (group of companies, holding company, consortium, association, etc.)	consumers of goods and services	suppliers of equipment, materials, components, software	competitors in the industry	consulting firms, IT services providers	research institutes	higher education institutions
Total	41247	5869	20582	8349	631	714	7101	2086
Industrial production – total	9644	1949	2252	3720	170	307	1656	619
Mining and quarrying	398	148	3	67	–	6	176	22
Mining of coal and lignite	1	–	–	–	–	–	1	–
Extraction of crude petroleum and natural gas	230	112	2	34	–	–	85	11
Mining of metal ores	79	14	–	23	–	1	43	7
Other mining and quarrying	53	2	–	–	–	5	42	4
Mining support service activities	35	20	1	10	–	–	5	–
Manufacturing	8980	1728	2242	3562	170	288	1416	566
High tech	3893	500	1030	1996	70	32	403	158
Manufacture of basic pharmaceutical products and pharmaceutical preparations	204	48	8	8	–	1	93	47
Production of computer, electronic and optical products	2250	334	719	1047	58	16	218	66
Manufacture of air and spacecraft and related machinery	1439	118	303	941	12	15	92	45

(continued)

	Joint projects – total	Of which by partner						
		enterprises within a single network (group of companies, holding company, consortium, association, etc.)	consumers of goods and services	suppliers of equipment, materials, components, software	competitors in the industry	consulting firms, IT services providers	research institutes	higher education institutions
Medium high tech	1604	420	411	497	25	62	295	88
Production of chemicals and chemical products	366	118	38	37	3	20	123	31
Manufacture of electrical equipment	333	55	77	161	8	9	78	14
Manufacture of machinery and equipment not elsewhere classified	383	74	109	155	5	17	26	13
Manufacture of motor vehicles, trailers and semi-trailers	311	70	130	52	7	9	43	19
Manufacture of other transport equipment	185	97	57	77	1	7	22	10
Manufacture of medical and dental instruments and supplies	26	6	–	15	1	–	3	1
Medium low tech	3297	773	780	969	75	188	704	309
Reproduction of recorded media	–	–	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	235	44	1	26	–	51	96	27
Manufacture of rubber and plastic products	111	14	22	25	1	6	51	–
Manufacture of other non-metallic mineral products	90	20	12	53	–	1	12	4
Manufacture of basic metals	727	188	31	88	1	99	184	158

(continued)

	Joint projects – total	Of which by partner						
		enterprises within a single network (group of companies, holding company, consortium, association, etc.)	consumers of goods and services	suppliers of equipment, materials, components, software	competitors in the industry	consulting firms, IT services providers	research institutes	higher education institutions
Manufacture of fabricated metal products, except machinery and equipment	1710	318	606	620	32	25	338	110
Building of ships and boats	179	23	62	131	41	5	16	7
Repair and installation of machinery and equipment	245	166	46	26	–	1	7	3
Low tech	186	35	21	100	–	6	14	11
Manufacture of food products	74	7	9	50	–	2	2	4
Manufacture of beverages	19	3	3	12	–	1	–	–
Manufacture of tobacco products	7	–	–	7	–	–	–	–
Manufacture of textiles	17	–	6	4	–	–	6	1
Manufacture of wearing apparel	3	–	–	–	–	–	2	1
Manufacture of leather and related products	6	1	–	1	–	1	–	3
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	2	2	–	–	–	–	–	–
Manufacture of paper and paper products	25	10	1	13	–	2	–	–
Printing and reproduction of recorded media	7	4	–	1	–	–	–	2
Manufacture of furniture	7	4	2	1	–	–	–	–
Other manufacturing	19	4	–	11	–	–	4	–

(continued)

	Joint projects – total	Of which by partner						
		enterprises within a single network (group of companies, holding company, consortium, association, etc.)	consumers of goods and services	suppliers of equipment, materials, components, software	competitors in the industry	consulting firms, IT services providers	research institutes	higher education institutions
Electricity, gas, steam and air-conditioning supply	208	71	4	53	–	13	51	24
Water supply; sewerage, waste management, and remediation activities	58	2	3	38	–	–	13	7
Types of economic activity within services sector – total	31102	3882	18063	4594	460	402	5287	1462
Transportation and storage	939	739	5	63	1	18	173	50
Publishing activities	6	5	1	–	–	–	–	–
Telecommunications	96	4	51	28	1	9	2	2
Computer programming, consultancy and related activities	930	463	487	57	26	56	147	30
IT industry	5346	86	5050	253	–	14	1	1
Legal and accounting activities	70	7	17	29	–	15	–	2
Activities of head offices; management consultancy activities	1748	90	1525	9	1	21	102	13

(continued)

	Joint projects – total	Of which by partner						
		enterprises within a single network (group of companies, holding company, consortium, association, etc.)	consumers of goods and services	suppliers of equipment, materials, components, software	competitors in the industry	consulting firms, IT services providers	research institutes	higher education institutions
Architectural and engineering activities; technical testing and analysis	500	78	193	91	17	28	97	41
Scientific research and development	20762	2318	10591	3786	388	212	4658	1214
Advertising and market research	16	9	2	2	–	3	–	7
Other professional, scientific and technical activities	108	57	44	18	2	1	6	8
Human health and social work activities	581	26	97	258	24	25	101	94
Agriculture – total	450	28	249	17	1	2	157	4
Growing of non-perennial crops	6	–	–	3	–	–	3	–
Growing of perennial crops	–	–	–	–	–	–	–	–
Plant propagation	–	–	–	–	–	–	–	–
Animal production	49	27	2	14	1	2	7	4
Mixed farming	1	1	–	–	–	–	–	–
Support activities to agriculture and post-harvest crop activities	394	–	247	–	–	–	147	–
Construction – total	51	10	18	18	–	3	1	1

6.7. PERCENTAGE DISTRIBUTION OF ENTERPRISES THAT ENGAGED IN JOINT R&D PROJECTS BY PARTNER COUNTRY AND TYPE OF ECONOMIC ACTIVITY: 2020

	Russia	EAEU countries*	EU countries, EU candidate countries**, Iceland, Liechtenstein, Norway, Switzerland, United Kingdom	Canada and United States	BRICS countries***	Other countries
Total	94.6	9.2	14.8	6.7	8.5	9.7
Industrial production – total	94.2	4.3	12.0	4.3	4.9	4.8
Mining and quarrying	97.8	–	6.7	2.2	6.7	6.7
Mining of coal and lignite	100	–	–	–	–	–
Extraction of crude petroleum and natural gas	100	–	–	–	–	–
Mining of metal ores	90.0	–	20.0	10.0	30.0	10.0
Other mining and quarrying	100	–	25.0	–	–	50.0
Mining support service activities	100	–	–	–	–	–
Manufacturing	93.5	5.0	13.5	4.8	5.2	4.7
High tech	95.6	4.4	6.9	2.5	3.4	3.4
Manufacture of basic pharmaceutical products and pharmaceutical preparations	79.3	3.4	13.8	3.4	10.3	10.3
Production of computer, electronic and optical products	98.5	5.3	4.6	2.3	1.5	1.5
Manufacture of air and spacecraft and related machinery	97.7	2.3	9.1	2.3	4.5	4.5
Medium high tech	90.9	4.6	17.8	6.2	8.7	6.2
Production of chemicals and chemical products	90.8	1.5	23.1	6.2	7.7	9.2

(continued)

	Russia	EAEU countries*	EU countries, EU candidate countries**, Iceland, Liechtenstein, Norway, Switzerland, United Kingdom	Canada and United States	BRICS countries***	Other countries
Manufacture of electrical equipment	95.3	4.7	11.6	2.3	4.7	2.3
Manufacture of machinery and equipment not elsewhere classified	90.0	8.3	16.7	10.0	6.7	6.7
Manufacture of motor vehicles, trailers and semi-trailers	86.7	4.4	20.0	4.4	15.6	8.9
Manufacture of other transport equipment	94.7	5.3	15.8	–	5.3	–
Manufacture of medical and dental instruments and supplies	88.9	–	11.1	22.2	22.2	–
Medium low tech	95.9	6.5	13.1	6.5	4.1	3.7
Reproduction of recorded media	–	–	–	–	–	–
Manufacture of coke and refined petroleum products	95.8	–	25.0	25.0	–	–
Manufacture of rubber and plastic products	94.1	–	17.6	5.9	5.9	5.9
Manufacture of other non-metallic mineral products	80.0	4.0	28.0	–	4.0	4.0
Manufacture of basic metals	98.0	2.0	17.6	5.9	3.9	5.9
Manufacture of fabricated metal products, except machinery and equipment	98.9	11.7	4.3	4.3	5.3	2.1
Building of ships and boats	94.4	11.1	5.6	5.6	5.6	11.1
Repair and installation of machinery and equipment	100	6.3	12.5	6.3	–	–

(continued)

	Russia	EAEU countries*	EU countries, EU candidate countries**, Iceland, Liechtenstein, Norway, Switzerland, United Kingdom	Canada and United States	BRICS countries***	Other countries
Low tech	86.8	1.9	20.8	–	1.9	7.5
Manufacture of food products	88.9	5.6	27.8	–	–	11.1
Manufacture of beverages	100	–	–	–	–	25.0
Manufacture of tobacco products	50.0	–	50.0	–	–	–
Manufacture of textiles	100	–	–	–	–	–
Manufacture of wearing apparel	100	–	–	–	–	–
Manufacture of leather and related products	50.0	–	100	–	–	–
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	–	–	–	–	–	100
Manufacture of paper and paper products	83.3	–	16.7	–	–	–
Printing and reproduction of recorded media	100	–	33.3	–	–	–
Manufacture of furniture	50.0	–	50.0	–	–	–
Other manufacturing	100	–	–	–	16.7	–
Electricity, gas, steam and air-conditioning supply	98.3	–	–	–	–	1.7
Water supply; sewerage, waste management, and remediation activities	100	–	–	–	–	16.7

(continued)

	Russia	EAEU countries*	EU countries, EU candidate countries**, Iceland, Liechtenstein, Norway, Switzerland, United Kingdom	Canada and United States	BRICS countries***	Other countries
Types of economic activity within services sector – total	95.2	13.1	16.6	8.7	11.6	13.7
Transportation and storage	97.0	4.5	–	–	–	3.0
Publishing activities	100	–	–	–	–	–
Telecommunications	100	12.5	12.5	12.5	–	12.5
Computer programming, consultancy and related activities	89.3	8.3	8.3	13.1	8.3	9.5
IT industry	91.7	8.3	16.7	8.3	–	8.3
Legal and accounting activities	100	–	11.1	11.1	–	–
Activities of head offices; management consultancy activities	95.0	–	5.0	–	5.0	10.0
Architectural and engineering activities; technical testing and analysis	94.4	9.3	14.8	3.7	9.3	5.6
Scientific research and development	95.2	16.7	20.8	10.0	15.3	17.4
Advertising and market research	100	–	28.6	–	–	–

(continued)

	Russia	EAEU countries*	EU countries, EU candidate countries**, Iceland, Liechtenstein, Norway, Switzerland, United Kingdom	Canada and United States	BRICS countries***	Other countries
Other professional, scientific and technical activities	100	9.1	18.2	–	–	–
Human health and social work activities	98.6	4.2	6.9	6.9	2.8	6.9
Agriculture – total	91.3	17.4	34.8	13.0	13.0	13.0
Growing of non-perennial crops	100	–	–	–	–	–
Growing of perennial crops	–	–	–	–	–	–
Plant propagation	–	–	–	–	–	–
Animal production	84.6	30.8	38.5	15.4	23.1	15.4
Mixed farming	100	–	–	–	–	–
Support activities to agriculture and post-harvest crop activities	100	–	75.0	25.0	–	25.0
Construction – total	86.7	–	20.0	–	–	6.7

* Here and below in table 6.8, Armenia, Belarus, Kazakhstan, and Kyrgyzstan.

** Here and below in table 6.8, Albania, Bosnia and Herzegovina, Iceland, Kosovo, Montenegro, North Macedonia, Serbia, and Türkiye.

*** Here and below in table 6.8, Brazil, China, India, and South Africa.

6.8. PERCENTAGE DISTRIBUTION OF JOINT R&D PROJECTS BY PARTNER COUNTRY: 2020

	Joint projects – total	Of which by partner country, <i>percentage</i>					
		Russia	EAEU countries	EU countries, EU candidate countries, Iceland, Liechtenstein, Norway, Switzerland, United Kingdom	Canada and United States	BRICS countries	other countries
Total	41247	92.4	1.3	4.2	0.8	0.9	1.5
Industrial production – total	9644	92.5	1.5	4.9	1.0	0.7	1.0
Manufacturing	8980	92.3	1.6	5.1	1.0	0.7	0.9
Types of economic activity within services sector – total	31102	92.9	1.3	3.4	0.7	0.9	1.6
Telecommunications; computer programming, consultancy and related activities; IT industry	6372	98.5	0.3	0.4	0.5	0.3	0.4
Transportation and storage	939	99.7	0.3	–	–	–	0.2
Human health and social work activities	581	91.0	1.9	2.9	3.6	0.5	2.1
Agriculture – total	450	51.1	2.4	46.7	2.4	2.7	3.1
Construction – total	51	82.4	–	13.7	–	–	3.9

6.9. PERCENTAGE DISTRIBUTION OF ENTERPRISES THAT ENGAGED IN JOINT R&D PROJECTS BY TYPE OF COOPERATION AND ECONOMIC ACTIVITY: 2020

	Permanent cooperation	Project-based cooperation	Informal cooperation
Total	43.6	76.8	9.2
Industrial production – total	43.7	76.8	6.8
Mining and quarrying	51.1	68.9	6.7
Mining of coal and lignite	–	100	–
Extraction of crude petroleum and natural gas	42.9	71.4	4.8
Mining of metal ores	80.0	70.0	10.0
Other mining and quarrying	50.0	75.0	25.0
Mining support service activities	44.4	55.6	–
Manufacturing	44.8	76.4	7.4
High tech	47.5	77.0	4.9
Manufacture of basic pharmaceutical products and pharmaceutical preparations	34.5	79.3	–
Production of computer, electronic and optical products	46.6	74.8	6.1
Manufacture of air and spacecraft and related machinery	59.1	81.8	4.5
Medium high tech	42.3	75.9	8.7
Production of chemicals and chemical products	36.9	81.5	10.8
Manufacture of electrical equipment	39.5	74.4	7.0
Manufacture of machinery and equipment not elsewhere classified	48.3	65.0	5.0
Manufacture of motor vehicles, trailers and semi-trailers	31.1	84.4	8.9
Manufacture of other transport equipment	68.4	68.4	15.8
Manufacture of medical and dental instruments and supplies	55.6	88.9	11.1
Medium low tech	48.2	77.6	7.8
Reproduction of recorded media	–	–	–

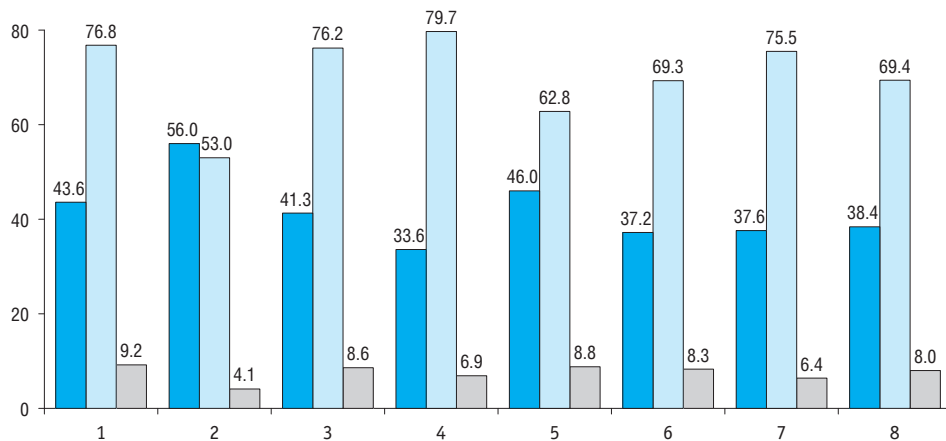
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	Permanent cooperation	Project-based cooperation	Informal cooperation
Manufacture of coke and refined petroleum products	58.3	79.2	–
Manufacture of rubber and plastic products	41.2	64.7	11.8
Manufacture of other non-metallic mineral products	48.0	68.0	8.0
Manufacture of basic metals	43.1	80.4	3.9
Manufacture of fabricated metal products, except machinery and equipment	53.2	78.7	9.6
Building of ships and boats	38.9	88.9	11.1
Repair and installation of machinery and equipment	37.5	75.0	12.5
Low tech	30.2	71.7	9.4
Manufacture of food products	33.3	66.7	16.7
Manufacture of beverages	25.0	100	–
Manufacture of tobacco products	50.0	50.0	–
Manufacture of textiles	14.3	85.7	–
Manufacture of wearing apparel	–	100	–
Manufacture of leather and related products	50.0	50.0	50.0
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	100	–	–
Manufacture of paper and paper products	33.3	66.7	–
Printing and reproduction of recorded media	33.3	66.7	–
Manufacture of furniture	100	50.0	–
Other manufacturing	–	83.3	16.7
Electricity, gas, steam and air-conditioning supply	24.1	87.9	–
Water supply; sewerage, waste management, and remediation activities	41.7	75.0	–

(continued)

	Permanent cooperation	Project-based cooperation	Informal cooperation
Types of economic activity within services sector – total	43.3	77.2	10.9
Transportation and storage	27.3	78.8	4.5
Publishing activities	100	–	–
Telecommunications	25.0	87.5	12.5
Computer programming, consultancy and related activities	45.2	71.4	4.8
IT industry	58.3	66.7	8.3
Legal and accounting activities	22.2	44.4	44.4
Activities of head offices; management consultancy activities	50.0	55.0	–
Architectural and engineering activities; technical testing and analysis	44.4	70.4	11.1
Scientific research and development	46.5	79.7	12.1
Advertising and market research	14.3	85.7	–
Other professional, scientific and technical activities	18.2	90.9	9.1
Human health and social work activities	27.8	76.4	13.9
Agriculture – total	43.5	56.5	26.1
Growing of non-perennial crops	–	80.0	20.0
Growing of perennial crops	–	–	–
Plant propagation	–	–	–
Animal production	46.2	46.2	30.8
Mixed farming	100	–	–
Support activities to agriculture and post-harvest crop activities	75.0	75.0	25.0
Construction – total	53.3	80.0	–

6.10. R&D COOPERATION BY TYPE: 2020

(as a percentage of all enterprises that engaged in joint projects)

1 – total

2 – enterprises within a single network (group of companies, holding company, consortium, association, etc.)

3 – consumers of goods and services

4 – suppliers of equipment, materials, components, software

5 – competitors in the industry

6 – consulting firms, IT services providers

7 – research institutes

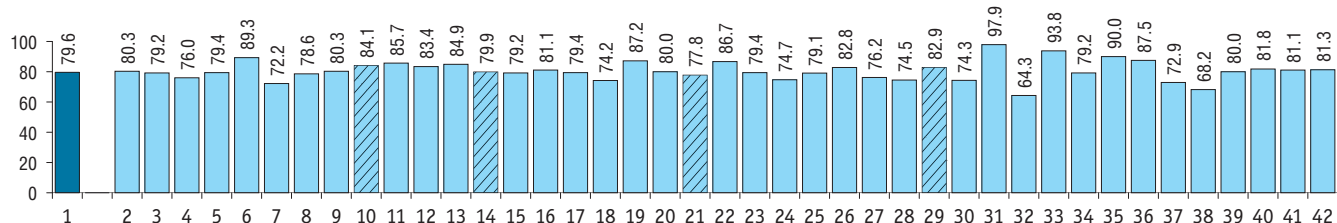
8 – higher education institutions

Permanent cooperation

Project-based cooperation

Informal cooperation

6.11. ENTERPRISES THAT ENGAGED IN COOPERATION WITHIN A SINGLE NETWORK* BY TYPE OF ECONOMIC ACTIVITY: 2020 (as a percentage of all enterprises that belong to a network)



1 – total

2 – industrial production – total

3 – mining and quarrying

4 – mining of coal and lignite

5 – extraction of crude petroleum and natural gas

6 – mining of metal ores

7 – other mining and quarrying

8 – mining support service activities

9 – manufacturing

10 – high tech

11 – manufacture of basic pharmaceutical products
and pharmaceutical preparations

12 – manufacture of computer, electronic and optical products

13 – manufacture of air and spacecraft and related machinery

14 – medium high tech

15 – production of chemicals and chemical products

16 – manufacture of electrical equipment

17 – manufacture of machinery and equipment
not elsewhere classified

18 – manufacture of motor vehicles, trailers and semi-trailers

19 – manufacture of other transport equipment

20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

22 – manufacture of coke and refined petroleum products

23 – manufacture of rubber and plastic products

24 – manufacture of other non-metallic mineral products

25 – manufacture of basic metals

26 – manufacture of fabricated metal products, except machinery and equipment

27 – building of ships and boats

28 – repair and installation of machinery and equipment

29 – low tech

30 – manufacture of food products

31 – manufacture of beverages

32 – manufacture of tobacco products

33 – manufacture of textiles

34 – manufacture of wearing apparel

35 – manufacture of leather and related products

36 – manufacture of wood and of products of wood and cork, except furniture;
manufacture of articles of straw and plaiting materials

37 – printing and reproduction of recorded media

38 – printing and reproduction of recorded media

39 – manufacture of furniture

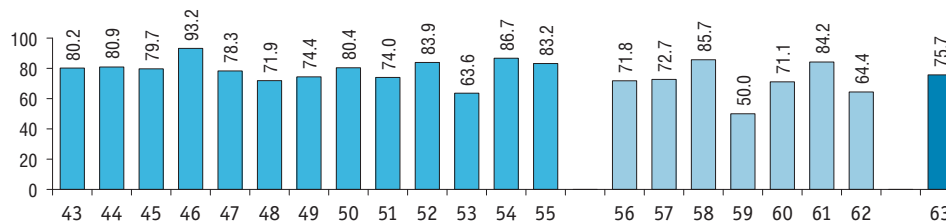
40 – other manufacturing

41 – electricity, gas, steam and air conditioning supply

42 – water supply; sewerage, waste management and remediation activities

* Acquisition (transfer) of scientific and technical knowledge (technologies), financial resources, business functions (production functions); exchange of employees.

(continued)

**43 – types of economic activity within services sector – total**

- 44 – transportation and storage
- 45 – publishing activities
- 46 – telecommunications
- 47 – computer programming, consultancy and related activities
- 48 – IT industry
- 49 – legal and accounting activities
- 50 – activities of head offices; management consultancy activities
- 51 – architectural and engineering activities; technical testing and analysis

52 – scientific research and development

53 – advertising and market research

54 – other professional, scientific and technical activities

55 – human health and social work activities

56 – agriculture – total

57 – growing of non-perennial crops

58 – growing of perennial crops

59 – plant propagation

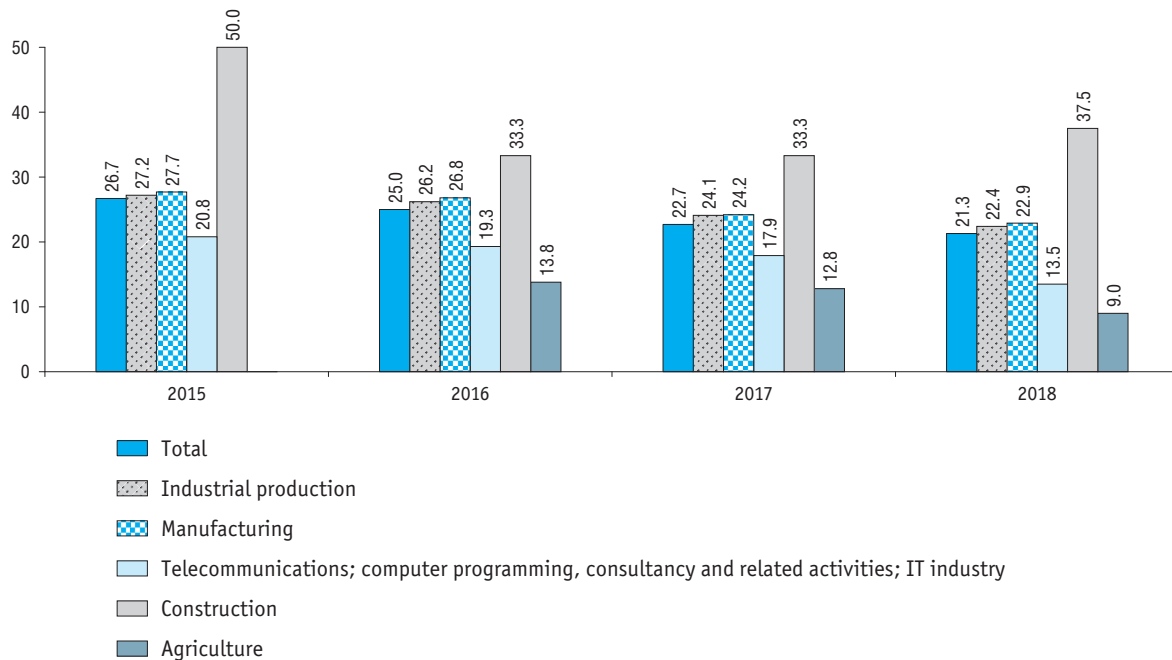
60 – animal production

61 – mixed farming

62 – support activities to agriculture and post-harvest crop activities

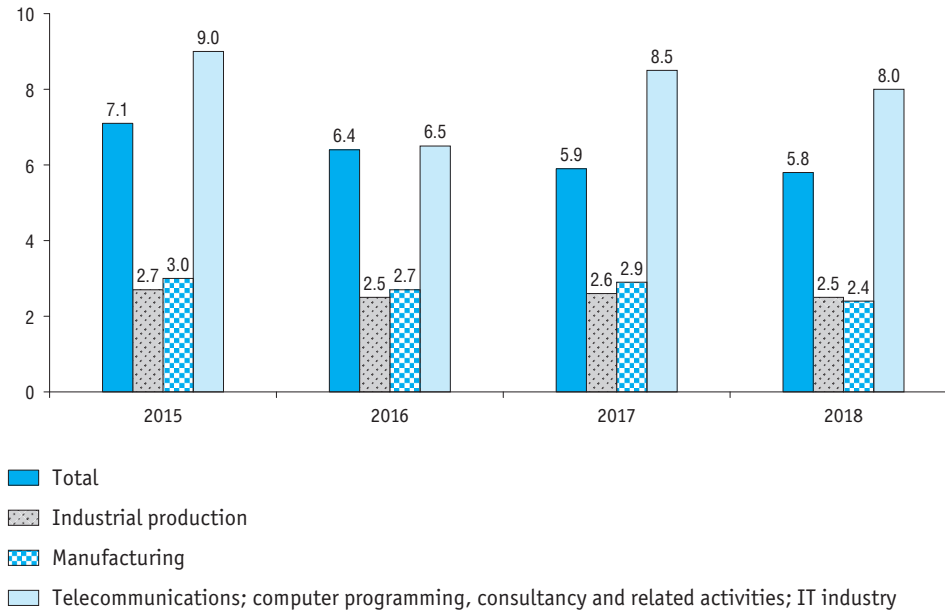
63 – construction – total

6.12. ENTERPRISES THAT ACQUIRED NEW TECHNOLOGIES AS A PERCENTAGE OF THE TOTAL NUMBER OF ENTERPRISES THAT ENGAGED IN INNOVATIVE ACTIVITIES*



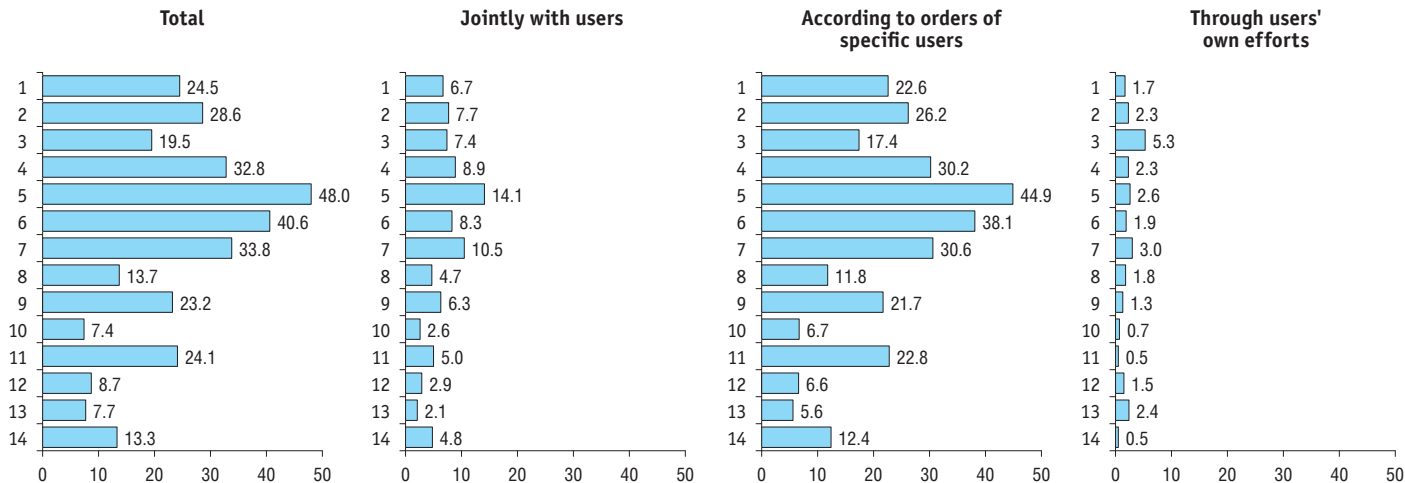
* Here and below in figure 6.13, the indicators are calculated for enterprises that had expenditure on technological innovation.

6.13. ENTERPRISES THAT TRANSFERRED NEW TECHNOLOGIES AS A PERCENTAGE OF THE TOTAL NUMBER OF ENTERPRISES THAT ENGAGED IN INNOVATIVE ACTIVITIES



6.14. ENTERPRISES THAT SOLD CUSTOMISED INNOVATIVE GOODS AND SERVICES BY TYPE OF ECONOMIC ACTIVITY: 2018–2020

(as a percentage of all enterprises that completed innovative activities)



1 – total

2 – industrial production – total

3 – mining and quarrying

4 – manufacturing

5 – high tech

6 – medium high tech

7 – medium low tech

8 – low tech

9 – types of economic activity within services sector – total

10 – transportation and storage

11 – telecommunications; computer programming, consultancy and related activities; IT industry

12 – human health and social work activities

13 – agriculture – total

14 – construction – total

6.15. ASSESSMENT OF INFORMATION SOURCES FOR INNOVATION: 2018–2020

	Enterprises indicating significance of the information source, <i>percentage</i>			
	main or decisive	significant	insignificant	not in use
In-house sources				
Enterprise's own sources	8.5	18.2	13.7	59.7
Enterprises within a single network (group of companies, holding company, consortium, association, etc.)	5.0	9.8	8.5	76.8
Market sources				
Suppliers of equipment, materials, components, software	3.0	18.8	16.6	61.6
Suppliers of raw materials	2.7	16.3	16.9	64.2
Competitors in the industry	2.4	15.1	16.8	65.6
Consumers of goods and services	6.6	18.6	13.2	61.5
Facilitating agencies (trade, distribution, sales)	1.5	8.2	17.7	72.6
Consulting firms, IT services providers	1.3	7.8	17.9	72.9
Institutional sources				
Research institutes	1.8	7.3	13.3	77.6
Higher education institutions	1.5	8.1	15.3	75.2
Law and executive authorities	3.7	13.3	15.0	68.0
Other sources				
Conferences, seminars, and symposia	2.0	15.5	18.9	63.5
Scientific and technical literature	2.1	13.9	17.2	66.8
Exhibitions, fairs, other promotional activities	1.7	13.3	18.5	66.4
Internet (social networks, web portals, crowdsourcing, etc.)	4.1	21.6	16.8	57.5
Professional associations	1.6	10.9	16.9	70.7
Informal methods	1.2	7.4	20.4	71.0
Information about patents	1.1	6.0	15.9	77.0
Reverse engineering	0.9	3.9	12.0	83.1
Standardisation documents	3.4	14.1	13.7	68.8
Open source software	1.4	10.5	17.3	70.8
Other	0.9	4.0	22.6	72.5



7

**FACTORS HAMPERING
INNOVATION DEVELOPMENT**

7.1. ASSESSMENT OF FACTORS HAMPERING INNOVATION ACTIVITY: 2018–2020

	Enterprises indicating significance of factors hampering their innovation activity*, <i>percentage</i>			
	main or decisive	significant	insignificant	no such factors
Economic factors				
Lack of own funds	10.6	16.5	9.7	38.5
Lack of financial support from the government	6.7	13.5	9.9	41.8
Lack of loans or direct investment	3.7	9.1	12.6	47.0
Low demand for new goods and services	4.2	9.2	12.4	44.3
High cost of introducing innovations	8.1	17.6	7.0	38.8
High economic risks	6.2	16.3	8.4	39.4
Extremely competitive market	5.0	14.5	11.2	40.4
Internal factors				
Low innovation potential of the enterprise	5.0	10.2	12.9	42.1
Lack of qualified personnel	4.7	10.3	14.8	44.1
Lack of information about new technologies	2.3	7.1	17.6	45.0
Lack of information about sales markets	2.3	6.3	16.4	46.8
Underdeveloped cooperation links	2.1	5.6	13.5	46.3
Inconsistency with enterprise's priorities	4.4	6.6	11.8	45.9
Other factors				
Lack of legislative documents regulating and stimulating innovation activity, imperfect existing technical regulations, rules, standards when it comes to advanced manufacturing technologies	2.5	7.7	13.3	42.2

* Excluding enterprises that did not know how to answer.

(continued)

	Enterprises indicating significance of factors hampering their innovation activity*, <i>percentage</i>			
	main or decisive	significant	insignificant	no such factors
Underdeveloped innovation infrastructure (intermediary, information, legal, banking, and other services)	2.3	8.4	14.1	42.7
Unclear economic benefits from the use of intellectual property	4.2	9.4	10.8	42.3
Delayed effects of S&T innovations	2.9	8.0	11.2	43.9
Regulatory risks associated with ensuring the consistency of the quality of agricultural products	2.0	4.6	7.2	56.5
Natural, climatic, and biological risks associated with living systems used in agricultural activities	2.8	3.5	7.5	57.2

7.2. ENTERPRISES THAT TERMINATED INNOVATIVE ACTIVITIES BY TYPE OF ECONOMIC ACTIVITY: 2018–2020

	Enterprises which innovative activities have been seriously delayed, stopped, or have not started as a percentage of the total number of enterprises			Number of innovative projects		
	seriously delayed	stopped	not started	seriously delayed	stopped	not started
Total	5.4	5.0	5.6	28772	27509	29762
Industrial production – total	7.2	6.4	7.1	10012	9499	10200
Mining and quarrying	5.4	5.1	6.4	806	789	838
Mining of coal and lignite	2.5	3.0	4.9	34	35	45
Extraction of crude petroleum and natural gas	4.0	3.7	5.5	94	87	106
Mining of metal ores	7.6	6.3	6.7	122	115	117
Other mining and quarrying	6.3	6.3	7.5	288	292	293
Mining support service activities	5.3	5.1	6.3	268	260	277
Manufacturing	8.2	7.1	7.6	6758	6323	6858
High tech	14.7	11.1	8.7	773	479	521
Manufacture of basic pharmaceutical products and pharmaceutical preparations	11.8	11.5	8.0	79	84	56
Production of computer, electronic and optical products	15.4	10.7	9.1	608	330	422
Manufacture of air and spacecraft and related machinery	15.7	12.4	7.2	86	65	43
Medium high tech	10.6	8.3	8.3	1620	1537	1500
Production of chemicals and chemical products	8.7	7.3	7.9	233	217	268
Manufacture of electrical equipment	12.2	9.9	9.1	398	484	343

(continued)

	Enterprises which innovative activities have been seriously delayed, stopped, or have not started as a percentage of the total number of enterprises			Number of innovative projects		
	seriously delayed	stopped	not started	seriously delayed	stopped	not started
Manufacture of machinery and equipment not elsewhere classified	12.0	9.8	9.8	629	590	630
Manufacture of motor vehicles, trailers and semi-trailers	13.0	7.1	6.4	224	125	131
Manufacture of other transport equipment	6.0	5.3	6.0	73	67	65
Manufacture of medical and dental instruments and supplies	10.1	7.6	10.8	63	54	63
Medium low tech	7.0	6.1	7.2	2032	1962	2441
Reproduction of recorded media	–	–	11.1	–	–	1
Manufacture of coke and refined petroleum products	7.9	5.0	8.3	61	59	62
Manufacture of rubber and plastic products	6.4	5.4	6.2	299	282	288
Manufacture of other non-metallic mineral products	6.8	6.4	7.9	434	423	432
Manufacture of basic metals	11.2	8.3	9.2	287	257	269
Manufacture of fabricated metal products, except machinery and equipment	8.4	7.5	8.4	545	522	669
Building of ships and boats	12.6	7.2	9.0	29	18	17
Repair and installation of machinery and equipment	4.8	4.5	5.1	377	401	703
Low tech	6.7	6.6	7.4	2333	2345	2396
Manufacture of food products	7.3	7.0	8.0	1184	1195	1209
Manufacture of beverages	8.4	8.8	9.1	386	397	391

(continued)

	Enterprises which innovative activities have been seriously delayed, stopped, or have not started as a percentage of the total number of enterprises			Number of innovative projects		
	seriously delayed	stopped	not started	seriously delayed	stopped	not started
Manufacture of tobacco products	1.9	1.9	1.9	1	1	1
Manufacture of textiles	4.9	5.3	6.9	59	59	64
Manufacture of wearing apparel	7.1	7.4	7.6	88	92	96
Manufacture of leather and related products	5.6	4.8	7.3	38	37	42
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	5.3	5.3	4.8	258	256	250
Manufacture of paper and paper products	6.0	5.0	5.3	57	50	52
Printing and reproduction of recorded media	5.5	5.3	6.6	165	162	172
Manufacture of furniture	3.5	3.2	5.8	26	26	38
Other manufacturing	7.0	7.0	8.9	71	70	81
Electricity, gas, steam and air-conditioning supply	5.4	5.1	5.8	1258	1207	1264
Water supply; sewerage, waste management, and remediation activities	5.8	5.4	6.6	1190	1180	1240
Types of economic activity within services sector – total	4.7	4.3	4.9	13564	12820	14162
Transportation and storage	3.8	3.5	3.9	1992	1960	2113
Publishing activities	4.3	4.0	5.1	570	491	585

(continued)

	Enterprises which innovative activities have been seriously delayed, stopped, or have not started as a percentage of the total number of enterprises			Number of innovative projects		
	seriously delayed	stopped	not started	seriously delayed	stopped	not started
Telecommunications	4.5	3.6	3.7	493	483	504
Computer programming, consultancy and related activities	4.9	4.6	4.4	486	465	447
IT industry	4.3	4.2	4.4	646	657	702
Legal and accounting activities	4.4	4.4	4.9	1327	1243	1405
Activities of head offices; management consultancy activities	4.1	3.7	4.3	697	604	635
Architectural and engineering activities; technical testing and analysis	3.9	3.6	4.2	1020	985	1076
Research and development	12.5	9.5	10.6	1396	983	1347
Advertising and market research	3.0	3.1	3.9	332	330	375
Other professional, scientific and technical activities	6.2	6.2	6.5	70	66	66
Health and social services activities	4.6	4.5	5.2	4535	4553	4907

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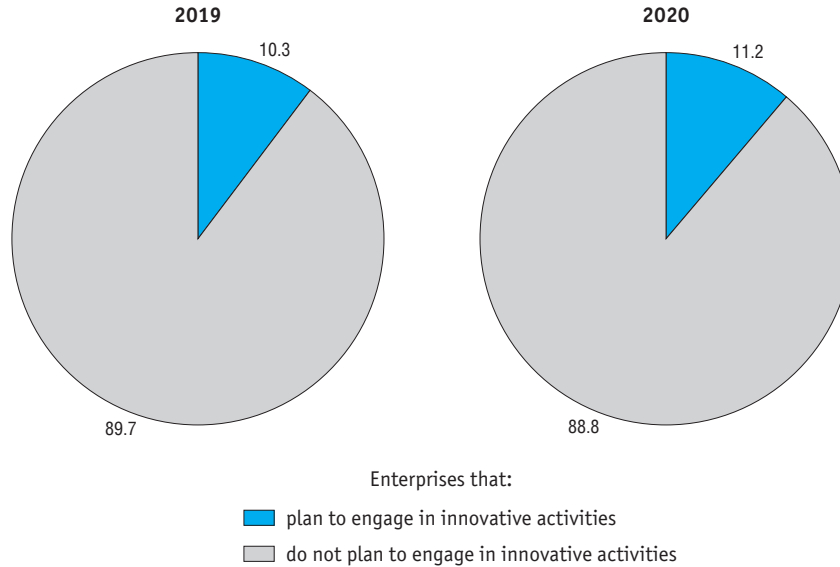
	Enterprises which innovative activities have been seriously delayed, stopped, or have not started as a percentage of the total number of enterprises			Number of innovative projects		
	seriously delayed	stopped	not started	seriously delayed	stopped	not started
Agriculture – total	6.4	6.3	7.7	3005	3022	3112
Growing of non-perennial crops	7.1	7.0	8.4	1117	1126	1163
Growing of perennial crops	7.5	7.0	9.3	86	83	88
Plant propagation	–	–	–	–	–	–
Animal production	6.3	6.4	7.8	1233	1247	1281
Mixed farming	5.2	5.0	5.9	284	283	286
Support activities to agriculture and post-harvest crop activities	5.1	4.7	5.8	285	283	294
Construction – total	3.7	3.7	4.6	2191	2168	2288



8

**INNOVATIVE AND NON-INNOVATIVE
ENTERPRISES: DEVELOPMENT POTENTIAL**

8.1. ENTERPRISES THAT PLAN TO ENGAGE IN INNOVATIVE ACTIVITIES WITHIN THE NEXT THREE YEARS
(percentage)



8.2. AVERAGE NUMBER OF EMPLOYEES IN ENTERPRISES BY LEVEL OF EDUCATION AND TYPE OF ECONOMIC ACTIVITY: 2020

	Enterprises that engaged in innovative activities		Enterprises that did not engage in innovative activities	
	Average number of employees, <i>headcount</i>	Of whom with higher education, <i>percentage</i>	Average number of employees, <i>headcount</i>	Of whom with higher education, <i>percentage</i>
Total	7001407	40.0	11604586	35.0
Industrial production – total	4161964	37.3	3667596	31.6
Mining and quarrying	420572	42.1	609176	32.8
Mining of coal and lignite	13859	15.7	149391	29.8
Extraction of crude petroleum and natural gas	248259	46.9	66480	55.7
Mining of metal ores	78276	30.1	95363	23.7
Other mining and quarrying	31676	31.8	57515	23.9
Mining support service activities	48503	51.0	240427	34.0
Manufacturing	3141314	36.2	1978041	30.6
High tech	626954	43.0	92156	48.0
Manufacture of basic pharmaceutical products and pharmaceutical preparations	47942	53.7	32834	50.4
Production of computer, electronic and optical products	347622	42.9	41928	49.0
Manufacture of air and spacecraft and related machinery	231390	40.9	17394	40.8
Medium high tech	893266	35.3	327264	34.1
Production of chemicals and chemical products	270516	39.7	67462	42.9
Manufacture of electrical equipment	130079	37.9	54618	36.9
Manufacture of machinery and equipment not elsewhere classified	202446	37.2	63177	35.2

(continued)

	Enterprises that engaged in innovative activities		Enterprises that did not engage in innovative activities	
	Average number of employees, <i>headcount</i>	Of whom with higher education, <i>percentage</i>	Average number of employees, <i>headcount</i>	Of whom with higher education, <i>percentage</i>
Manufacture of motor vehicles, trailers and semi-trailers	197214	28.9	60714	32.7
Manufacture of other transport equipment	88306	27.4	75785	24.0
Manufacture of medical and dental instruments and supplies	4705	38.0	5508	42.8
Medium low tech	1262754	35.5	674762	30.9
Reproduction of recorded media	–	–	170	84.1
Manufacture of coke and refined petroleum products	116662	54.9	16986	52.8
Manufacture of rubber and plastic products	64726	29.2	78411	30.2
Manufacture of other non-metallic mineral products	93937	27.0	187279	25.4
Manufacture of basic metals	407617	31.9	85184	30.3
Manufacture of fabricated metal products, except machinery and equipment	358374	38.2	128047	30.2
Building of ships and boats	141830	29.6	18627	33.3
Repair and installation of machinery and equipment	79609	39.9	160057	35.8
Low tech	358340	28.6	883860	27.2
Manufacture of food products	179181	28.7	531676	26.8
Manufacture of beverages	26084	40.9	66729	40.4
Manufacture of tobacco products	2648	48.8	3485	48.0
Manufacture of textiles	16599	30.3	29154	21.2
Manufacture of wearing apparel	19980	24.4	26861	20.0
Manufacture of leather and related products	7112	19.0	14688	19.6

(continued)

	Enterprises that engaged in innovative activities		Enterprises that did not engage in innovative activities	
	Average number of employees, <i>headcount</i>	Of whom with higher education, <i>percentage</i>	Average number of employees, <i>headcount</i>	Of whom with higher education, <i>percentage</i>
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	24157	19.8	83870	19.7
Manufacture of paper and paper products	53692	26.5	49597	29.9
Printing and reproduction of recorded media	5665	36.6	25073	37.9
Manufacture of furniture	12619	27.5	36733	23.4
Other manufacturing	10605	30.3	15995	34.6
Electricity, gas, steam and air-conditioning supply	475634	42.5	799666	35.4
Water supply; sewerage, waste management, and remediation activities	124445	30.5	280713	26.0
Types of economic activity within services sector – total	2586968	45.6	6193528	40.1
Transportation and storage	1016298	30.7	1883519	33.1
Publishing activities	5384	64.9	36105	68.9
Telecommunications	172137	60.8	158294	63.1
Computer programming, consultancy and related activities	66358	86.7	168966	86.1
IT industry	31418	71.3	152851	76.6
Legal and accounting activities	37155	58.4	174415	75.7

(continued)

	Enterprises that engaged in innovative activities		Enterprises that did not engage in innovative activities	
	Average number of employees, <i>headcount</i>	Of whom with higher education, <i>percentage</i>	Average number of employees, <i>headcount</i>	Of whom with higher education, <i>percentage</i>
Activities of head offices; management consultancy activities	19130	75.7	106485	75.1
Architectural and engineering activities; technical testing and analysis	114025	76.7	232190	67.8
Research and development	549868	67.5	44477	71.9
Advertising and market research	7022	56.2	51390	70.1
Other professional, scientific and technical activities	1583	80.5	7087	48.2
Human health and social work activities	566590	32.0	3177749	32.5
Agriculture – total	126134	18.7	688517	19.4
Growing of non-perennial crops	50386	18.4	228653	18.3
Growing of perennial crops	3667	15.3	13939	19.3
Plant propagation	224	12.5	301	30.0
Animal production	68536	18.3	395337	18.1
Mixed farming	1853	12.8	11798	15.3
Support activities to agriculture and post-harvest crop activities	1468	60.5	38488	40.5
Construction – total	126341	34.6	1054946	26.7

8.3. EMPLOYEES IN ENTERPRISES THAT ENGAGED IN R&D BY TYPE OF ECONOMIC ACTIVITY: 2020

	Employees who performed R&D	
	as a percentage of the total number of employees in enterprises	as a percentage of the number of employees in enterprises engaged in innovative activities
Total	2.5	6.7
Industrial production – total	1.9	3.6
Mining and quarrying	0.5	1.2
Mining of coal and lignite	0.02	0.3
Extraction of crude petroleum and natural gas	1.1	1.3
Mining of metal ores	0.3	0.7
Other mining and quarrying	0.7	1.9
Mining support service activities	0.2	0.9
Manufacturing	2.8	4.5
High tech	7.7	8.8
Manufacture of basic pharmaceutical products and pharmaceutical preparations	2.0	3.4
Production of computer, electronic and optical products	9.8	10.9
Manufacture of air and spacecraft and related machinery	6.2	6.6
Medium high tech	2.9	4.0
Production of chemicals and chemical products	2.4	2.9
Manufacture of electrical equipment	4.4	6.3
Manufacture of machinery and equipment not elsewhere classified	4.3	5.7
Manufacture of motor vehicles, trailers and semi-trailers	2.3	3.0
Manufacture of other transport equipment	1.0	1.9
Manufacture of medical and dental instruments and supplies	2.6	5.6

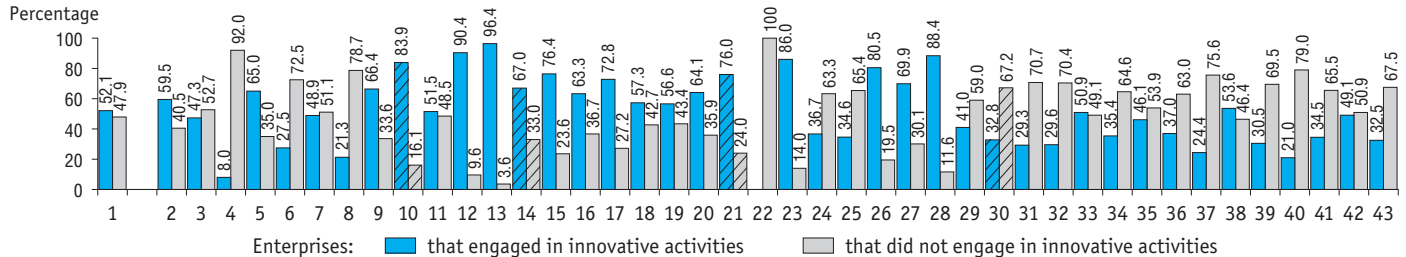
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	Employees who performed R&D	
	as a percentage of the total number of employees in enterprises	as a percentage of the number of employees in enterprises engaged in innovative activities
Medium low tech	2.4	3.7
Reproduction of recorded media	–	–
Manufacture of coke and refined petroleum products	1.5	1.7
Manufacture of rubber and plastic products	1.3	3.0
Manufacture of other non-metallic mineral products	0.4	1.2
Manufacture of basic metals	1.2	1.4
Manufacture of fabricated metal products, except machinery and equipment	5.7	7.8
Building of ships and boats	3.3	3.7
Repair and installation of machinery and equipment	1.4	4.2
Low tech	0.3	1.2
Manufacture of food products	0.3	1.4
Manufacture of beverages	0.1	0.3
Manufacture of tobacco products	0.02	0.04
Manufacture of textiles	0.6	1.5
Manufacture of wearing apparel	0.5	1.1
Manufacture of leather and related products	0.4	1.3
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	0.1	0.6
Manufacture of paper and paper products	0.3	0.6
Printing and reproduction of recorded media	0.2	1.2
Manufacture of furniture	0.7	2.7
Other manufacturing	0.9	2.2
Electricity, gas, steam and air-conditioning supply	0.2	0.6
Water supply; sewerage, waste management and remediation activities	0.1	0.5

(continued)

	Employees who performed R&D	
	as a percentage of the total number of employees in enterprises	as a percentage of the number of employees in enterprises engaged in innovative activities
Types of economic activity within services sector – total	3.6	12.1
Transportation and storage	0.1	0.3
Publishing activities	0.4	2.8
Telecommunications	0.2	0.4
Computer programming, consultancy and related activities	6.1	21.8
IT industry	1.8	10.4
Legal and accounting activities	0.1	0.6
Activities of head offices; management consultancy activities	1.2	7.7
Architectural and engineering activities; technical testing and analysis	11.6	35.3
Research and development	41.0	44.3
Advertising and market research	0.3	2.1
Other professional, scientific and technical activities	7.7	42.2
Health and social services activities	0.1	0.9
Agriculture – total	0.1	0.5
Growing of non-perennial crops	0.01	0.1
Growing of perennial crops	0.9	4.3
Plant propagation	0.6	1.3
Animal production	0.05	0.3
Mixed farming	–	–
Support activities to agriculture and post-harvest crop activities	0.7	18.3
Construction – total	0.3	2.6

8.4. SALES OF GOODS AND SERVICES PRODUCED THROUGH ENTERPRISES' OWN EFFORTS BY TYPE OF ECONOMIC ACTIVITY: 2020



1 – total

2 – industrial production – total

3 – mining and quarrying

4 – mining of coal and lignite

5 – extraction of crude petroleum and natural gas

6 – mining of metal ores

7 – other mining and quarrying

8 – mining support service activities

9 – manufacturing

10 – high tech

11 – manufacture of basic pharmaceutical products and pharmaceutical preparations

12 – manufacture of computer, electronic and optical products

13 – manufacture of air and spacecraft and related machinery

14 – medium high tech

15 – production of chemicals and chemical products

16 – manufacture of electrical equipment

17 – manufacture of machinery and equipment not elsewhere classified

18 – manufacture of motor vehicles, trailers and semi-trailers

19 – manufacture of other transport equipment

20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

22 – reproduction of recorded media

23 – manufacture of coke and refined petroleum products

24 – manufacture of rubber and plastic products

25 – manufacture of other non-metallic mineral products

26 – manufacture of basic metals

27 – manufacture of fabricated metal products, except machinery and equipment

28 – building of ships and boats

29 – repair and installation of machinery and equipment

30 – low tech

31 – manufacture of food products

32 – manufacture of beverages

33 – manufacture of tobacco products

34 – manufacture of textiles

35 – manufacture of wearing apparel

36 – manufacture of leather and related products

37 – manufacture of wood and of products of wood and cork, except furniture;

manufacture of articles of straw and plaiting materials

38 – printing and reproduction of recorded media

39 – printing and reproduction of recorded media

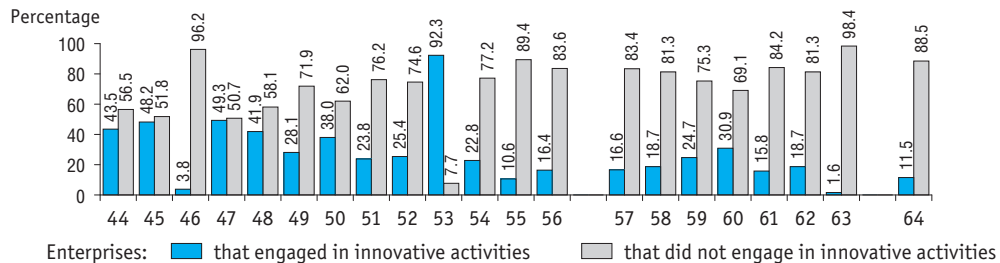
40 – manufacture of furniture

41 – other manufacturing

42 – electricity, gas, steam and air conditioning supply

43 – water supply; sewerage, waste management and remediation activities

(continued)



44 – types of economic activity within services sector – total

- 45 – transportation and storage
- 46 – publishing activities
- 47 – telecommunications
- 48 – computer programming, consultancy and related activities
- 49 – IT industry
- 50 – legal and accounting activities
- 51 – activities of head offices; management consultancy activities
- 52 – architectural and engineering activities; technical testing and analysis

53 – scientific research and development

54 – advertising and market research

55 – other professional, scientific and technical activities

56 – human health and social work activities

57 – agriculture – total

58 – growing of non-perennial crops

59 – growing of perennial crops

60 – plant propagation

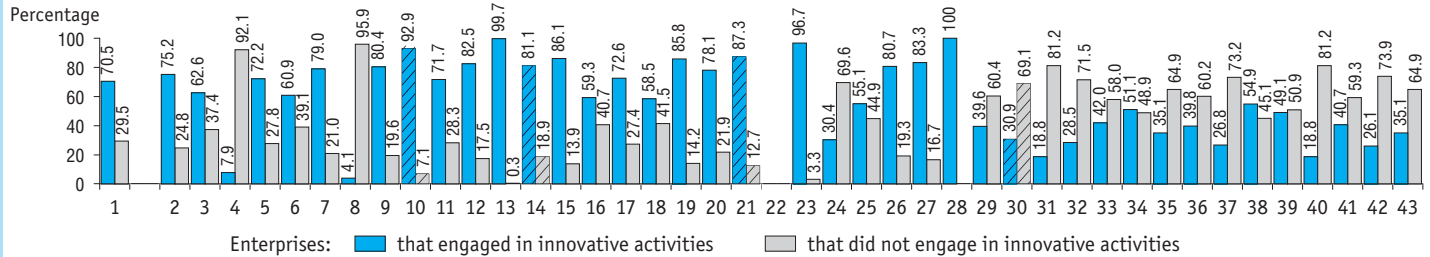
61 – animal production

62 – mixed farming

63 – support activities to agriculture and post-harvest crop activities

64 – construction – total

8.5. EXPORTS OF GOODS AND SERVICES PRODUCED THROUGH ENTERPRISES' OWN EFFORTS BY TYPE OF ECONOMIC ACTIVITY: 2020



1 – total

2 – industrial production – total

3 – mining and quarrying

4 – mining of coal and lignite

5 – extraction of crude petroleum and natural gas

6 – mining of metal ores

7 – other mining and quarrying

8 – mining support service activities

9 – manufacturing

10 – high tech

11 – manufacture of basic pharmaceutical products

and pharmaceutical preparations

12 – manufacture of computer, electronic and optical products

13 – manufacture of air and spacecraft and related machinery

14 – medium high tech

15 – production of chemicals and chemical products

16 – manufacture of electrical equipment

17 – manufacture of machinery and equipment

not elsewhere classified

18 – manufacture of motor vehicles, trailers and semi-trailers

19 – manufacture of other transport equipment

20 – manufacture of medical and dental instruments and supplies

21 – medium low tech

22 – reproduction of recorded media

23 – manufacture of coke and refined petroleum products

24 – manufacture of rubber and plastic products

25 – manufacture of other non-metallic mineral products

26 – manufacture of basic metals

27 – manufacture of fabricated metal products, except machinery and equipment

28 – building of ships and boats

29 – repair and installation of machinery and equipment

30 – low tech

31 – manufacture of food products

32 – manufacture of beverages

33 – manufacture of tobacco products

34 – manufacture of textiles

35 – manufacture of wearing apparel

36 – manufacture of leather and related products

37 – manufacture of wood and of products of wood and cork, except furniture;

manufacture of articles of straw and plaiting materials

38 – printing and reproduction of recorded media

39 – printing and reproduction of recorded media

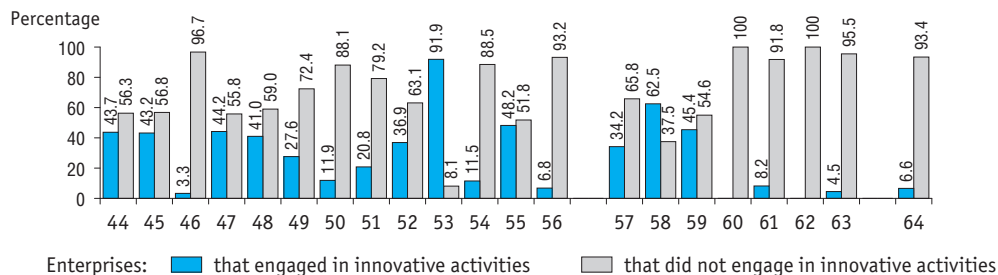
40 – manufacture of furniture

41 – other manufacturing

42 – electricity, gas, steam and air conditioning supply

43 – water supply; sewerage, waste management and remediation activities

(continued)



44 – types of economic activity within services sector – total

- 45 – transportation and storage
- 46 – publishing activities
- 47 – telecommunications
- 48 – computer programming, consultancy and related activities
- 49 – IT industry
- 50 – legal and accounting activities
- 51 – activities of head offices; management consultancy activities
- 52 – architectural and engineering activities; technical testing and analysis

53 – scientific research and development

- 54 – advertising and market research
- 55 – other professional, scientific and technical activities
- 56 – human health and social work activities

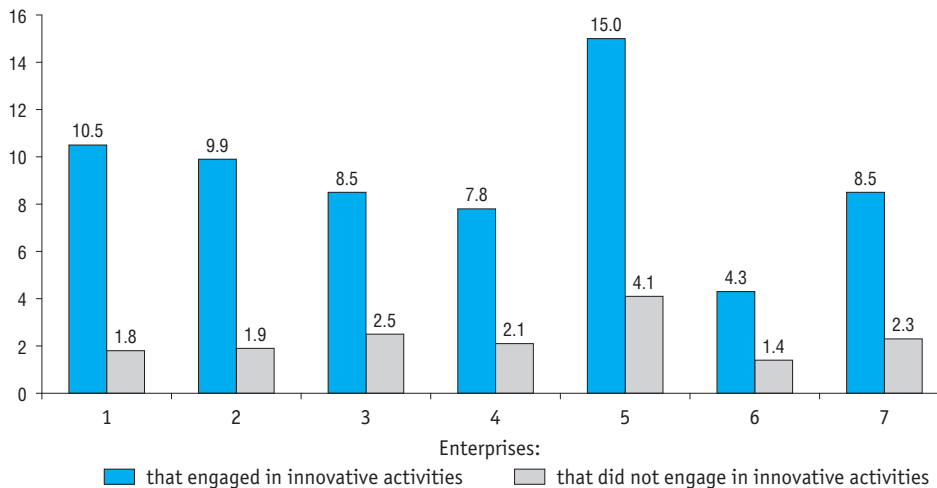
57 – agriculture – total

- 58 – growing of non-perennial crops
- 59 – growing of perennial crops
- 60 – plant propagation
- 61 – animal production
- 62 – mixed farming
- 63 – support activities to agriculture and post-harvest crop activities

64 – construction – total

**8.6. ENTERPRISES INDICATING THE FOLLOWING INVENTIONS AND R&D RESULTS
PROTECTION METHODS AS MAIN: 2018–2020**

(as a percentage of the total number of enterprises that engaged and did not engage in innovative activities)



Formal methods:

- 1 – patenting of inventions, utility models, industrial designs (in the reporting year)
- 2 – valid patents maintenance
- 3 – trademark registration
- 4 – copyright protection

Informal methods:

- 5 – preservation of trade secrets (including confidentiality agreements), know-how protection
- 6 – product design complexity
- 7 – gaining competitive advantage over competitors regarding goods and services development and launch terms



9

**INNOVATION ACTIVITY
IN RUSSIAN REGIONS**

9.1. CURRENT AND PROJECTED LEVELS OF INNOVATION ACTIVITY OF ENTERPRISES: 2020

(percentage)

	Innovation activity of enterprises	Enterprises that plan to implement innovative activities within the next three years as a percentage of the total number of enterprises
Russia	10.8	11.2
Central Federal District	12.5	12.4
Belgorod Region	18.0	10.8
Bryansk Region	10.9	12.5
Vladimir Region	12.6	12.5
Voronezh Region	15.9	14.1
Ivanovo Region	16.2	9.7
Kaluga Region	12.1	13.8
Kostroma Region	5.6	8.0
Kursk Region	7.6	10.0
Lipetsk Region	11.5	14.8
Moscow Region	10.8	11.5
Orel Region	13.7	11.6
Ryazan Region	10.9	11.5
Smolensk Region	7.1	8.7
Tambov Region	12.5	6.6
Tver Region	12.0	13.9
Tula Region	20.2	12.9
Yaroslavl Region	10.7	10.0
Moscow	13.0	14.0
North-Western Federal District	10.8	11.1
Republic of Karelia	7.0	11.2
Komi Republic	8.0	11.5
Arkhangelsk Region	4.4	10.3
Nenets Autonomous Region	3.1	...

(continued)

	Innovation activity of enterprises	Enterprises that plan to implement innovative activities within the next three years as a percentage of the total number of enterprises
Vologda Region	12.2	10.1
Kaliningrad Region	5.6	7.3
Leningrad Region	7.9	10.0
Murmansk Region	9.4	10.4
Novgorod Region	11.4	12.1
Pskov Region	9.6	9.0
St Petersburg	15.9	13.1
Southern Federal District	8.0	6.1
Republic of Adygea	8.9	10.2
Republic of Kalmykia	2.8	7.4
Republic of Crimea	4.8	8.1
Krasnodar Region	5.3	2.8
Astrakhan Region	5.3	7.8
Volgograd Region	7.7	8.4
Rostov Region	13.8	8.2
Sevastopol	17.6	6.9
North Caucasian Federal District	3.5	10.1
Republic of Dagestan	3.0	3.8
Republic of Ingushetia	1.5	68.6
Kabardino-Balkarian Republic	7.5	8.5
Karachay-Cherkess Republic	5.6	2.7
Republic of North Ossetia–Alania	2.9	8.6
Chechen Republic	1.8	4.3
Stavropol Region	5.3	9.7

(continued)

	Innovation activity of enterprises	Enterprises that plan to implement innovative activities within the next three years as a percentage of the total number of enterprises
Volga Federal District	15.5	13.7
Republic of Bashkortostan	25.1	12.4
Mari El Republic	9.5	13.0
Republic of Mordovia	20.4	17.6
Republic of Tatarstan	24.9	16.2
Udmurt Republic	12.6	15.3
Chuvash Republic	14.6	15.4
Perm Region	10.8	12.6
Kirov Region	13.9	13.6
Nizhny Novgorod Region	14.0	14.7
Orenburg Region	7.5	10.0
Penza Region	17.5	18.3
Samara Region	14.9	13.6
Saratov Region	7.1	9.4
Ulyanovsk Region	15.1	14.4
Ural Federal District	10.2	11.3
Kurgan Region	14.1	13.4
Sverdlovsk Region	11.2	12.9
Tyumen Region	8.5	10.0
Khanty-Mansi Autonomous Region – Yugra	7.4	...
Yamal-Nenets Autonomous Region	5.9	...
Chelyabinsk Region	11.4	11.6
Siberian Federal District	9.8	11.3
Altai Republic	3.8	12.3
Republic of Tuva	9.1	6.8

(continued)

	Innovation activity of enterprises	Enterprises that plan to implement innovative activities within the next three years as a percentage of the total number of enterprises
Republic of Khakassia	3.8	7.6
Altai Region	19.5	12.1
Krasnoyarsk Region	6.7	12.1
Irkutsk Region	7.1	10.4
Kemerovo Region	6.3	10.4
Novosibirsk Region	8.0	11.0
Omsk Region	10.5	11.6
Tomsk Region	24.6	14.5
Far Eastern Federal District	6.9	9.7
Republic of Buryatia	5.8	11.6
Republic of Sakha (Yakutia)	8.6	13.4
Trans-Baikal Region	4.1	7.8
Kamchatka Region	12.8	15.4
Primorsky Region	7.1	9.1
Khabarovsk Region	5.9	7.7
Amur Region	6.7	8.0
Magadan Region	9.4	9.4
Sakhalin Region	4.8	8.3
Jewish Autonomous Region	5.5	9.0
Chukotka Autonomous Region	6.7	6.7

9.2. PERCENTAGE DISTRIBUTION OF ENTERPRISES BY TYPE OF INNOVATIVE ACTIVITY: 2020

(as a percentage of enterprises that had expenditure on innovative activities)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Russia	36.8	46.8	5.6	13.0	2.9	10.6	30.8	10.4	4.3	15.3
Central Federal District	44.5	43.6	7.7	15.1	3.3	12.1	32.8	11.1	4.8	12.2
Belgorod Region	32.0	50.0	6.0	11.0	7.0	12.0	22.0	6.0	3.0	14.0
Bryansk Region	20.0	45.5	10.9	7.3	3.6	27.3	12.7	7.3	1.8	9.1
Vladimir Region	48.0	33.3	4.0	10.7	–	8.0	22.7	10.7	2.7	16.0
Voronezh Region	34.5	48.2	5.0	12.2	1.4	7.2	28.1	5.0	5.8	10.8
Ivanovo Region	22.7	60.0	–	5.3	–	4.0	12.0	5.3	1.3	9.3
Kaluga Region	61.4	35.1	12.3	15.8	3.5	12.3	24.6	14.0	5.3	17.5
Kostroma Region	17.6	41.2	–	17.6	–	5.9	41.2	5.9	5.9	17.6
Kursk Region	33.3	51.5	3.0	12.1	–	12.1	39.4	6.1	9.1	24.2
Lipetsk Region	14.0	73.7	7.0	12.3	3.5	24.6	22.8	8.8	5.3	1.8
Moscow Region	59.3	42.8	8.9	19.1	3.4	17.8	25.8	18.2	4.2	11.9
Orel Region	34.0	24.0	8.0	12.0	6.0	6.0	20.0	4.0	34.0	8.0
Ryazan Region	53.8	46.2	12.8	25.6	10.3	12.8	25.6	7.7	2.6	15.4
Smolensk Region	39.4	51.5	12.1	18.2	9.1	21.2	24.2	9.1	6.1	12.1
Tambov Region	31.6	32.9	5.1	5.1	–	13.9	36.7	2.5	2.5	–
Tver Region	30.8	58.5	1.5	20.0	1.5	16.9	23.1	4.6	6.2	7.7
Tula Region	22.3	63.5	4.7	16.9	1.4	10.1	46.6	4.1	2.7	12.8
Yaroslavl Region	47.0	48.5	7.6	10.6	4.5	15.2	33.3	9.1	9.1	12.1
Moscow	58.0	34.4	10.2	17.6	4.0	9.6	43.7	16.4	3.7	14.1

* Acquisition of patent rights (alienation), licenses, industrial designs, utility models, selection achievements, integrated circuit designs, etc.; patenting (registration) of the results of intellectual activity.

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
North-Western Federal District	42.6	40.3	5.8	14.8	3.1	14.7	32.2	12.1	6.6	14.5
Republic of Karelia	22.7	31.8	4.5	9.1	4.5	9.1	40.9	9.1	13.6	–
Komi Republic	19.6	71.7	2.2	13.0	–	13.0	15.2	4.3	–	6.5
Arkhangelsk Region	40.0	40.0	4.0	8.0	12.0	12.0	52.0	16.0	12.0	16.0
Nenets Autonomous Region	33.3	–	–	–	33.3	–	66.7	–	–	–
Vologda Region	19.1	36.8	–	5.9	–	8.8	32.4	2.9	7.4	22.1
Kaliningrad Region	33.3	46.7	–	20.0	–	10.0	30.0	13.3	10.0	13.3
Leningrad Region	52.9	47.1	5.9	9.8	3.9	29.4	19.6	15.7	11.8	11.8
Murmansk Region	17.6	32.4	8.8	8.8	5.9	11.8	29.4	2.9	5.9	11.8
Novgorod Region	43.3	43.3	3.3	13.3	–	10.0	20.0	6.7	6.7	20.0
Pskov Region	11.8	44.1	5.9	17.6	2.9	5.9	52.9	2.9	2.9	5.9
St Petersburg	55.8	36.2	8.0	18.2	3.6	16.3	33.7	16.3	5.8	16.0
Southern Federal District	30.1	55.9	3.0	8.7	2.0	6.4	24.5	7.1	2.6	13.0
Republic of Adygea	20.0	46.7	6.7	–	–	6.7	13.3	6.7	6.7	26.7
Republic of Kalmykia	60.0	20.0	–	–	–	20.0	20.0	–	20.0	20.0
Republic of Crimea	39.1	56.5	4.3	13.0	4.3	–	30.4	4.3	13.0	8.7
Krasnodar Region	32.5	47.2	2.5	12.3	4.3	7.4	22.1	10.4	1.8	14.7
Astrakhan Region	31.3	68.8	–	18.8	12.5	6.3	12.5	6.3	–	18.8
Volgograd Region	23.2	69.5	4.9	7.3	–	7.3	42.7	8.5	1.2	6.1
Rostov Region	32.2	59.6	3.0	7.9	0.7	6.7	20.6	6.0	2.2	9.7
Sevastopol	13.5	40.5	–	–	–	–	29.7	–	2.7	37.8

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
North Caucasian Federal District	26.6	58.7	2.1	8.4	2.8	7.0	26.6	2.1	6.3	15.4
Republic of Dagestan	8.1	82.4	1.4	6.8	–	2.7	28.4	–	1.4	14.9
Republic of Ingushetia	–	66.7	–	33.3	–	–	33.3	–	33.3	–
Kabardino-Balkarian Republic	55.6	33.3	–	11.1	–	11.1	11.1	–	11.1	11.1
Karachay-Cherkess Republic	25.0	37.5	–	12.5	–	12.5	25.0	–	25.0	12.5
Republic of North Ossetia–Alania	–	75.0	–	25.0	–	25.0	25.0	–	25.0	25.0
Chechen Republic	28.6	42.9	–	–	–	14.3	71.4	–	14.3	–
Stavropol Region	60.5	23.7	5.3	7.9	10.5	10.5	18.4	7.9	5.3	21.1
Volga Federal District	30.7	53.4	5.3	11.6	3.0	9.4	29.1	12.5	3.2	14.6
Republic of Bashkortostan	22.6	54.3	1.0	8.6	1.0	3.9	24.1	32.2	1.5	15.7
Mari El Republic	18.2	31.8	4.5	13.6	18.2	13.6	36.4	4.5	9.1	9.1
Republic of Mordovia	37.2	43.6	8.5	20.2	4.3	10.6	21.3	3.2	3.2	11.7
Republic of Tatarstan	22.8	67.0	3.3	6.5	0.7	7.8	28.3	6.5	1.6	12.7
Udmurt Republic	44.3	38.6	11.4	15.7	4.3	15.7	31.4	11.4	5.7	15.7
Chuvash Republic	28.4	60.5	4.9	14.8	6.2	12.3	25.9	8.6	2.5	9.9
Perm Region	55.7	50.0	8.6	20.0	–	12.9	35.7	15.7	5.7	21.4
Kirov Region	29.6	51.9	4.9	8.6	7.4	11.1	18.5	3.7	6.2	21.0
Nizhny Novgorod Region	45.1	56.0	9.7	13.7	2.3	11.4	26.9	9.7	5.1	13.7
Orenburg Region	39.2	39.2	2.0	11.8	3.9	11.8	23.5	3.9	3.9	19.6
Penza Region	30.2	44.8	12.1	18.1	9.5	12.9	38.8	4.3	2.6	12.9

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Samara Region	33.0	41.1	7.0	13.7	4.8	13.0	36.7	7.8	4.8	19.6
Saratov Region	54.3	45.7	6.5	15.2	2.2	19.6	32.6	17.4	6.5	8.7
Ulyanovsk Region	25.0	61.5	4.2	11.5	1.0	2.1	36.5	7.3	2.1	5.2
Ural Federal District	39.9	35.3	5.1	14.4	2.7	11.5	33.7	11.1	4.0	21.1
Kurgan Region	17.8	68.9	6.7	8.9	6.7	13.3	35.6	–	2.2	6.7
Sverdlovsk Region	59.1	33.9	4.1	13.5	3.5	14.0	29.8	21.1	3.5	14.0
Tyumen Region	27.3	26.5	4.5	14.7	1.2	8.2	39.6	4.9	4.9	29.8
Khanty-Mansi Autonomous Region – Yugra	31.9	19.8	2.2	16.5	2.2	6.6	37.4	3.3	2.2	30.8
Yamal-Nenets Autonomous Region	23.1	25.0	1.9	7.7	–	5.8	38.5	7.7	7.7	34.6
Chelyabinsk Region	48.9	45.5	8.0	18.2	3.4	14.8	23.9	14.8	3.4	18.2
Siberian Federal District	33.4	44.2	5.2	11.4	2.6	9.8	33.9	7.3	4.3	20.1
Altai Republic	16.7	50.0	–	16.7	–	16.7	33.3	–	16.7	16.7
Republic of Tuva	8.7	73.9	–	–	–	4.3	26.1	4.3	4.3	–
Republic of Khakassia	28.6	28.6	14.3	–	–	14.3	57.1	–	28.6	14.3
Altai Region	23.5	64.3	3.3	4.7	2.3	2.3	34.3	1.4	2.3	8.5
Krasnoyarsk Region	42.7	30.3	4.5	15.7	–	10.1	42.7	11.2	2.2	22.5
Irkutsk Region	34.5	38.2	5.5	10.9	5.5	14.5	30.9	12.7	3.6	20.0
Kemerovo Region	36.2	32.8	3.4	15.5	–	12.1	34.5	5.2	8.6	24.1
Novosibirsk Region	39.3	40.5	14.3	20.2	6.0	25.0	29.8	13.1	2.4	13.1
Omsk Region	53.6	42.9	7.1	23.2	8.9	16.1	26.8	8.9	10.7	14.3
Tomsk Region	34.3	31.5	3.9	9.9	1.1	7.7	34.3	8.8	3.9	39.2

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Far Eastern Federal District	34.9	42.2	3.1	17.1	1.5	11.0	28.1	4.9	6.7	24.2
Republic of Buryatia	42.9	14.3	7.1	7.1	–	7.1	57.1	14.3	7.1	–
Republic of Sakha (Yakutia)	48.0	44.0	1.3	12.0	–	4.0	20.0	1.3	4.0	48.0
Trans-Baikal Region	21.4	35.7	–	28.6	–	28.6	35.7	14.3	14.3	35.7
Kamchatka Region	31.6	52.6	–	23.7	–	7.9	34.2	5.3	–	10.5
Primorsky Region	34.8	32.6	10.9	21.7	4.3	17.4	32.6	8.7	17.4	19.6
Khabarovsk Region	35.3	51.0	5.9	17.6	2.0	21.6	25.5	3.9	9.8	29.4
Amur Region	25.0	42.5	–	15.0	2.5	5.0	32.5	5.0	7.5	7.5
Magadan Region	26.3	47.4	–	10.5	–	5.3	10.5	–	–	21.1
Sakhalin Region	36.8	26.3	–	31.6	5.3	15.8	26.3	5.3	–	10.5
Jewish Autonomous Region	16.7	50.0	–	–	–	–	16.7	–	–	16.7
Chukotka Autonomous Region	–	60.0	–	–	–	–	40.0	–	–	–

9.3. INNOVATION EXPENDITURE: 2020

	Million roubles	As a percentage of total sales
Russia	2134038.4	2.3
Central Federal District	890687.9	2.8
Belgorod Region	21540.9	1.9
Bryansk Region	3742.3	1.1
Vladimir Region	11950.5	2.1
Voronezh Region	24847.9	3.5
Ivanovo Region	1402.4	0.7
Kaluga Region	15471.0	0.7
Kostroma Region	453.5	0.3
Kursk Region	1738.3	0.3
Lipetsk Region	42875.2	4.9
Moscow Region	185958.3	4.3
Orel Region	1033.1	0.5
Ryazan Region	3939.8	1.0
Smolensk Region	3938.3	1.1
Tambov Region	3115.5	1.1
Tver Region	6639.4	1.5
Tula Region	26638.5	2.7
Yaroslavl Region	8006.0	1.6
Moscow	527396.9	3.0
North-Western Federal District	178444.6	1.7
Republic of Karelia	4748.6	1.9
Komi Republic	5423.3	0.6
Arkhangelsk Region	1930.0	0.3
Nenets Autonomous Region	5.9	0.0

(continued)

	Million roubles	As a percentage of total sales
Vologda Region	2434.8	0.3
Kaliningrad Region	1189.9	0.2
Leningrad Region	27971.3	1.6
Murmansk Region	3438.5	0.3
Novgorod Region	2477.9	1.0
Pskov Region	652.5	0.4
St Petersburg	128177.7	3.0
Southern Federal District	123971.5	2.4
Republic of Adygea	236.1	0.3
Republic of Kalmykia	31.5	0.3
Republic of Crimea	7763.1	3.3
Krasnodar Region	54743.9	2.5
Astrakhan Region	2583.7	0.6
Volgograd Region	5139.0	0.5
Rostov Region	52713.0	4.2
Sevastopol	761.2	2.6
North Caucasian Federal District	5223.7	0.6
Republic of Dagestan	441.6	0.4
Republic of Ingushetia	39.4	0.7
Kabardino-Balkarian Republic	324.2	0.6
Karachay-Cherkess Republic	64.4	0.1
Republic of North Ossetia–Alania	168.5	0.4
Chechen Republic	120.9	0.2
Stavropol Region	4064.7	0.8

(continued)

	Million roubles	As a percentage of total sales
Volga Federal District	516363.6	3.6
Republic of Bashkortostan	25915.7	1.4
Mari El Republic	1131.1	0.8
Republic of Mordovia	7386.7	2.5
Republic of Tatarstan	147733.3	5.0
Udmurt Republic	5350.6	0.9
Chuvash Republic	4925.5	1.9
Perm Region	36442.5	2.1
Kirov Region	6914.0	2.1
Nizhny Novgorod Region	181801.9	9.6
Orenburg Region	11171.3	1.2
Penza Region	11019.6	3.1
Samara Region	65381.0	3.8
Saratov Region	3123.1	0.4
Ulyanovsk Region	8067.3	2.3
Ural Federal District	119976.6	0.9
Kurgan Region	1673.6	1.0
Sverdlovsk Region	45716.1	1.6
Tyumen Region	50578.6	0.6
Khanty-Mansi Autonomous Region – Yugra	35702.9	0.9
Yamal-Nenets Autonomous Region	1419.6	0.05
Chelyabinsk Region	22008.3	1.2
Siberian Federal District	180732.0	1.7
Altai Republic	330.6	2.3
Republic of Tuva	859.3	2.3

(continued)

	Million roubles	As a percentage of total sales
Republic of Khakassia	106.7	0.04
Altai Region	8886.6	2.1
Krasnoyarsk Region	53845.9	1.8
Irkutsk Region	43279.5	1.8
Kemerovo Region	33979.5	2.1
Novosibirsk Region	11311.1	1.4
Omsk Region	14509.9	1.4
Tomsk Region	13623.0	2.1
Far Eastern Federal District	118638.5	2.4
Republic of Buryatia	7598.2	3.6
Republic of Sakha (Yakutia)	6544.3	0.6
Trans-Baikal Region	509.7	0.2
Kamchatka Region	1255.8	1.0
Primorsky Region	4106.9	0.7
Khabarovsk Region	46298.4	7.7
Amur Region	1175.3	0.4
Magadan Region	455.4	0.2
Sakhalin Region	50419.7	4.3
Jewish Autonomous Region	204.8	0.6
Chukotka Autonomous Region	70.0	0.1
Land territories of the Arctic zone of the Russian Federation	13226.6	0.2

9.4. PERCENTAGE DISTRIBUTION OF INNOVATION EXPENDITURE BY TYPE OF INNOVATIVE ACTIVITY: 2020

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Russia	44.3	33.4	0.3	0.2	0.3	7.0	4.1	1.8	0.2	8.4
Central Federal District	48.2	33.1	0.5	0.2	0.2	7.0	5.6	0.6	0.2	4.4
Belgorod Region	35.8	44.2	0.1	0.03	0.1	9.0	1.5	0.1	0.01	9.2
Bryansk Region	11.5	71.0	0.9	0.01	0.5	12.7	0.3	0.1	0.04	2.9
Vladimir Region	41.6	36.8	0.01	2.0	–	1.6	0.6	8.4	0.02	9.0
Voronezh Region	50.2	37.3	0.01	0.02	0.0	6.8	2.1	0.3	0.1	3.1
Ivanovo Region	66.3	25.4	–	0.03	–	0.3	4.5	0.02	0.1	3.4
Kaluga Region	67.7	5.8	2.3	0.1	0.2	2.0	13.1	1.0	0.1	7.8
Kostroma Region	17.0	77.7	–	0.1	–	1.7	2.6	0.0	0.3	0.5
Kursk Region	64.3	13.3	0.01	0.2	–	4.6	3.0	0.01	8.1	6.5
Lipetsk Region	2.6	86.2	0.9	0.01	0.02	7.8	1.4	0.2	0.9	0.04
Moscow Region	75.0	17.6	0.3	0.04	0.5	5.0	0.8	0.3	0.02	0.5
Orel Region	25.1	44.3	0.4	0.6	0.4	9.6	10.1	0.03	7.4	2.1
Ryazan Region	56.1	31.6	0.1	0.3	0.1	5.5	1.5	0.6	0.04	4.0
Smolensk Region	13.3	39.0	0.5	0.1	0.2	34.0	1.2	0.1	0.1	11.5
Tambov Region	20.6	27.7	0.4	0.4	–	48.0	2.4	0.4	0.1	–
Tver Region	21.8	27.4	0.0	0.4	0.0	8.7	35.6	0.0	0.04	6.1
Tula Region	57.5	8.3	0.2	0.1	0.01	23.6	1.6	2.6	0.3	5.8
Yaroslavl Region	34.6	43.2	0.1	0.8	0.05	17.2	0.7	0.5	0.2	2.6
Moscow	43.1	35.3	0.6	0.3	0.1	6.4	7.9	0.5	0.2	5.7

* Acquisition of patent rights (alienation), licenses, industrial designs, utility models, selection achievements, integrated circuit designs, etc.; patenting (registration) of the results of intellectual activity.

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
North-Western Federal District	41.9	35.5	0.1	0.1	0.9	3.2	8.9	0.7	0.6	8.0
Republic of Karelia	1.3	54.8	0.01	0.01	0.01	42.8	0.1	0.01	0.9	–
Komi Republic	8.7	84.2	0.0	0.01	–	6.2	0.2	0.02	–	0.5
Arkhangelsk Region	8.4	79.0	0.1	0.1	0.04	1.1	5.1	0.03	0.1	6.0
Nenets Autonomous Region	4.0	–	–	–	0.9	–	95.1	–	–	–
Vologda Region	14.1	75.5	–	0.03	–	1.1	2.4	0.8	0.04	6.1
Kaliningrad Region	33.7	49.7	–	0.1	–	2.8	10.1	0.6	0.2	2.8
Leningrad Region	13.1	48.8	0.04	0.1	0.1	2.3	0.2	0.2	0.05	35.2
Murmansk Region	77.0	18.5	0.1	0.03	0.2	2.7	1.3	0.0	0.1	0.1
Novgorod Region	12.5	76.8	0.0	0.02	–	1.9	0.5	5.9	1.8	0.5
Pskov Region	4.5	74.0	17.4	0.2	1.5	0.4	1.8	0.0	0.2	0.1
St Petersburg	52.0	27.8	0.1	0.2	1.2	2.0	12.1	0.8	0.7	3.2
Southern Federal District	39.2	28.6	0.05	0.1	0.4	16.6	1.2	2.4	0.02	11.5
Republic of Adygea	66.0	26.0	0.6	–	–	0.1	2.5	2.9	0.6	1.3
Republic of Kalmykia	64.6	7.2	–	–	–	1.6	17.9	–	4.4	4.2
Republic of Crimea	10.2	89.4	0.0	0.02	0.1	–	0.1	0.0	0.1	0.1
Krasnodar Region	53.2	21.4	0.1	0.1	0.7	8.1	2.2	1.1	0.01	13.1
Astrakhan Region	1.0	42.9	–	0.01	0.4	0.2	0.01	0.01	–	55.4
Volgograd Region	9.3	42.6	0.1	0.02	–	3.1	2.2	0.1	0.04	42.7
Rostov Region	33.0	25.2	0.04	0.03	0.2	30.3	0.3	4.4	0.02	6.4
Sevastopol	77.1	10.4	–	–	–	–	1.6	–	0.2	10.7

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
North Caucasian Federal District	33.3	47.2	0.01	0.1	0.3	10.2	1.3	0.1	0.2	7.3
Republic of Dagestan	39.7	55.8	0.0	0.5	–	0.3	2.4	–	0.5	0.9
Republic of Ingushetia	–	81.3	–	0.3	–	–	14.6	–	3.8	–
Kabardino-Balkarian Republic	61.8	21.5	–	0.01	–	2.7	1.8	–	0.2	11.9
Karachay-Cherkess Republic	8.5	76.0	–	0.01	–	0.2	10.1	–	2.9	2.3
Republic of North Ossetia–Alania	–	88.1	–	0.1	–	4.0	3.5	–	0.9	3.4
Chechen Republic	0.4	84.9	–	–	–	0.6	12.6	–	1.5	–
Stavropol Region	33.4	44.7	0.01	0.1	0.4	12.6	0.4	0.2	0.1	8.2
Volga Federal District	44.4	30.3	0.1	0.1	0.5	6.5	2.6	5.3	0.1	10.4
Republic of Bashkortostan	24.9	44.5	0.3	0.2	0.3	7.0	14.7	1.4	0.3	6.5
Mari El Republic	23.3	47.7	0.2	0.1	21.2	5.3	2.1	0.0	0.1	0.03
Republic of Mordovia	20.1	73.5	0.2	0.1	0.9	3.1	0.6	0.1	0.05	1.4
Republic of Tatarstan	32.8	28.0	0.04	0.02	0.01	13.1	1.9	0.3	0.04	23.8
Udmurt Republic	22.6	53.2	0.8	0.1	1.1	10.0	3.2	0.1	0.3	8.7
Chuvash Republic	51.0	37.5	0.1	0.1	0.4	3.2	1.2	0.4	0.04	6.0
Perm Region	61.0	14.0	0.1	0.1	–	4.9	6.0	0.3	0.1	13.7
Kirov Region	62.1	22.9	0.1	0.01	0.05	6.8	0.5	0.0	0.1	7.5
Nizhny Novgorod Region	60.6	21.5	0.1	0.01	0.5	1.2	1.2	14.2	0.1	0.6
Orenburg Region	2.6	42.0	0.0	0.04	0.1	17.2	2.2	0.2	0.1	35.6
Penza Region	28.3	63.2	0.2	0.04	0.1	5.9	1.8	0.0	0.1	0.4

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and databases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Samara Region	38.6	46.8	0.1	0.2	1.7	6.0	1.7	0.5	0.1	4.3
Saratov Region	45.1	33.7	0.2	0.1	0.5	7.5	7.8	0.1	0.2	4.9
Ulyanovsk Region	23.3	42.9	0.2	0.1	0.02	0.3	2.0	1.5	0.02	29.7
Ural Federal District	42.7	35.0	0.1	0.6	0.1	7.5	3.5	0.9	0.8	8.8
Kurgan Region	16.4	77.7	0.04	0.1	0.1	1.6	3.9	–	0.1	0.1
Sverdlovsk Region	35.6	41.9	0.1	0.1	0.2	14.7	3.9	1.8	0.8	1.0
Tyumen Region	43.4	35.5	0.1	0.1	0.1	1.5	3.8	0.2	1.2	14.2
Khanty-Mansi Autonomous Region – Yugra	49.4	42.7	0.03	0.1	0.03	0.3	0.4	0.2	0.03	6.7
Yamal-Nenets Autonomous Region	48.9	10.5	0.03	0.3	–	9.4	22.9	0.1	5.2	2.7
Chelyabinsk Region	57.7	16.4	0.1	3.1	0.1	6.5	2.0	0.8	0.03	13.2
Siberian Federal District	55.5	29.7	0.2	0.1	0.6	7.8	1.2	0.1	0.03	4.8
Altai Republic	3.6	38.4	–	0.01	–	0.5	1.8	–	0.01	55.7
Republic of Tuva	0.1	99.0	–	–	–	0.05	0.7	0.0	0.2	–
Republic of Khakassia	38.0	40.1	0.6	–	–	9.0	6.1	–	1.5	4.8
Altai Region	22.6	53.6	0.1	0.1	0.3	1.0	1.9	0.01	0.02	20.4
Krasnoyarsk Region	81.2	13.2	0.04	0.1	–	2.1	0.8	0.02	0.01	2.6
Irkutsk Region	14.5	59.9	0.01	0.01	1.9	20.7	0.8	0.1	0.0	2.0
Kemerovo Region	83.0	12.7	0.02	0.1	–	1.0	0.9	0.0	0.04	2.2
Novosibirsk Region	43.6	25.1	2.0	0.2	0.1	10.7	4.6	0.1	0.03	13.5
Omsk Region	31.0	43.9	0.03	0.1	1.6	14.1	1.1	1.3	0.1	6.9
Tomsk Region	78.0	9.5	0.03	0.04	0.01	2.4	1.3	0.05	0.03	8.5

(continued)

	Research and development	Purchase of machinery and equipment, or other fixed assets	Marketing and brand creation	Education and training of personnel	Design	Engineering	Development and purchase of software and data-bases	Acquisition of rights to the results of intellectual activity*	Planning, development, and implementation of new business methods, organisation of workplaces and networking	Other
Far Eastern Federal District	9.0	55.2	0.01	0.1	0.0	3.3	0.4	0.03	0.1	31.8
Republic of Buryatia	76.2	22.6	0.01	0.0	–	0.4	0.8	0.0	0.02	–
Republic of Sakha (Yakutia)	47.6	4.7	0.2	0.5	–	13.8	1.6	0.5	1.2	29.9
Trans-Baikal Region	29.8	41.4	–	1.1	–	24.2	1.3	0.4	0.4	1.4
Kamchatka Region	49.5	30.7	–	0.2	–	1.7	3.1	0.1	–	14.6
Primorsky Region	4.3	67.7	0.1	0.2	0.02	25.2	0.5	0.02	0.5	1.4
Khabarovsk Region	1.0	20.4	0.0	0.01	0.0	3.8	0.1	0.0	0.03	74.6
Amur Region	7.3	16.1	–	0.4	0.04	1.6	3.0	0.01	0.1	71.5
Magadan Region	43.2	29.8	–	0.8	–	1.3	1.3	–	–	23.6
Sakhalin Region	0.1	99.6	–	0.02	0.0	0.1	0.2	0.0	–	0.04
Jewish Autonomous Region	54.5	36.4	–	–	–	–	2.7	–	–	6.3
Chukotka Autonomous Region	–	92.0	–	–	–	–	8.0	–	–	–
Land territories of the Arctic zone of the Russian Federation	37.7	35.4	0.04	0.2	0.1	19.2	3.6	0.01	0.9	2.9

9.5. INNOVATION EXPENDITURE FROM BUDGET FUNDS: 2020

(as a percentage of the total innovation expenditure)

	Budget funds – total	Of which	
		federal budget	regional and local budgets
Russia	24.9	23.4	1.5
Central Federal District	35.0	33.6	1.4
Belgorod Region	4.8	3.9	1.0
Bryansk Region	70.4	67.0	3.4
Vladimir Region	22.4	21.8	0.6
Voronezh Region	47.3	42.7	4.6
Ivanovo Region	15.7	9.3	6.5
Kaluga Region	4.9	4.2	0.8
Kostroma Region	4.7	4.7	0.0
Kursk Region	2.9	2.6	0.3
Lipetsk Region	0.3	0.1	0.2
Moscow Region	65.8	65.0	0.7
Orel Region	22.2	21.5	0.7
Ryazan Region	12.4	11.5	0.9
Smolensk Region	38.2	38.2	0.0
Tambov Region	31.3	30.4	0.9
Tver Region	25.1	14.8	10.3
Tula Region	34.0	33.9	0.2
Yaroslavl Region	25.9	25.5	0.4
Moscow	29.3	27.6	1.7
North-Western Federal District	17.6	16.1	1.6
Republic of Karelia	1.5	1.4	0.1
Komi Republic	4.1	0.2	3.9

(continued)

	Budget funds – total	Of which	
		federal budget	regional and local budgets
Arkhangelsk Region	25.2	19.2	5.9
Nenets Autonomous Region	95.1	94.8	0.3
Vologda Region	8.2	7.5	0.7
Kaliningrad Region	21.0	1.3	19.7
Leningrad Region	0.7	0.7	–
Murmansk Region	2.3	1.2	1.2
Novgorod Region	76.8	74.5	2.3
Pskov Region	1.6	1.1	0.4
St Petersburg	21.9	20.3	1.6
Southern Federal District	17.5	11.9	5.6
Republic of Adygea	20.2	16.5	3.7
Republic of Kalmykia	71.6	71.6	–
Republic of Crimea	88.5	84.1	4.3
Krasnodar Region	8.9	2.2	6.7
Astrakhan Region	0.1	0.1	0.03
Volgograd Region	15.3	13.8	1.5
Rostov Region	17.1	11.7	5.4
Sevastopol	16.5	10.3	6.2
North Caucasian Federal District	13.6	8.7	5.0
Republic of Dagestan	76.0	31.8	44.2
Republic of Ingushetia	18.4	18.4	–
Kabardino-Balkarian Republic	2.0	2.0	–
Karachay-Cherkess Republic	21.8	11.6	10.1
Republic of North Ossetia–Alania	19.6	19.6	–
Chechen Republic	7.3	7.3	–
Stavropol Region	7.6	6.2	1.4

(continued)

	Budget funds – total	Of which	
		federal budget	regional and local budgets
Volga Federal District	17.9	17.3	0.6
Republic of Bashkortostan	2.2	1.7	0.6
Mari El Republic	0.7	0.6	0.0
Republic of Mordovia	12.9	3.8	9.1
Republic of Tatarstan	2.4	2.1	0.2
Udmurt Republic	10.1	8.0	2.1
Chuvash Republic	19.9	7.6	12.3
Perm Region	27.5	27.4	0.1
Kirov Region	59.2	58.9	0.3
Nizhny Novgorod Region	25.0	25.0	0.03
Orenburg Region	8.5	8.1	0.4
Penza Region	28.6	25.3	3.2
Samara Region	30.3	29.3	1.0
Saratov Region	20.2	19.6	0.6
Ulyanovsk Region	22.6	20.8	1.8
Ural Federal District	16.4	16.1	0.3
Kurgan Region	14.6	14.5	0.1
Sverdlovsk Region	15.1	14.8	0.3
Tyumen Region	0.7	0.3	0.4
Khanty-Mansi Autonomous Region – Yugra	0.1	0.02	0.1
Yamal-Nenets Autonomous Region	3.1	2.6	0.5
Chelyabinsk Region	55.5	55.4	0.1

(continued)

	Budget funds – total	Of which	
		federal budget	regional and local budgets
Siberian Federal District	27.4	25.0	2.4
Altai Republic	5.2	5.2	–
Republic of Tuva	85.1	3.2	81.9
Republic of Khakassia	39.5	23.1	16.3
Altai Region	20.1	5.9	14.2
Krasnoyarsk Region	63.8	63.1	0.7
Irkutsk Region	5.4	1.8	3.6
Kemerovo Region	1.0	0.7	0.3
Novosibirsk Region	42.1	41.4	0.6
Omsk Region	16.8	16.2	0.6
Tomsk Region	19.7	18.2	1.5
Far Eastern Federal District	2.9	1.6	1.3
Republic of Buryatia	1.0	1.0	–
Republic of Sakha (Yakutia)	15.5	7.9	7.6
Trans-Baikal Region	25.7	21.8	3.9
Kamchatka Region	68.9	27.6	41.3
Primorsky Region	2.7	2.6	0.1
Khabarovsk Region	0.9	0.8	0.1
Amur Region	13.7	12.3	1.3
Magadan Region	45.2	9.5	35.7
Sakhalin Region	0.7	0.1	0.6
Jewish Autonomous Region	60.9	60.9	–
Chukotka Autonomous Region	79.3	66.6	12.8

9.6. SALES OF INNOVATIVE GOODS AND SERVICES: 2020

	Million roubles	As a percentage of total sales
Russia	5189046.2	5.7
Central Federal District	1653352.2	5.2
Belgorod Region	158024.3	14.1
Bryansk Region	31792.7	9.7
Vladimir Region	39150.6	7.0
Voronezh Region	43602.3	6.2
Ivanovo Region	5398.9	2.9
Kaluga Region	21706.8	1.0
Kostroma Region	10341.1	5.9
Kursk Region	30310.4	5.8
Lipetsk Region	54397.2	6.2
Moscow Region	380965.4	8.8
Orel Region	10219.2	4.8
Ryazan Region	21399.9	5.2
Smolensk Region	12564.7	3.4
Tambov Region	15445.1	5.5
Tver Region	32431.1	7.1
Tula Region	131270.2	13.5
Yaroslavl Region	27729.1	5.4
Moscow	626603.4	3.6
North-Western Federal District	676257.5	6.3
Republic of Karelia	7060.5	2.8
Komi Republic	8885.1	1.0
Arkhangelsk Region	53202.0	7.6
Nenets Autonomous Region	30.7	0.01

(continued)

	Million roubles	As a percentage of total sales
Vologda Region	16518.7	1.9
Kaliningrad Region	6820.9	1.0
Leningrad Region	16358.9	1.0
Murmansk Region	112798.5	10.6
Novgorod Region	4570.4	1.9
Pskov Region	2017.6	1.2
St Petersburg	448024.9	10.6
Southern Federal District	172935.5	3.3
Republic of Adygea	496.5	0.6
Republic of Kalmykia	63.9	0.5
Republic of Crimea	1714.2	0.7
Krasnodar Region	38530.6	1.8
Astrakhan Region	699.2	0.2
Volgograd Region	22980.7	2.2
Rostov Region	106739.7	8.5
Sevastopol	1710.9	5.9
North Caucasian Federal District	44284.7	5.1
Republic of Dagestan	1468.1	1.3
Republic of Ingushetia	238.7	4.5
Kabardino-Balkarian Republic	552.6	1.0
Karachay-Cherkess Republic	438.2	0.8
Republic of North Ossetia–Alania	597.6	1.3
Chechen Republic	24.0	0.04
Stavropol Region	40965.4	7.7

(continued)

	Million roubles	As a percentage of total sales
Volga Federal District	1606414.4	11.3
Republic of Bashkortostan	150637.9	7.9
Mari El Republic	8233.3	6.2
Republic of Mordovia	61535.9	20.9
Republic of Tatarstan	528840.4	18.1
Udmurt Republic	63741.2	10.4
Chuvash Republic	23684.3	9.3
Perm Region	190629.7	11.0
Kirov Region	27168.4	8.3
Nizhny Novgorod Region	276159.9	14.6
Orenburg Region	31172.6	3.4
Penza Region	30627.1	8.7
Samara Region	157163.2	9.2
Saratov Region	9717.1	1.3
Ulyanovsk Region	47103.5	13.1
Ural Federal District	500723.7	3.8
Kurgan Region	5271.0	3.2
Sverdlovsk Region	185485.2	6.5
Tyumen Region	231859.3	2.8
Khanty-Mansi Autonomous Region – Yugra	39744.3	1.0
Yamal-Nenets Autonomous Region	16657.1	0.5
Chelyabinsk Region	78108.1	4.4
Siberian Federal District	382073.2	3.7
Altai Republic	557.4	3.9
Republic of Tuva	41.7	0.1

(continued)

	Million roubles	As a percentage of total sales
Republic of Khakassia	255.0	0.1
Altai Region	11457.7	2.6
Krasnoyarsk Region	135373.1	4.6
Irkutsk Region	16973.1	0.7
Kemerovo Region	37998.2	2.3
Novosibirsk Region	28484.5	3.5
Omsk Region	132406.1	12.6
Tomsk Region	18526.3	2.9
Far Eastern Federal District	153005.1	3.1
Republic of Buryatia	3777.6	1.8
Republic of Sakha (Yakutia)	9392.0	0.8
Trans-Baikal Region	525.1	0.2
Kamchatka Region	2992.1	2.5
Primorsky Region	13563.6	2.2
Khabarovsk Region	109696.0	18.2
Amur Region	2420.2	0.8
Magadan Region	795.2	0.3
Sakhalin Region	8747.3	0.7
Jewish Autonomous Region	371.2	1.0
Chukotka Autonomous Region	724.8	0.5
Land territories of the Arctic zone of the Russian Federation	237050.6	3.5

9.7. ENTERPRISES THAT ENGAGED IN JOINT R&D PROJECTS BY PARTNER: 2020

(as a percentage of enterprises that engaged in innovative activities)

	Total	Of which by partner						
		enterprises within a single network (group of companies, holding company, consortium, association, etc.)	consumers of goods and services	suppliers of equipment, materials, components, software	competitors in the industry	consulting firms, IT services providers	research institutes	higher education institutions
Russia	17.0	6.1	5.8	5.2	1.2	1.9	8.3	5.1
Central Federal District	21.6	8.1	8.3	7.6	2.0	2.9	11.1	6.0
Belgorod Region	12.3	4.7	3.3	6.1	0.5	2.4	3.8	2.8
Bryansk Region	13.8	9.2	3.4	2.3	–	–	4.6	1.1
Vladimir Region	18.0	5.5	8.6	6.3	0.8	2.3	10.2	1.6
Voronezh Region	10.3	2.5	3.9	3.9	0.5	0.5	5.9	1.5
Ivanovo Region	9.2	0.9	3.7	3.7	0.9	0.9	4.6	1.8
Kaluga Region	30.4	10.8	7.8	8.8	4.9	2.9	19.6	9.8
Kostroma Region	12.5	–	–	6.3	–	3.1	6.3	–
Kursk Region	6.6	–	3.3	1.6	–	–	4.9	3.3
Lipetsk Region	6.0	–	2.4	2.4	–	2.4	3.6	1.2
Moscow Region	26.6	10.6	11.0	11.0	4.0	2.8	16.0	6.6
Orel Region	3.8	2.5	1.3	–	–	–	–	–
Ryazan Region	19.5	9.8	3.7	8.5	–	3.7	6.1	4.9
Smolensk Region	23.1	7.7	11.5	9.6	–	–	5.8	1.9
Tambov Region	12.0	4.8	1.2	1.2	–	–	4.8	4.8
Tver Region	15.5	10.3	4.3	4.3	1.7	0.9	6.0	1.7
Tula Region	9.8	2.6	3.6	4.1	1.5	1.0	5.2	3.1
Yaroslavl Region	23.4	7.2	5.4	6.3	2.7	6.3	9.9	7.2
Moscow	30.9	11.7	13.0	10.3	2.8	4.6	16.1	10.1

(continued)

	Total	Of which by partner						
		enterprises within a single network (group of companies, holding company, consortium, association, etc.)	consumers of goods and services	suppliers of equipment, materials, components, software	competitors in the industry	consulting firms, IT services providers	research institutes	higher education institutions
North-Western Federal District	20.8	7.8	6.9	5.4	1.5	1.8	10.7	6.3
Republic of Karelia	11.1	5.6	8.3	2.8	–	–	5.6	2.8
Komi Republic	11.4	7.1	–	1.4	–	–	1.4	2.9
Arkhangelsk Region	12.2	4.1	4.1	2.0	2.0	2.0	4.1	2.0
Nenets Autonomous Region	–	–	–	–	–	–	–	–
Vologda Region	8.4	1.9	3.7	2.8	–	–	4.7	1.9
Kaliningrad Region	15.0	8.3	5.0	5.0	3.3	5.0	3.3	3.3
Leningrad Region	23.5	10.2	7.1	3.1	2.0	2.0	14.3	3.1
Murmansk Region	11.4	4.3	4.3	1.4	–	2.9	7.1	4.3
Novgorod Region	13.0	9.3	11.1	–	–	–	3.7	–
Pskov Region	3.8	1.9	–	1.9	–	–	1.9	–
St Petersburg	28.0	9.6	8.8	8.2	2.1	2.3	15.2	9.9
Southern Federal District	11.2	3.4	3.2	3.9	0.5	1.2	4.7	2.3
Republic of Adygea	7.4	–	–	7.4	–	–	–	–
Republic of Kalmykia	12.5	–	–	–	–	–	12.5	–
Republic of Crimea	22.6	9.4	9.4	7.5	1.9	–	9.4	3.8
Krasnodar Region	14.0	4.5	3.3	5.0	0.8	2.5	5.4	2.5
Astrakhan Region	11.4	2.9	2.9	2.9	–	2.9	5.7	2.9
Volgograd Region	12.1	6.1	2.3	3.8	0.8	1.5	4.5	3.0
Rostov Region	8.9	1.5	3.2	3.2	0.2	0.5	4.4	2.2
Sevastopol	2.2	2.2	–	–	–	–	–	–

(continued)

	Total	Of which by partner						
		enterprises within a single network (group of companies, holding company, consortium, association, etc.)	consumers of goods and services	suppliers of equipment, materials, components, software	competitors in the industry	consulting firms, IT services providers	research institutes	higher education institutions
North Caucasian Federal District	9.1	3.9	1.3	1.3	0.4	0.4	4.8	2.6
Republic of Dagestan	4.2	3.2	1.1	–	1.1	–	2.1	–
Republic of Ingushetia	–	–	–	–	–	–	–	–
Kabardino-Balkarian Republic	13.6	4.5	–	4.5	–	–	13.6	4.5
Karachay-Cherkess Republic	5.9	–	–	–	–	–	5.9	5.9
Republic of North Ossetia–Alania	16.7	–	–	–	–	–	8.3	8.3
Chechen Republic	8.3	–	–	–	–	–	–	8.3
Stavropol Region	15.2	7.6	3.0	3.0	–	1.5	6.1	3.0
Volga Federal District	13.3	5.0	4.8	4.3	0.8	1.6	4.8	4.1
Republic of Bashkortostan	6.1	2.1	1.9	1.3	0.4	0.4	2.7	2.5
Mari El Republic	10.3	7.7	7.7	–	–	–	–	–
Republic of Mordovia	7.3	2.4	2.4	2.4	–	–	0.8	4.0
Republic of Tatarstan	10.7	5.2	3.3	3.4	0.4	1.0	4.8	3.8
Udmurt Republic	16.4	7.4	5.7	7.4	0.8	3.3	5.7	7.4
Chuvash Republic	19.3	6.4	5.5	6.4	0.9	2.8	4.6	4.6
Perm Region	22.6	7.0	7.0	9.1	0.5	4.3	8.1	5.9
Kirov Region	12.8	3.4	4.3	4.3	1.7	0.9	2.6	2.6
Nizhny Novgorod Region	20.3	6.6	10.7	6.2	1.4	1.7	8.3	6.6
Orenburg Region	13.1	4.8	2.4	4.8	1.2	1.2	8.3	3.6
Penza Region	10.3	4.8	4.8	4.1	2.8	1.4	3.4	2.1

(continued)

	Total	Of which by partner						
		enterprises within a single network (group of companies, holding company, consortium, association, etc.)	consumers of goods and services	suppliers of equipment, materials, components, software	competitors in the industry	consulting firms, IT services providers	research institutes	higher education institutions
Samara Region	15.5	5.6	4.2	5.6	0.3	2.5	5.4	3.7
Saratov Region	19.6	7.1	10.7	5.4	2.7	2.7	7.1	7.1
Ulyanovsk Region	12.2	5.3	3.1	2.3	0.8	0.8	3.1	2.3
Ural Federal District	16.6	6.4	4.4	4.1	0.6	1.6	9.0	4.5
Kurgan Region	12.0	5.3	2.7	2.7	2.7	–	6.7	2.7
Sverdlovsk Region	25.2	8.3	8.0	5.5	0.6	1.8	13.8	8.6
Tyumen Region	8.5	4.2	1.6	2.4	0.3	0.5	4.2	0.8
Khanty-Mansi Autonomous Region – Yugra	3.6	2.9	0.7	1.5	–	–	2.2	–
Yamal-Nenets Autonomous Region	12.9	7.1	1.4	2.9	–	–	5.7	–
Chelyabinsk Region	19.6	7.7	4.3	5.3	0.5	3.8	11.0	5.3
Siberian Federal District	15.7	5.2	5.2	4.1	1.0	1.7	9.1	5.9
Altai Republic	11.1	–	11.1	–	–	–	–	–
Republic of Tuva	–	–	–	–	–	–	–	–
Republic of Khakassia	5.6	5.6	–	–	–	–	5.6	–
Altai Region	6.0	1.2	2.8	2.0	–	0.4	4.0	1.6
Krasnoyarsk Region	18.1	8.8	3.5	7.6	0.6	2.9	9.4	7.0
Irkutsk Region	20.5	4.5	3.6	5.4	–	4.5	13.4	4.5
Kemerovo Region	17.8	6.9	2.0	5.9	–	2.0	5.0	5.9
Novosibirsk Region	27.5	5.6	13.5	4.5	2.2	2.2	20.2	12.4
Omsk Region	10.9	5.8	4.3	3.6	2.2	1.4	5.1	5.1
Tomsk Region	17.7	6.7	6.2	3.3	1.9	1.0	9.6	7.2

9.8. PERCENTAGE DISTRIBUTION OF RUSSIAN REGIONS BY MAIN INNOVATION ACTIVITY INDICATORS: 2020

	Rank of the Russian region by indicators		
	innovation activity of enterprises	expenditure on technological innovation as a percentage of total sales	innovative goods and services as a percentage of total sales
Central Federal District	2	2	3
Belgorod Region	7	29	5
Bryansk Region	35	42	15
Vladimir Region	23	22	25
Voronezh Region	11	10	29
Ivanovo Region	10	55	47
Kaluga Region	28	56	64
Kostroma Region	68	76	31
Kursk Region	51	71	32
Lipetsk Region	30	4	27
Moscow Region	36	5	18
Orel Region	20	64	36
Ryazan Region	34	49	35
Smolensk Region	58	44	44
Tambov Region	25	43	33
Tver Region	29	36	24
Tula Region	5	15	6
Yaroslavl Region	38	35	34
Moscow	21	14	41
North-Western Federal District	3	6	2
Republic of Karelia	59	30	48
Komi Republic	47	59	62
Arkhangelsk Region:			
Nenets Autonomous Region	80	85	85
Arkhangelsk Region excluding the Autonomous Region	76	65	7

(continued)

	Rank of the Russian region by indicators		
	innovation activity of enterprises	expenditure on technological innovation as a percentage of total sales	innovative goods and services as a percentage of total sales
Vologda Region	27	73	54
Kaliningrad Region	69	79	67
Leningrad Region	49	33	68
Murmansk Region	42	72	12
Novgorod Region	31	46	55
Pskov Region	40	68	61
St Petersburg	12	13	13
Southern Federal District	6	4	7
Republic of Adygea	45	74	75
Republic of Kalmykia	83	75	77
Republic of Crimea	74	11	73
Krasnodar Region	71	17	57
Astrakhan Region	72	58	81
Volgograd Region	50	63	52
Rostov Region	19	7	20
Sevastopol	8	16	30
North Caucasian Federal District	8	8	4
Republic of Dagestan	81	66	58
Republic of Ingushetia	85	54	38
Kabardino-Balkarian Republic	52	61	66
Karachay-Cherkess Republic	67	81	71
Republic of North Ossetia–Alania	82	70	59
Chechen Republic	84	77	84
Stavropol Region	73	53	23

(continued)

	Rank of the Russian region by indicators		
	innovation activity of enterprises	expenditure on technological innovation as a percentage of total sales	innovative goods and services as a percentage of total sales
Volga Federal District	1	1	1
Republic of Bashkortostan	1	39	22
Mari El Republic	41	52	28
Republic of Mordovia	4	18	1
Republic of Tatarstan	2	3	3
Udmurt Republic	24	51	14
Chuvash Republic	15	28	16
Perm Region	37	24	11
Kirov Region	18	25	21
Nizhny Novgorod Region	17	1	4
Orenburg Region	53	41	43
Penza Region	9	12	19
Samara Region	14	8	17
Saratov Region	56	67	60
Ulyanovsk Region	13	21	8
Ural Federal District	4	7	5
Kurgan Region	16	47	45
Sverdlovsk Region	33	34	26
Tyumen Region:			
Khanty-Mansi Autonomous Region – Yugra	54	50	65
Yamal-Nenets Autonomous Region	64	83	76
Tyumen Region excluding autonomous regions	26	48	9
Chelyabinsk Region	32	40	39

(continued)

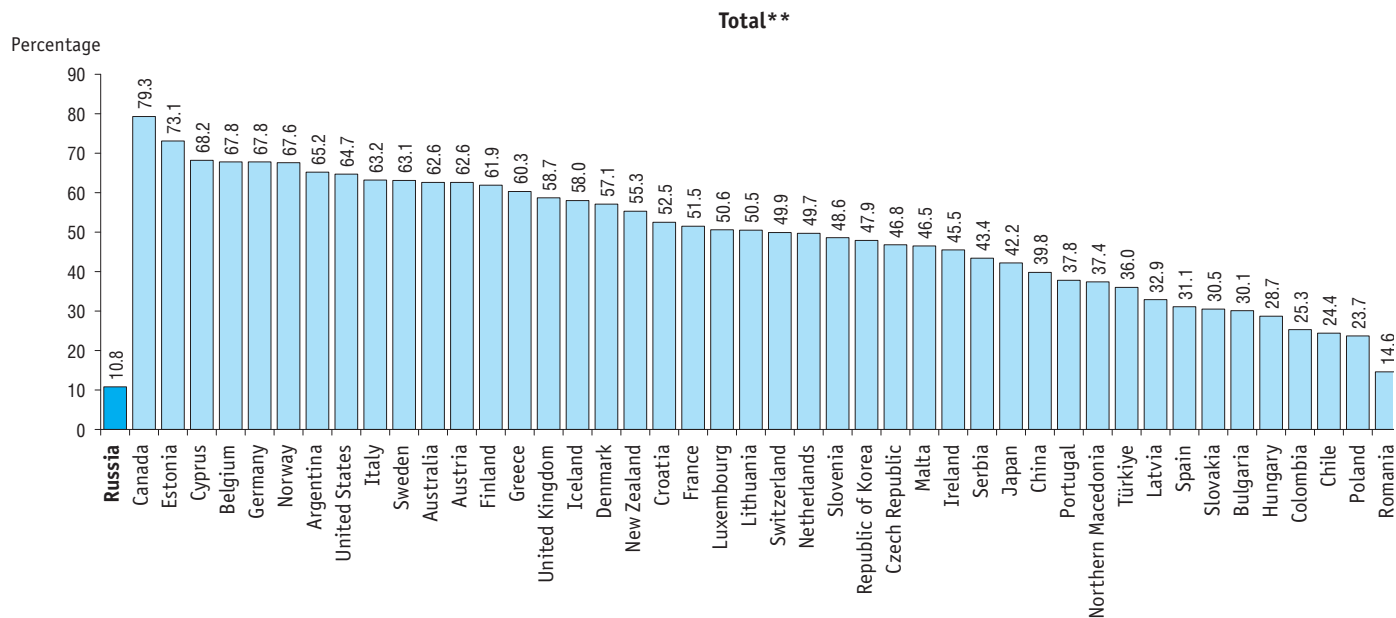
	Rank of the Russian region by indicators		
	innovation activity of enterprises	expenditure on technological innovation as a percentage of total sales	innovative goods and services as a percentage of total sales
Siberian Federal District	5	5	6
Altai Republic	78	20	40
Republic of Tuva	44	19	82
Republic of Khakassia	79	84	83
Altai Region	6	27	49
Krasnoyarsk Region	60	31	37
Irkutsk Region	57	32	74
Kemerovo Region	63	26	51
Novosibirsk Region	48	37	42
Omsk Region	39	38	10
Tomsk Region	3	23	46
Far Eastern Federal District	7	3	8
Republic of Buryatia	66	9	56
Republic of Sakha (Yakutia)	46	60	69
Trans-Baikal Region	77	78	80
Kamchatka Region	22	45	50
Primorsky Region	55	57	53
Khabarovsk Region	65	2	2
Amur Region	62	69	70
Magadan Region	43	80	79
Sakhalin Region	75	6	72
Jewish Autonomous Region	70	62	63
Chukotka Autonomous Region	61	82	78



10

**INTERNATIONAL
COMPARISONS**

10.1. INNOVATION ACTIVITY OF ENTERPRISES: 2020*

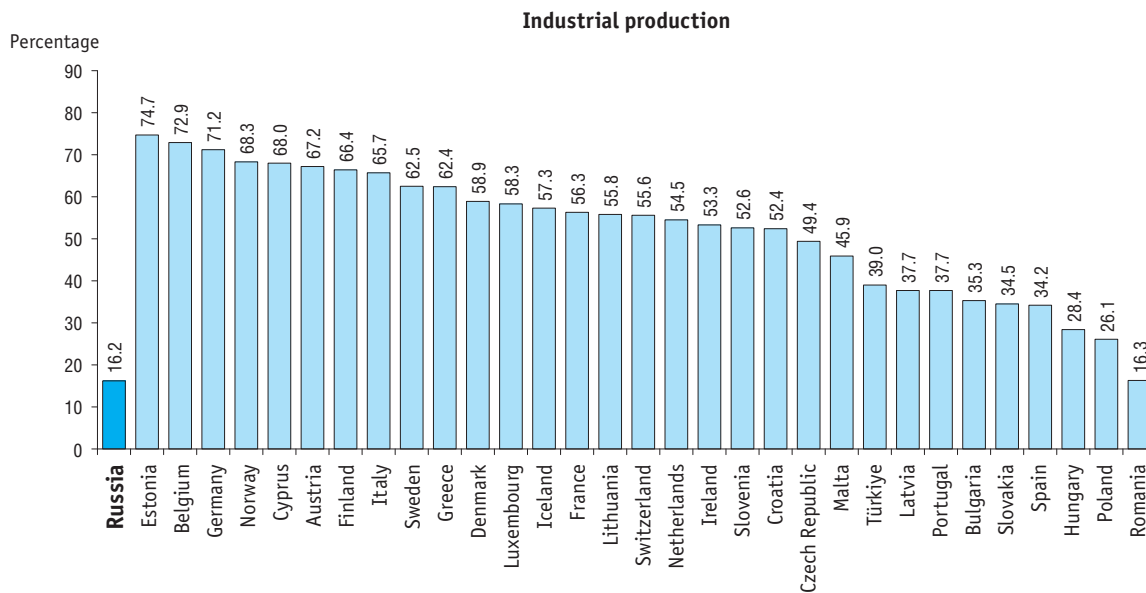


* The data for EU countries, Iceland, Norway, Switzerland, and Türkiye are based on the European Innovation Survey (2016–2018). The data for Northern Macedonia, Serbia, and the United Kingdom are based on the results of the European Innovation Survey (2014–2016). For other countries: Argentina (2014–2016, manufacturing), Australia (2016–2017), Canada (2015–2017), Chile (2015–2016), China (2014–2016), Colombia (2015–2016, manufacturing), Japan (2015–2017), New Zealand (2015–2017), Republic of Korea (2015–2017), and United States (2015–2017).

** Here and below in this section, for Russia, the aggregate data for enterprises (legal entities, excluding small businesses) refer to the following types of observed economic activity under OKVED2: codes 01.1, 01.2, 01.3, 01.4, 01.5, 01.6, Sections B, C, D (excluding 35.14; 35.23; 35.30.6), E, F, H, Q, codes 58, 61, 62, 63, 69, 70, 71, 72, 73, 74.

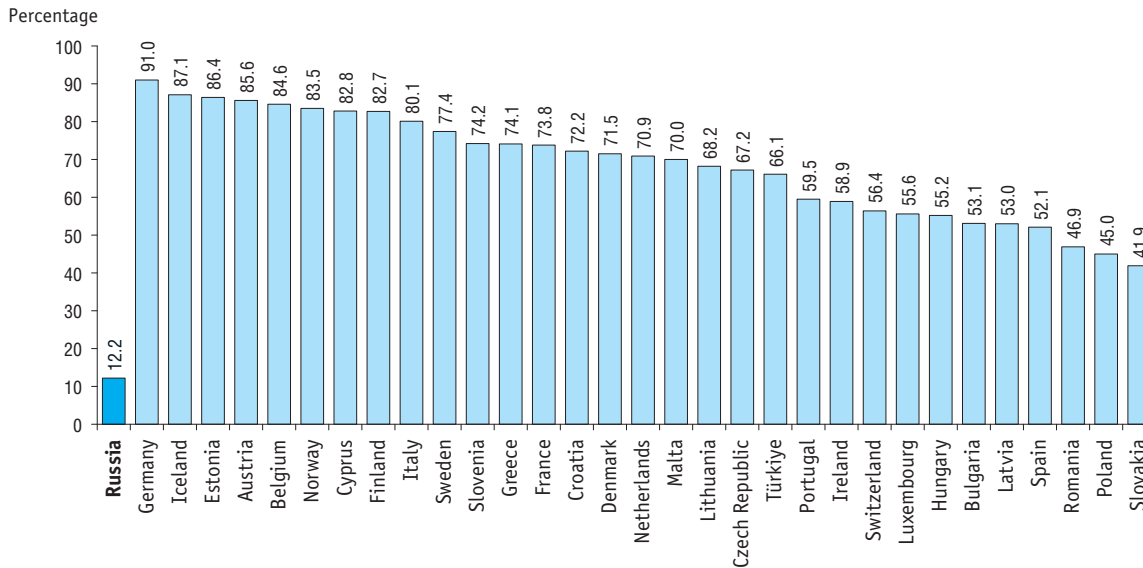
Sources: Eurostat; materials of national statistical services.

(continued)



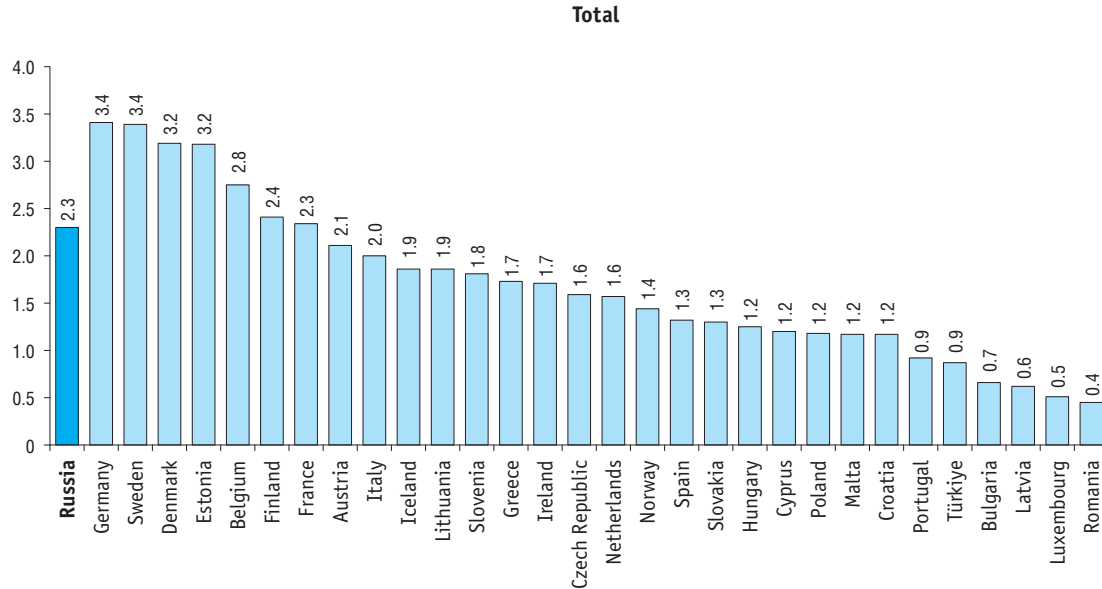
(continued)

**Telecommunications; computer programming,
consultancy and related activities; IT industry**



10.2. INTENSITY OF INNOVATION EXPENDITURE: 2020*

(innovation expenditure as a percentage of total sales)

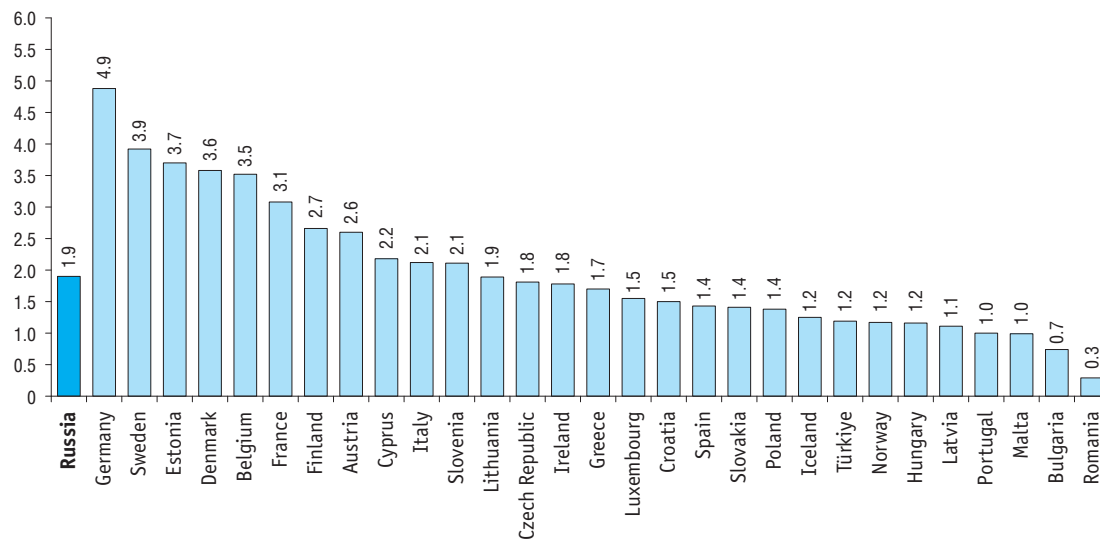


* The data for EU countries, Iceland, Norway, and Türkiye are based on the European Innovation Survey (2016–2018). The data for the Netherlands are based on the results of the European Innovation Survey (2014–2016).

Source: Eurostat.

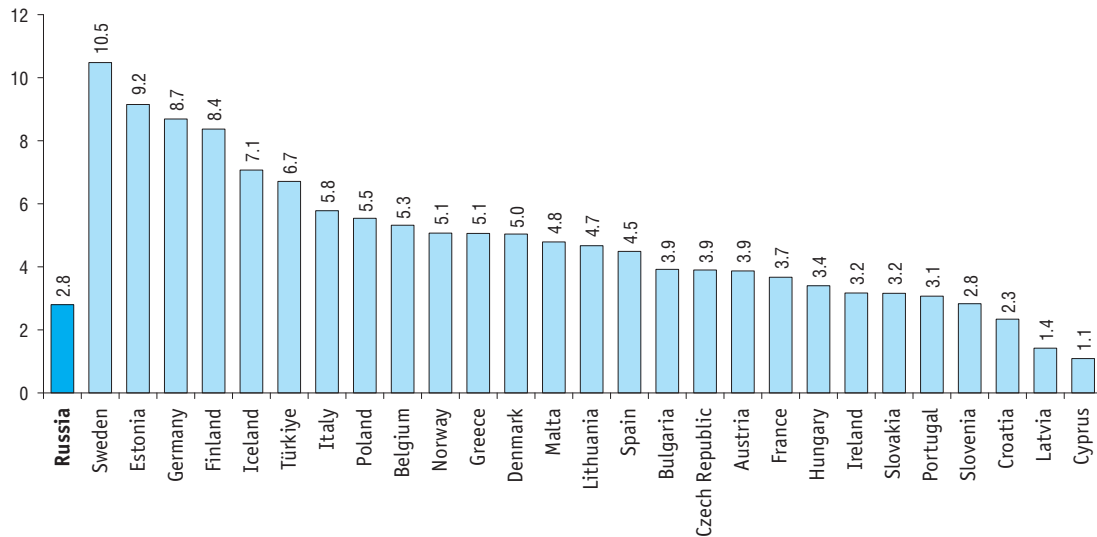
(continued)

Industrial production



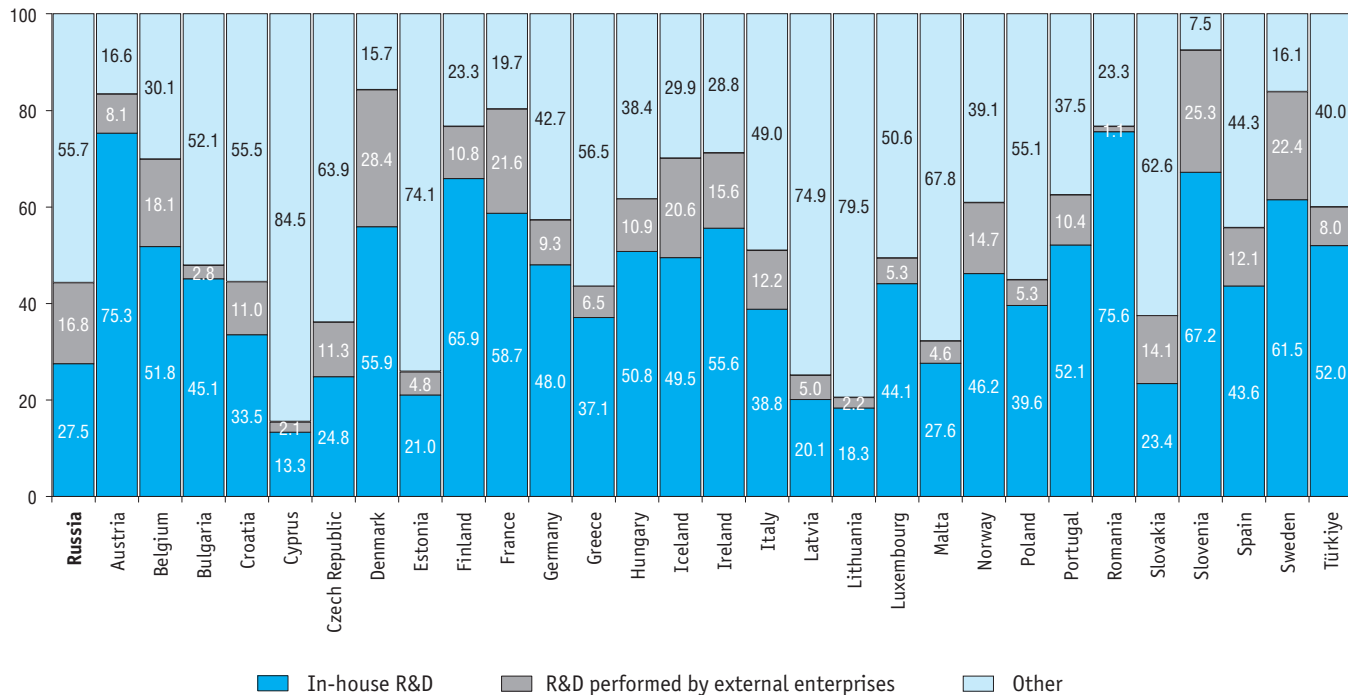
(continued)

Telecommunications; computer programming,
consultancy and related activities; IT industry



10.3. PERCENTAGE DISTRIBUTION OF INNOVATION EXPENDITURE BY TYPE OF INNOVATIVE ACTIVITY: 2020*

Total

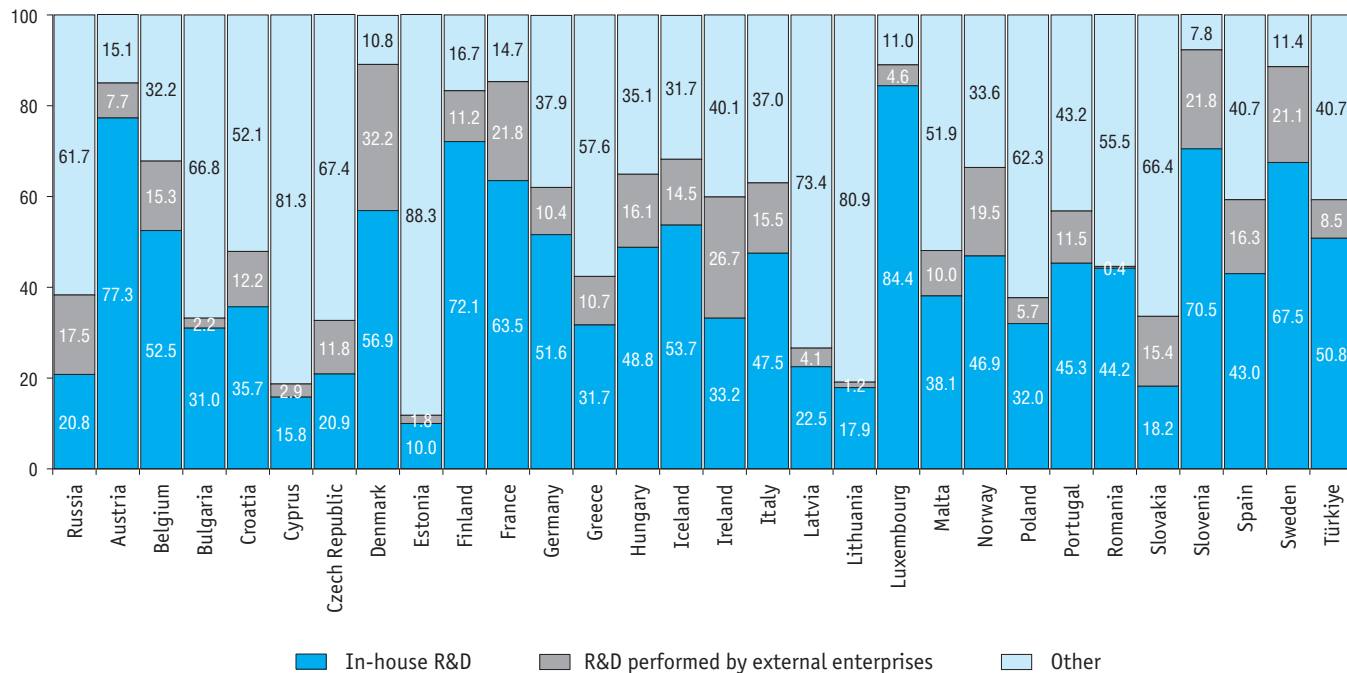


* The data for EU countries, Iceland, Norway, and Türkiye are based on the European Innovation Survey (2016–2018).

Source: Eurostat.

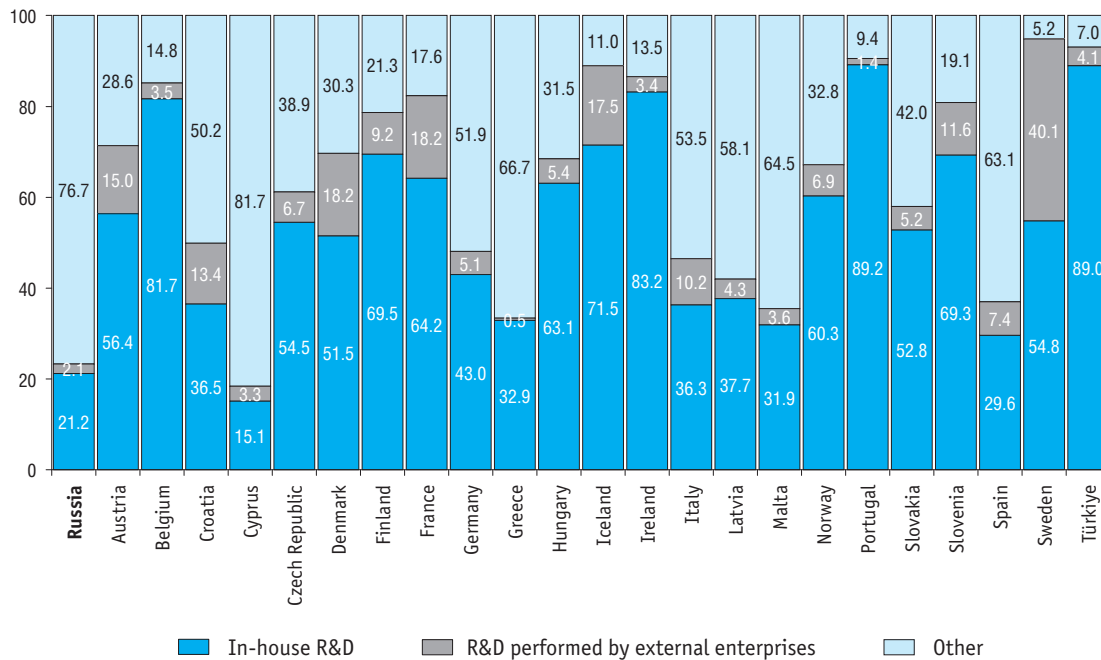
(continued)

Industrial production

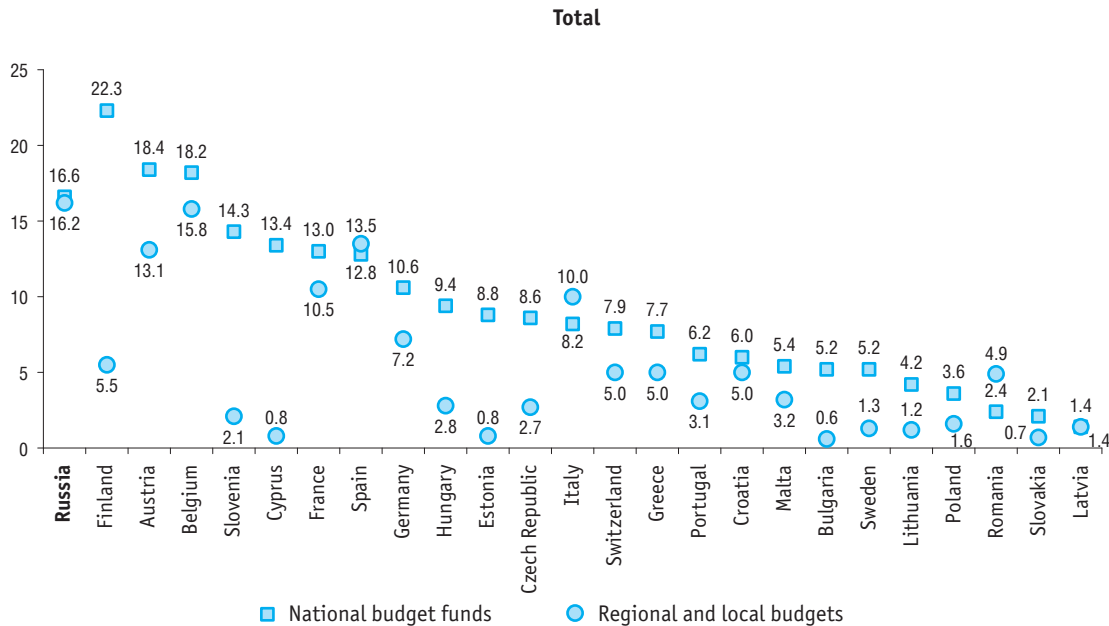


(continued)

Telecommunications; computer programming,
consultancy and related activities; IT industry



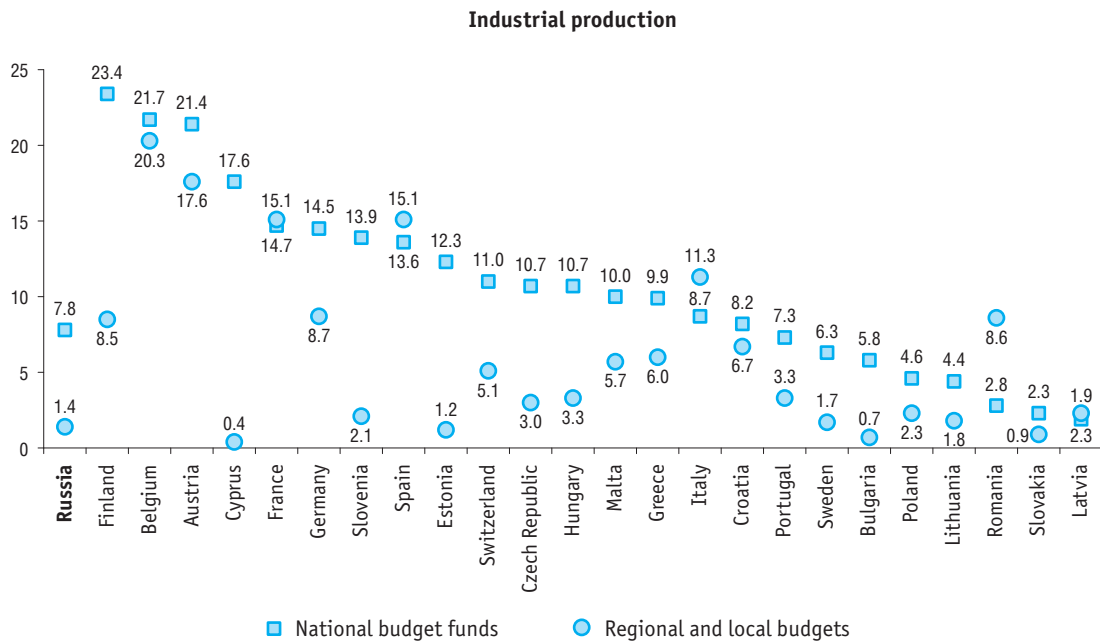
10.4. ENTERPRISES THAT RECEIVED FUNDS FROM THE BUDGET AS A PERCENTAGE OF THE TOTAL NUMBER OF ENTERPRISES THAT HAD INNOVATION EXPENDITURE: 2020*



* The data for EU countries and Switzerland are based on the European Innovation Survey (2016–2018).

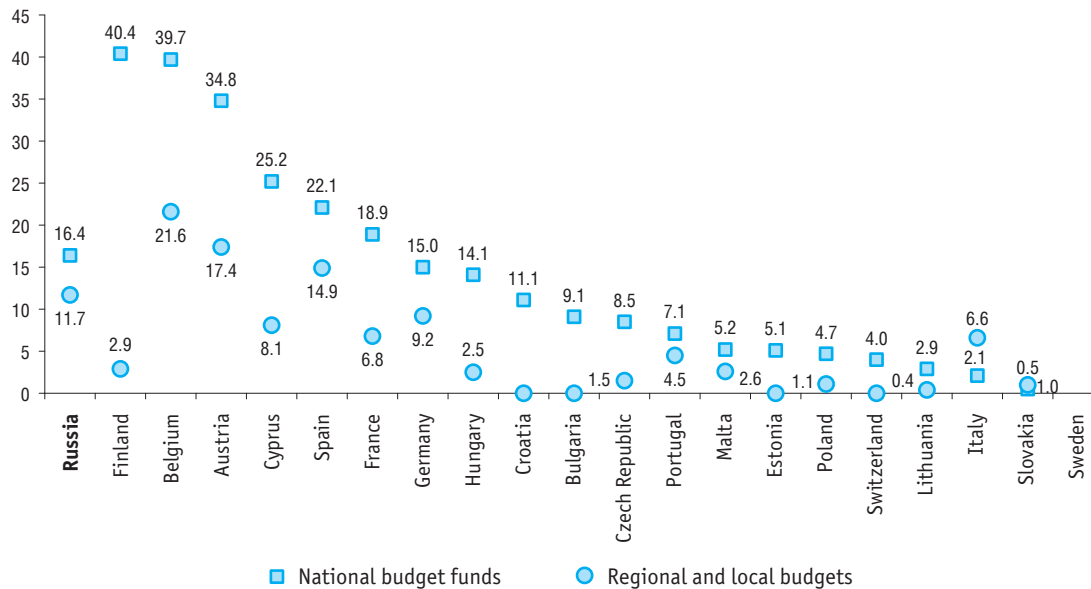
Source: Eurostat.

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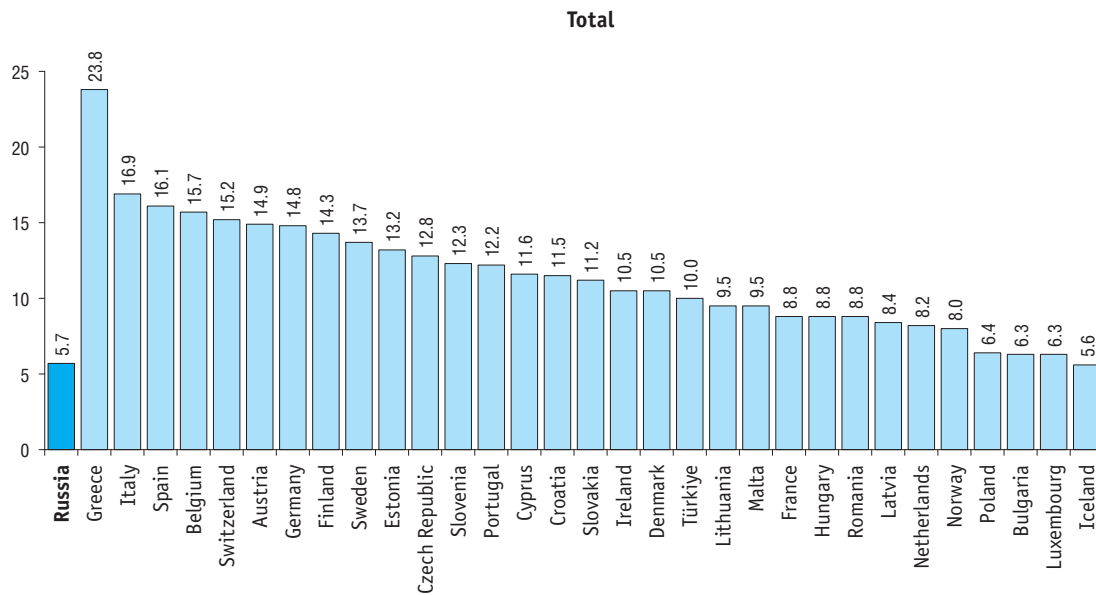


(continued)

Telecommunications; computer programming, consultancy and related activities; IT industry



10.5. INNOVATIVE GOODS AND SERVICES AS A PERCENTAGE OF TOTAL SALES: 2020*

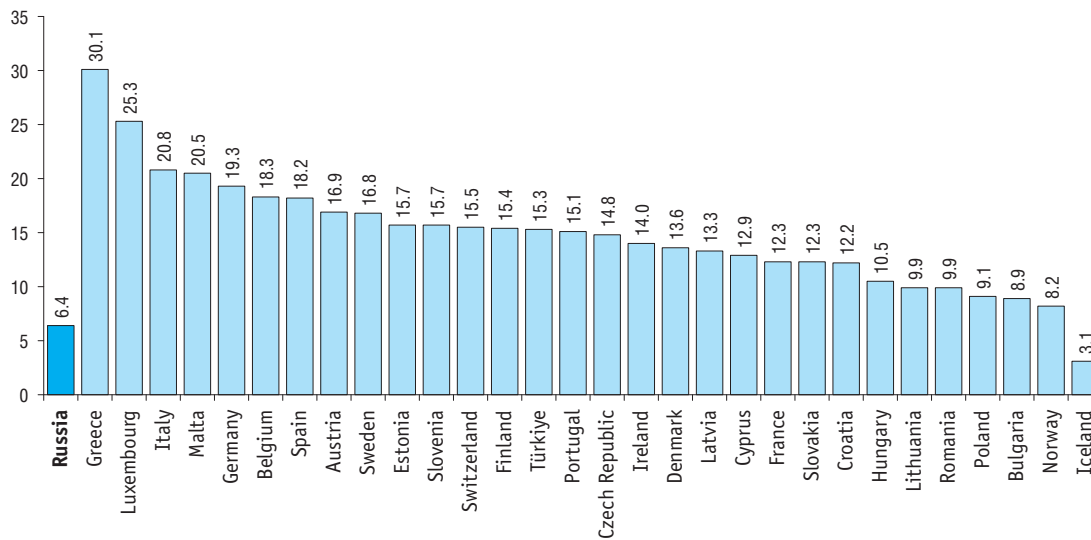


* The data for EU countries, Iceland, Norway, Switzerland, and Türkiye are based on the European Innovation Survey (2016–2018).

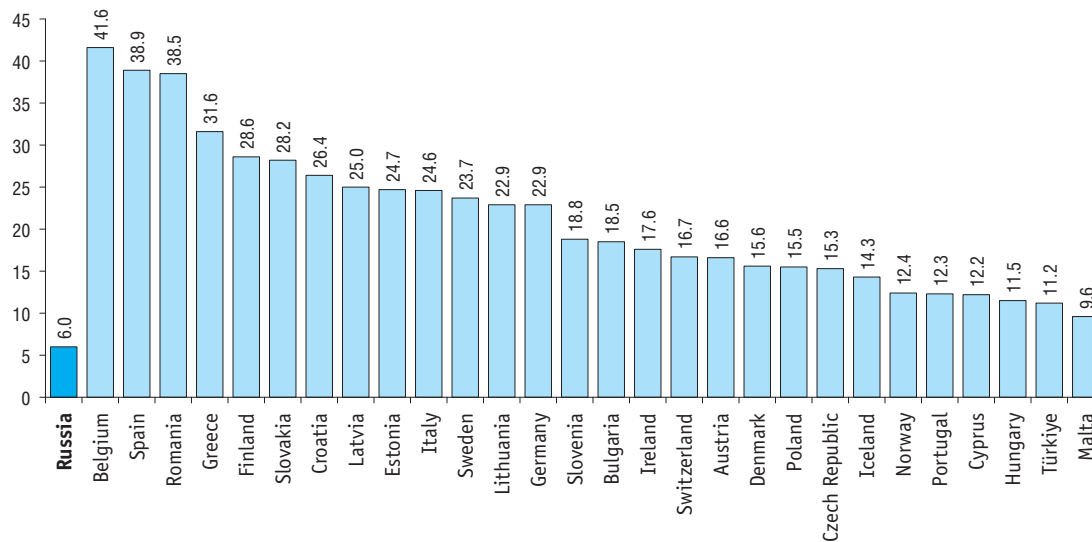
Source: Eurostat.

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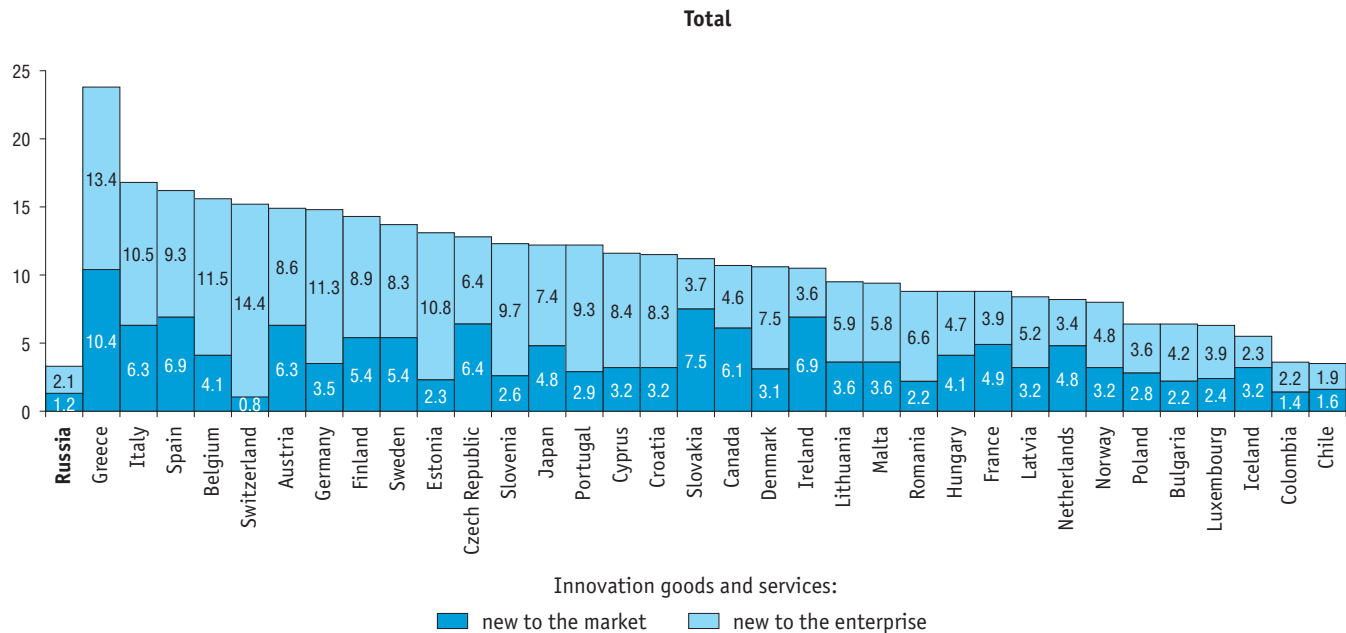
Industrial production



(continued)

**Telecommunications; computer programming,
consultancy and related activities; IT industry**

10.6. NEW OR TECHNOLOGICALLY NEW INNOVATIVE GOODS AND SERVICES BY DEGREE OF NOVELTY AS A PERCENTAGE OF TOTAL SALES: 2020*

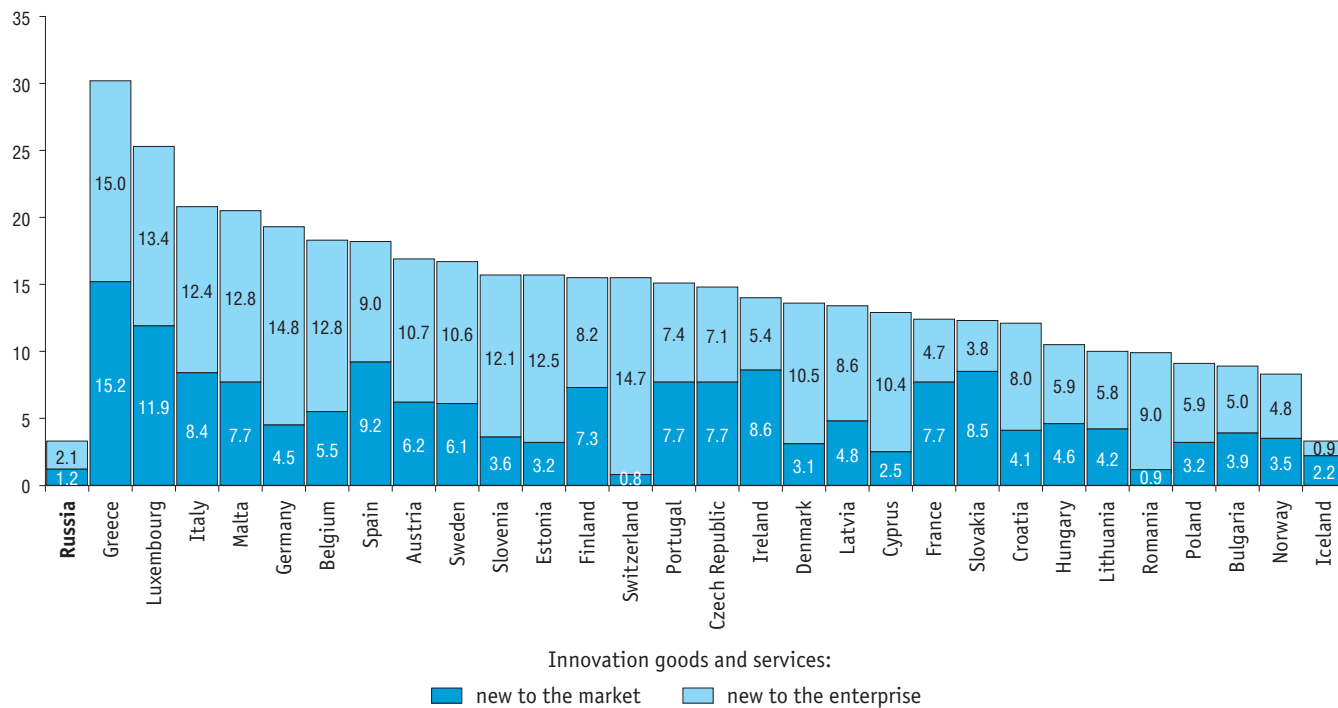


* The data for EU countries, Iceland, Norway, and Switzerland are based on the European Innovation Survey (2016–2018). For other countries: Canada (2015–2017), Chile (2015–2016), Colombia (2015–2016, manufacturing), and Japan (2015–2017).

Sources: Eurostat; materials of national statistical services.

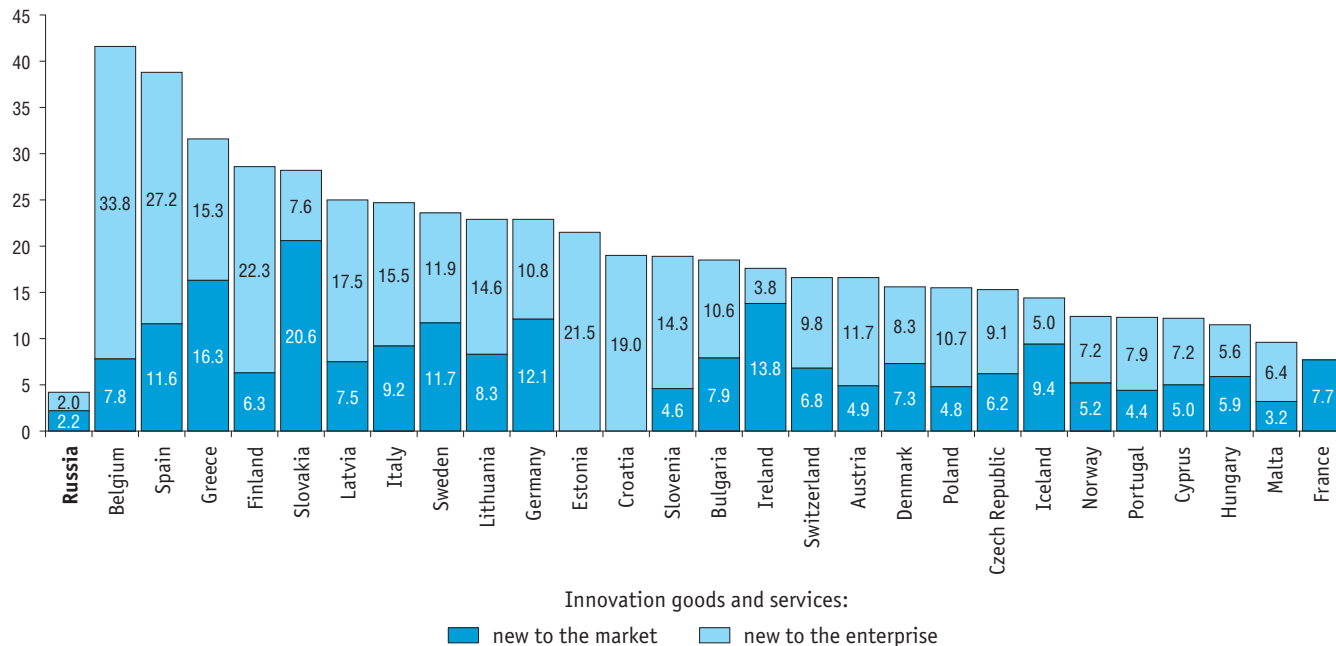
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Industrial production



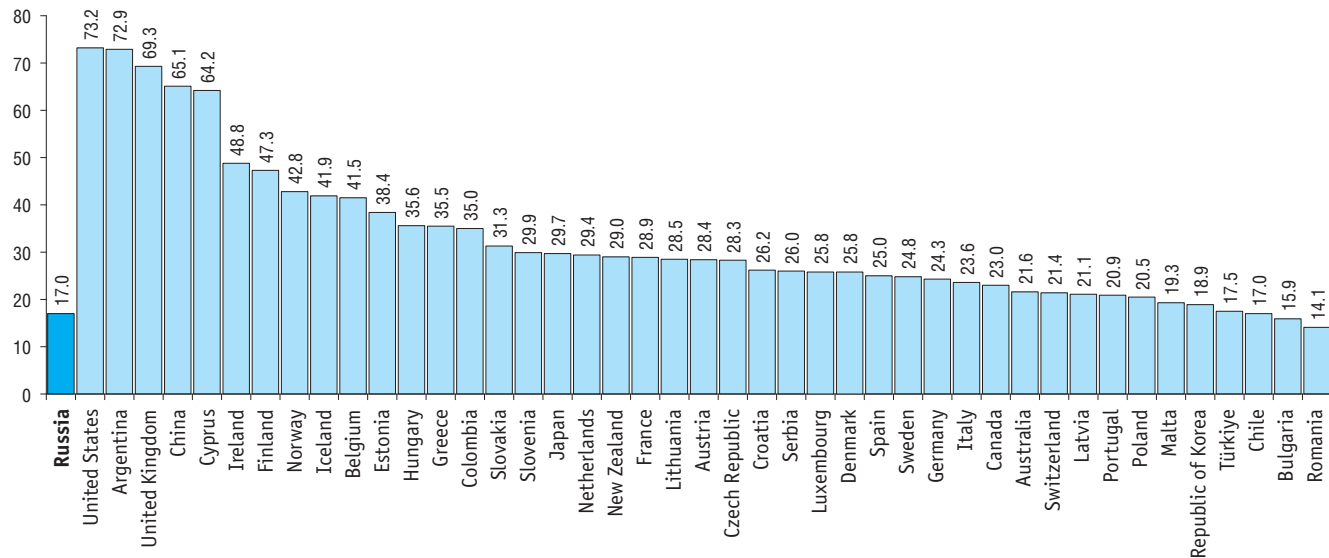
(continued)

Telecommunications; computer programming, consultancy and related activities; IT industry



10.7. ENTERPRISES THAT ENGAGED IN JOINT R&D PROJECTS AS A PERCENTAGE OF THE TOTAL NUMBER OF ENTERPRISES THAT ENGAGED IN INNOVATIVE ACTIVITY: 2020*

Total

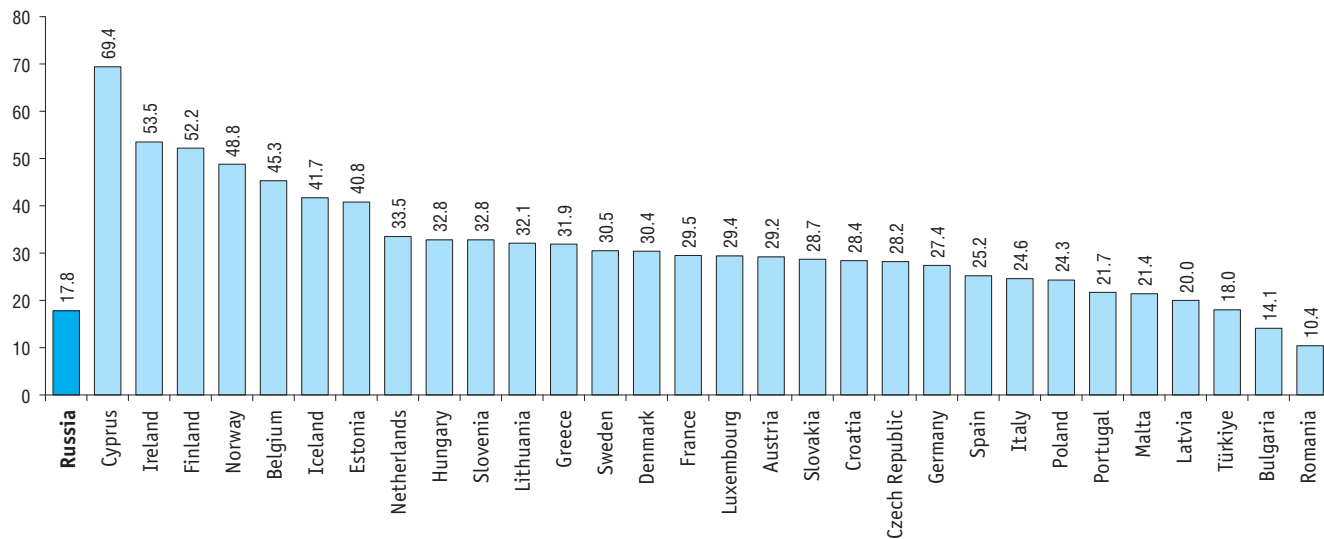


* For all countries other than Russia, the data refer to participation of enterprises in joint R&D projects and other types of innovative activities. The data for EU countries, Iceland, Norway, and Türkiye are based on the European Innovation Survey (2016–2018). The data for Serbia, Switzerland, and the United Kingdom are based on the European Innovation Survey (2014–2016). For other countries: Argentina (2014–2016, manufacturing), Australia (2016–2017), Canada (2015–2017), Chile (2015–2016), China (2014–2016), Colombia (2015–2016, manufacturing), Japan (2015–2017), New Zealand (2015–2017), Republic of Korea (2015–2017), and United States (2015–2017).

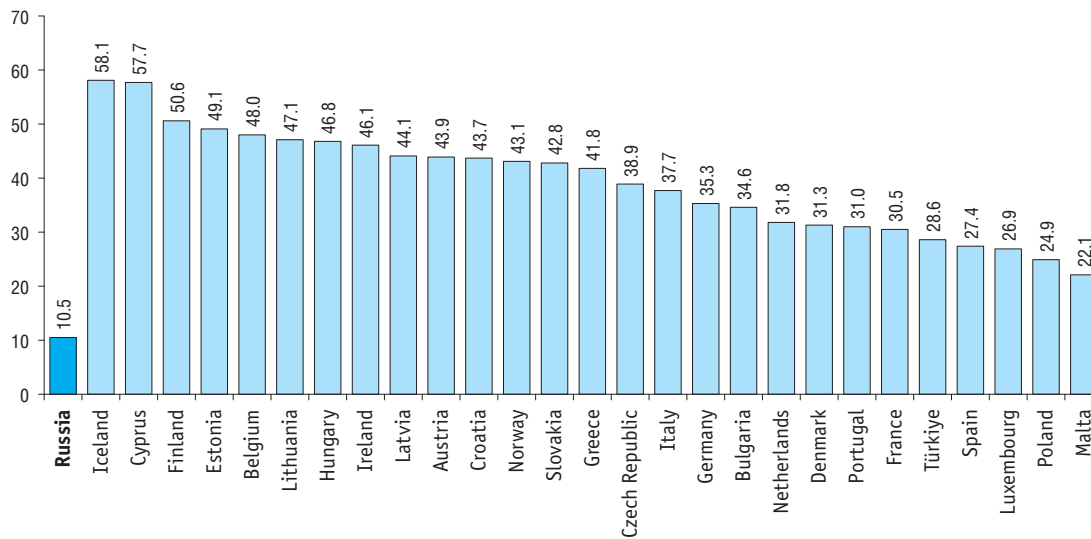
Sources: Eurostat; materials of national statistical services.

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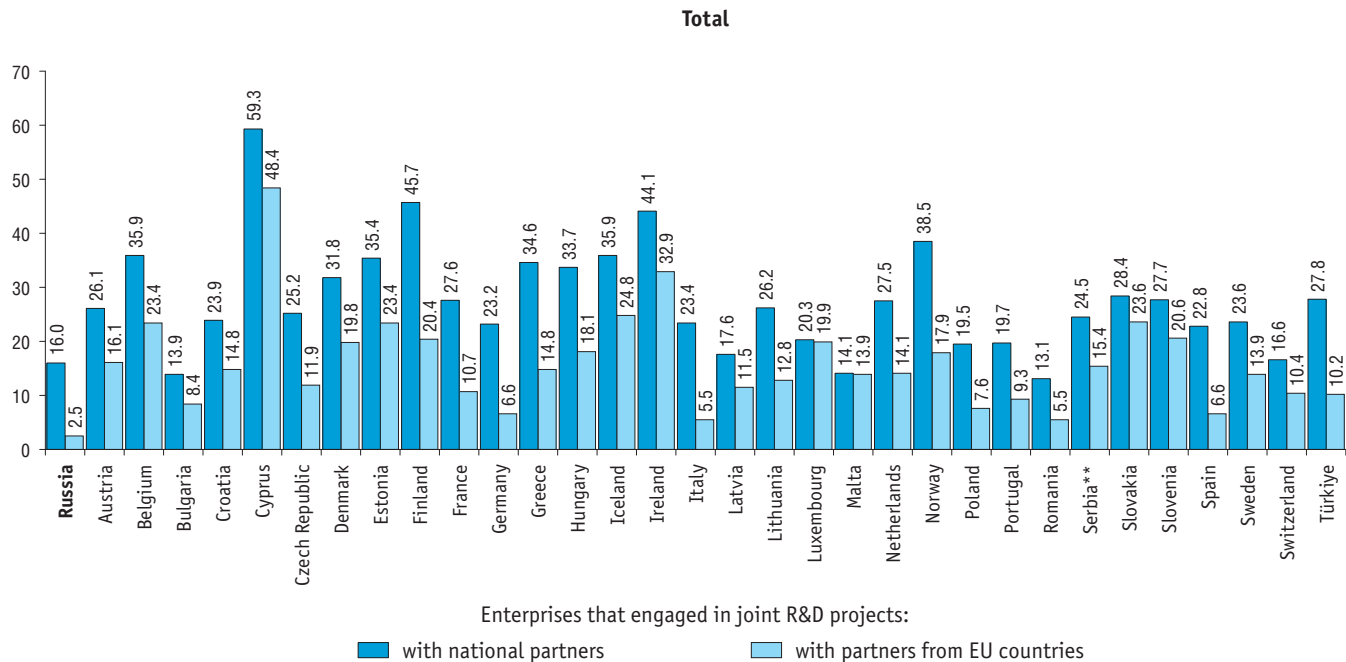
Industrial production



(continued)

**Telecommunications; computer programming,
consultancy and related activities; IT industry**

10.8. ENTERPRISES THAT ENGAGED IN JOINT R&D PROJECTS AS A PERCENTAGE OF THE TOTAL NUMBER OF ENTERPRISES THAT ENGAGED IN INNOVATIVE ACTIVITIES BY PARTNER COUNTRY: 2020*



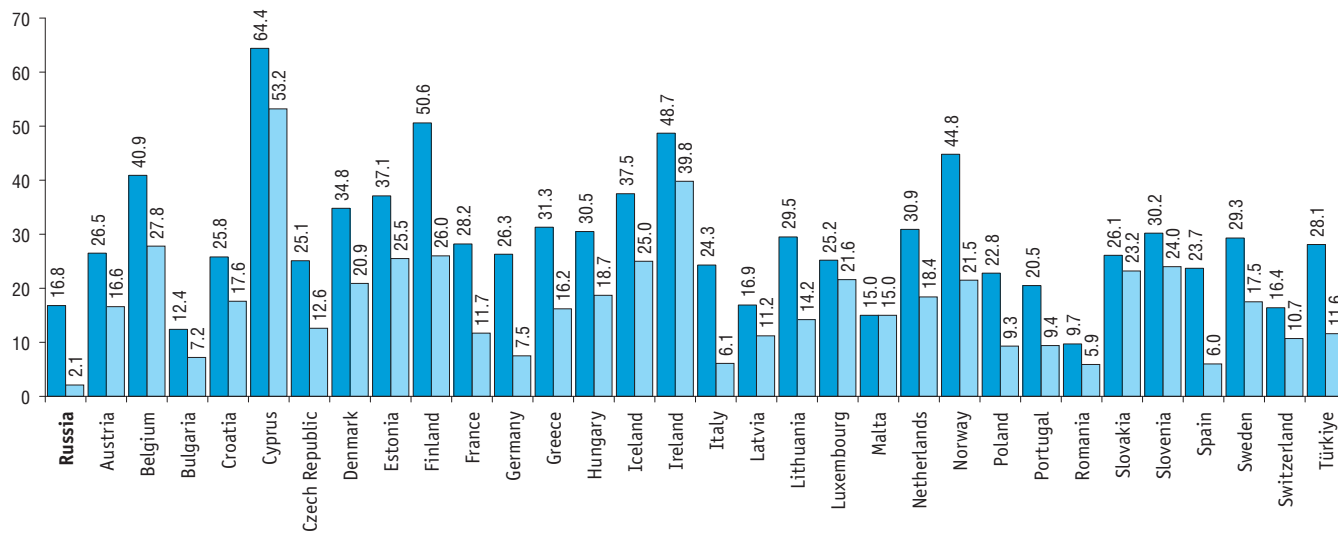
* The data for EU countries, Iceland, Norway, and Türkiye are based on the European Innovation Survey (2016–2018).

** The data for Serbia and Switzerland are based on the European Innovation Survey (2014–2016).

Source: Eurostat.

(continued)

Industrial production



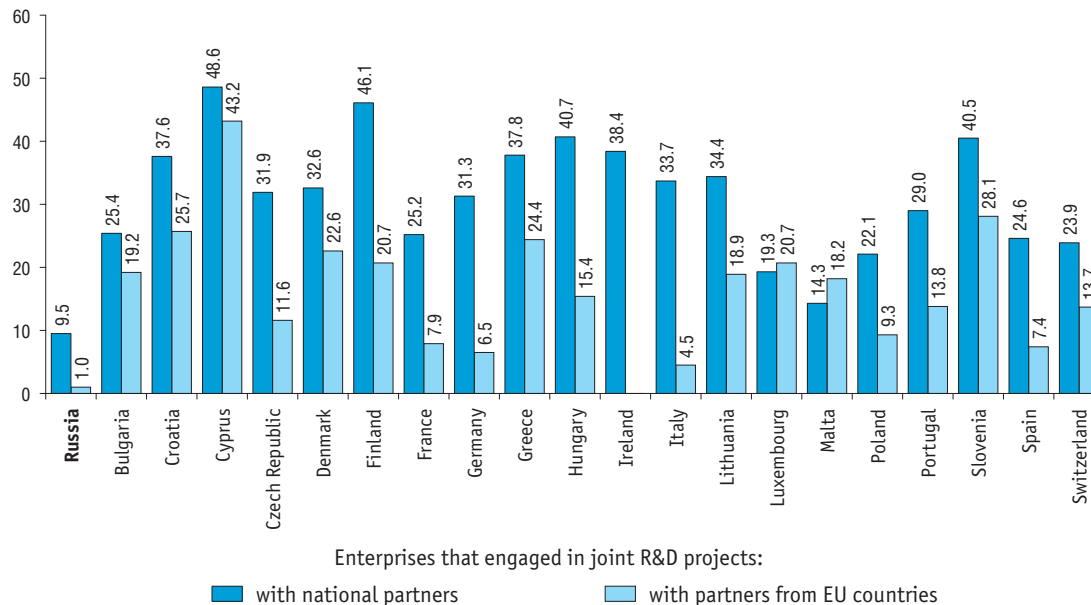
Enterprises that engaged in joint R&D projects:

■ with national partners

■ with partners from EU countries

(continued)

Telecommunications; computer programming, consultancy and related activities; IT industry



**10.9. PERCENTAGE DISTRIBUTION OF ENTERPRISES THAT ENGAGED IN INNOVATION ACTIVITY
AND JOINT R&D PROJECTS BY PARTNER: 2020***

	Enterprises within a single network	Consumers of goods and services	Suppliers of equipment, materials, components, software	Competitors in the industry	Consulting and IT services providers	Research institutes	Higher education institutions
Total							
Russia	36.3	34.3	30.8	7.1	11.3	49.0	29.8
Austria	46.7	33.9	49.3	13.9	55.1	26.0	60.8
Belgium	50.6	28.5	60.2	13.0	54.8	22.4	38.4
Bulgaria	23.6	46.7	66.2	16.2	37.4	15.5	28.8
Croatia	37.2	52.4	76.3	18.5	54.5	18.8	34.0
Cyprus	20.8	34.4	96.1	7.6	43.4	5.6	8.3
Czech Republic	36.2	32.3	55.6	4.5	29.8	14.3	38.8
Estonia	32.3	12.4	55.9	7.1	31.0	9.1	40.1
Finland	41.1	47.7	58.2	15.9	62.2	29.3	50.4
France	44.9	40.8	58.9	11.6	53.0	19.6	39.1
Germany	32.5	27.6	37.9	28.4	31.6	29.5	62.8
Greece	11.3	55.0	87.7	16.8	71.4	19.6	34.1
Hungary	27.5	51.4	71.6	19.0	47.4	10.1	29.6
Iceland	50.2	54.6	56.0	14.0	47.3	22.7	21.7
Ireland	54.6	65.3	80.3	39.9	77.0	46.3	51.3
Italy	24.4	38.9	63.4	13.0	73.1	17.8	33.6
Latvia	37.7	43.5	61.4	20.4	38.9	11.2	32.2
Lithuania	25.8	45.4	55.6	19.7	49.8	18.9	28.0
Luxembourg	58.7	37.8	65.7	17.7	56.3	24.0	29.5
Malta	43.8	47.9	69.8	16.7	49.0	14.6	26.0

(continued)

	Enterprises within a single network	Consumers of goods and services	Suppliers of equipment, materials, components, software	Competitors in the industry	Consulting and IT services providers	Research institutes	Higher education institutions
Netherlands	50.3	22.7	68.1	27.4	52.8	20.9	34.6
Norway	39.8	31.4	45.1	12.9	40.8	20.0	19.3
Poland	43.6	36.7	49.9	14.3	45.8	29.6	48.6
Portugal	35.4	42.2	60.4	12.1	51.9	20.3	50.3
Romania	20.1	40.0	77.7	16.4	26.1	13.5	24.8
Slovakia	42.7	58.3	75.5	25.6	37.4	10.1	33.0
Slovenia	46.7	63.9	81.4	–	62.0	38.5	53.7
Spain	27.6	20.3	39.2	9.4	38.8	19.2	28.4
Sweden	60.7	99.2	96.9	19.1	71.8	29.6	50.4
Industrial production							
Russia	40.3	27.2	35.5	5.4	11.4	43.8	26.6
Austria	51.1	33.5	56.5	10.5	57.9	26.7	66.4
Belgium	49.8	29.6	66.1	11.3	57.8	25.4	47.0
Bulgaria	18.3	44.7	65.3	15.6	37.9	14.3	27.1
Croatia	30.7	54.0	81.2	21.9	56.5	18.3	36.7
Cyprus	12.3	30.6	97.5	10.2	50.9	5.6	11.7
Czech Republic	34.6	36.5	51.4	3.3	34.4	15.5	47.0
Estonia	27.2	13.3	56.0	5.5	31.4	10.5	47.6
Finland	43.9	48.8	66.5	16.6	69.8	38.5	60.5
France	43.3	39.8	61.3	10.7	60.5	17.2	41.7
Germany	31.5	25.8	42.8	19.1	33.1	29.2	66.1
Greece	11.5	56.1	86.7	17.4	68.5	21.3	39.4
Hungary	27.0	52.1	74.8	16.8	51.5	9.6	33.6
Iceland	46.2	54.9	56.0	17.6	49.5	36.3	29.7

(continued)

	Enterprises within a single network	Consumers of goods and services	Suppliers of equipment, materials, components, software	Competitors in the industry	Consulting and IT services providers	Research institutes	Higher education institutions
Ireland	53.4	63.7	84.4	39.3	80.9	49.9	55.4
Italy	23.1	42.6	65.3	13.6	72.7	18.3	34.7
Latvia	32.2	36.8	57.9	17.8	42.1	12.5	42.8
Lithuania	22.0	51.1	59.4	18.5	49.2	19.2	27.0
Luxembourg	55.0	40.0	65.0	18.3	68.3	61.7	48.3
Malta	40.0	56.7	80.0	13.3	46.7	16.7	30.0
Netherlands	57.1	24.4	71.4	25.4	52.8	22.4	40.0
Norway	36.3	32.1	48.2	14.8	46.2	27.3	22.4
Poland	42.5	36.5	48.7	14.1	44.9	34.5	48.6
Portugal	31.4	42.6	59.2	11.5	52.3	21.7	54.4
Romania	25.6	61.3	74.8	18.9	37.0	11.8	26.9
Slovakia	47.5	61.7	76.1	22.9	38.5	7.8	32.9
Slovenia	–	–	82.4	15.7	–	–	–
Spain	27.9	19.4	39.3	7.2	43.2	18.6	28.9
Sweden	64.4	98.9	98.1	17.4	76.3	30.4	–
Telecommunications; computer programming, consultancy and related activities; IT industry							
Russia	46.2	45.2	26.9	5.8	18.3	10.6	13.5
Austria	45.1	40.2	36.2	13.4	53.0	27.6	68.5
Belgium	55.5	33.0	40.1	16.1	55.0	21.8	40.8
Bulgaria	36.8	50.8	67.4	–	37.8	–	29.5
Croatia	47.3	78.0	73.3	–	50.7	19.3	34.0
Cyprus	37.5	62.5	90.6	7.8	40.6	6.3	20.3
Czech Republic	35.9	32.6	50.3	12.2	8.3	6.9	33.1
Estonia	27.4	14.2	53.8	12.3	38.7	5.7	38.7

(continued)

	Enterprises within a single network	Consumers of goods and services	Suppliers of equipment, materials, components, software	Competitors in the industry	Consulting and IT services providers	Research institutes	Higher education institutions
Finland	46.4	48.9	46.4	15.3	51.6	20.5	45.9
France	43.4	43.0	34.7	15.2	33.3	24.4	36.1
Germany	29.9	35.1	36.1	34.6	24.8	34.9	62.1
Greece	–	64.6	70.1	25.9	74.1	36.7	–
Hungary	17.9	55.3	60.3	17.2	33.2	12.6	28.6
Iceland	60.5	69.8	55.8	14.0	39.5	14.0	14.0
Ireland	52.0	70.4	71.2	35.2	71.2	48.8	54.4
Italy	28.7	29.9	41.0	11.3	60.8	17.8	35.2
Latvia	42.9	65.1	65.1	39.7	36.5	9.5	23.8
Lithuania	40.0	49.6	49.6	27.8	51.3	14.8	29.6
Luxembourg	71.8	53.8	74.4	23.1	61.5	12.8	17.9
Malta	52.9	41.2	64.7	17.6	41.2	17.6	52.9
Netherlands	49.6	26.6	60.7	34.2	50.2	19.7	26.4
Norway	38.7	35.2	35.2	9.3	40.1	14.0	15.4
Poland	52.3	37.5	46.1	13.3	33.6	14.1	48.4
Portugal	43.1	46.4	56.9	12.4	38.6	17.6	41.8
Slovakia	47.2	53.9	70.8	21.3	41.6	16.9	53.9
Spain	23.8	30.5	29.3	13.8	30.5	21.2	34.5

* The data for EU countries, Iceland, and Norway are based on the European Innovation Survey (2016–2018).

Source: Eurostat.

10.10. ENTERPRISES INDICATING THE FOLLOWING FACTORS HINDERING THEIR INNOVATIVE ACTIVITIES AS MAIN: 2018–2020* (as a percentage of all enterprises)

	Lack of own funds	High cost of introducing innovations	Lack of financial support from the government	Extremely competitive market	Lack of qualified personnel	Inconsistency with enterprise's priorities	Lack of loans or direct investment	Underdeveloped cooperation links
Russia	10.6	8.1	6.7	5.0	4.7	4.4	3.7	2.1
Austria	10.1	14.3	11.5	12.6	20.1	18.6	5.0	4.5
Bulgaria	12.1	19.3	13.5	13.4	14.1	5.4	7.4	7.0
Croatia	22.7	26.6	17.3	15.4	17.5	18.7	14.6	9.2
Cyprus	28.1	33.7	33.3	36.7	18.3	38.7	18.5	6.0
Czech Republic	15.6	–	–	–	13.8	–	11.1	7.6
Denmark	30.2	24.6	23.2	27.1	28.7	22.4	32.4	37.2
Estonia	18.6	29.1	14.4	24.3	30.1	6.5	9.9	4.3
Finland	6.7	6.1	3.9	5.8	7.2	6.8	3.8	1.8
France	18.6	19.9	16.9	14.8	21.2	21.5	14.7	9.4
Greece	29.9	28.5	29.3	25.1	15.5	16.9	25.8	11.9
Hungary	12.3	18.3	13.0	10.8	17.0	5.9	6.9	3.5
Ireland	13.6	12.8	9.4	8.2	11.6	17.0	7.2	4.1
Italy	13.0	14.7	11.1	18.4	8.8	10.5	9.3	5.0
Latvia	20.9	25.2	15.9	16.8	10.5	17.8	11.6	6.1
Lithuania	19.7	15.7	8.7	15.2	15.0	3.5	9.2	6.8
Luxembourg	9.4	12.1	6.2	11.8	12.6	22.5	4.4	5.1
Malta	7.2	8.9	4.8	12.0	13.8	11.1	3.6	2.7
Poland	8.6	13.2	9.1	9.2	11.8	2.9	6.2	4.7
Portugal	12.6	21.8	11.8	21.5	11.8	13.2	8.4	6.9
Romania	16.6	23.2	13.0	14.3	15.3	13.4	13.2	9.9
Slovakia	24.6	26.3	22.5	19.0	17.3	10.4	10.9	7.4
Slovenia	11.1	15.1	12.6	13.6	14.4	7.7	7.0	5.7

(continued)

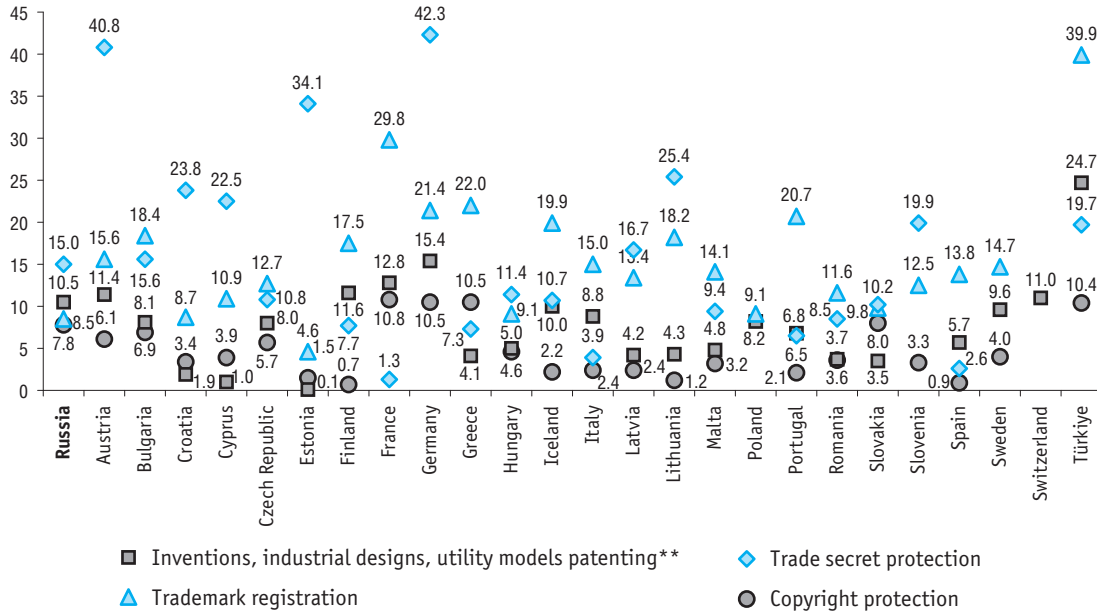
	Lack of own funds	High cost of introducing innovations	Lack of financial support from the government	Extremely competitive market	Lack of qualified personnel	Inconsistency with enterprise's priorities	Lack of loans or direct investment	Underdeveloped cooperation links
Spain	16.9	27.8	20.5	20.9	15.5	40.4	14.6	9.7
Sweden	6.1	6.4	5.2	3.4	3.9	9.6	5.3	1.5
Switzerland	10	18.6	–	–	20.4	–	7.9	–
Türkiye	30.8	56.5	29.5	36.1	23.5	18.1	27.6	16.2

* The data for EU countries, Switzerland, and Türkiye are based on the European Innovation Survey (2016–2018).

Source: Eurostat.

10.11. ENTERPRISES INDICATING THE FOLLOWING INVENTIONS AND R&D RESULTS PROTECTION METHODS AS MAIN: 2020*

(as a percentage of all enterprises that engaged in innovative activities)



* The data for EU countries, Iceland, Norway, Switzerland, and Türkiye are based on the European Innovation Survey (2016–2018).

** The data for EU countries, Iceland, Norway, Switzerland, and Türkiye refer to the number of enterprises that have been patenting inventions.

Source: Eurostat.

TECHNICAL NOTES

Innovation activity describes the involvement degree of enterprises (organisations) in general or specific innovative activity during a given period of time. **Innovation activity of enterprises** is calculated as a ratio of the number of innovation-active enterprises to the total number of surveyed enterprises in the reporting year. The methodology for calculating the indicator was approved by Rosstat Order no. 818 of December 27, 2019. Any changes in 2017 data are due to the recalculation of the indicator according to the specified method.

Innovative activity includes all developmental (R&D), financial or commercial activity related to creation of technologically new or significantly improved goods or services that have been introduced on the market and differ significantly from the previously produced goods and services; or technologically new or significantly improved business processes that differ significantly from the previously used business processes.

The following main **types of innovative activity** are distinguished in statistics:

- research and development of new goods, services, and methods of their production (transfer), new manufacturing processes;
- purchase of machinery, equipment, and other fixed assets related to innovative activities;

- marketing and brand creation (implementation of new or significantly improved marketing methods, methods of maintaining and developing the brand);
- education and training of personnel related to innovative activities;
- design (activity of developing a new or modified shape, appearance, or usability of goods or services);
- engineering, including pre-FEED and FEED, project development and design studies of technological items and solutions at the innovation implementation stage, post-project services during installation, commissioning and start-up work, other engineering (not related to scientific R&D) of new goods, services, and methods of their production (transfer), new manufacturing processes;
- development and purchase of computer programmes and databases related to innovative activities;
- acquisition of patent rights (alienation), licenses, industrial designs, utility models, selection achievements, integrated circuit designs, etc.; patenting (registration) of the results of intellectual activity;
- planning, development, and implementation of new business methods, organisation of workplaces and networking.

Innovative goods and services are products (goods and services) that are new or have undergone technological (and/or biological for agricultural enterprises) modification in the last three years (including the reporting period). According to the degree of novelty, there are two types of innovative goods and services – those newly introduced (or those that have undergone substantial technological changes) and those significantly improved.

New or technologically new goods and services are goods and services based on new (including fundamentally new) technologies or on a combination of new technologies with existing ones. For these products, the scope of application (use), operational characteristics, features, design, as well as the composition of the materials and components used, have to be new or significantly different in comparison with those in previously manufactured products.

Significantly improved goods and services are based on the introduction of new or significantly improved manufacturing methods, including methods of product transfer involving the use of new production equipment and/or software, new production technologies, new production processes, or their combination.

Classification of innovative goods and services according to the degree of their novelty is also performed from market positions. The following innovative goods and services are distinguished according to the type of novelty for the market: new to the world market, new to the sales market of the enterprise, as well as innovative goods and services, new to the enterprise, but not new to the market.

Innovation expenditure is the actual expenditure in monetary form, connected with the implementation of different or all types of innovative activities (research and development, acquisition of machinery and equipment, engineering, etc.) performed within the enterprise. Innovation expenditure includes current expenditure and capital expenditure. At the same time, the stage of the innovation process does not matter, whether at the final stage, when the equipment is already commissioned and mastered in operation, i.e., production is organised and goods (works or services) are produced, or at the initial or intermediate stage, for example, when new equipment is still being installed or only ready for operation, but has not been put into work, has not been tested or used in the production of goods (works or services).

The surveyed **types of economic activity**. Information on innovation activity is provided both in general for the surveyed set of enterprises (legal entities, excluding small enterprises), and for individual types of economic activity:

- industrial production (including mining and quarrying; manufacturing; electricity, gas, steam and air conditioning supply (excluding trade of electricity; trade of gas through mains, steam and air conditioning supply (thermal energy)); water supply; sewerage, waste management and remediation activities);
- services sector activities (including transportation and storage; human health and social work activities; publishing activities; telecommunications; computer programming, consultancy and related activities; information technology activities;

legal and accounting activities; activities of head offices; management consultancy activities; architectural and engineering activities; technical testing and analysis; scientific research and development; advertising and market research; other professional, scientific and technical activities);

- agriculture (including the growing of non-perennial crops; growing of perennial crops; plant propagation; animal production; mixed farming; support activities to agriculture and post-harvest crop activities);
- construction

Product innovation is a new or improved good or service that differs significantly from the previous goods or services and that has been introduced on the market.

Business process innovation is a new or improved business process that differs significantly from the previous business processes and that has been brought into use.

Business process innovations include:

- new or improved methods for producing goods or providing services (including methods and development of agricultural goods or services);
- new or improved logistics, delivery, or distribution methods; of raw materials, components, goods and services;
- new or improved methods of processing and transmitting information, that are common to the enterprise;

- new or improved methods of doing business, corporate governance, accounting and financial accounting;
- new or improved business relations and external relations practices;
- new or improved methods of human resource management;
- new or improved marketing methods for promoting, presenting, and pricing products.

The Oslo Manual is the main methodological principles for the statistical measurement of innovation activity prepared by the OECD and Eurostat and recognised as an international standard in the field of innovation statistics. The latest, fourth edition of the Oslo Manual (Oslo Manual: Guidelines for collecting, reporting and using data on innovation), published in 2018, is used as a basis for updating the national programme and tools of the federal statistical monitoring of innovation activity of enterprises.

Technological innovation is a new or significantly improved good or service introduced to the market, a new or improved business process or method of production (transfer) of services used in practice.

Technological exchange is the number of new technologies or individual technical achievements acquired (transferred) by the enterprise within one year. It covers transactions on the acquisition and transfer of scientific and technical knowledge and expertise for the provision of scientific and technical services, the application of technological processes, the production of goods and services either on a

non-contractual basis or on the terms defined by the contract concluded between the parties.

Environmental innovation is a new or significantly improved good, service, or method of their production (transfer), a new or sig-

nificantly improved business process or a combination of them that improve environmental safety and management or prevent negative impacts on the environment.

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Data Book

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