Global Innovation Index 2022

BELARUS

77th Belarus ranks 77th among the 132 economies featured in the GII 2022.

The Global Innovation Index (GII) ranks world economies according to their innovation capabilities. Consisting of roughly 80 indicators, grouped into innovation inputs and outputs, the GII aims to capture the multi-dimensional facets of innovation.

The following table shows the rankings of Belarus over the past three years, noting that data availability and changes to the GII model framework influence year-on-year comparisons of the GII rankings. The statistical confidence interval for the ranking of Belarus in the GII 2022 is between ranks 56 and 79.

Rankings for Belarus (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	64	67	61
2021	62	68	62
2022	77	86	63

- Belarus performs better in innovation outputs than innovation inputs in 2022.
- This year Belarus ranks 86th in innovation inputs, lower than both 2021 and 2020.
- As for innovation outputs, Belarus ranks 63rd. This position is lower than both 2021 and 2020.

23rd Belarus ranks 23rd among the 36 upper-middle-income group economies.

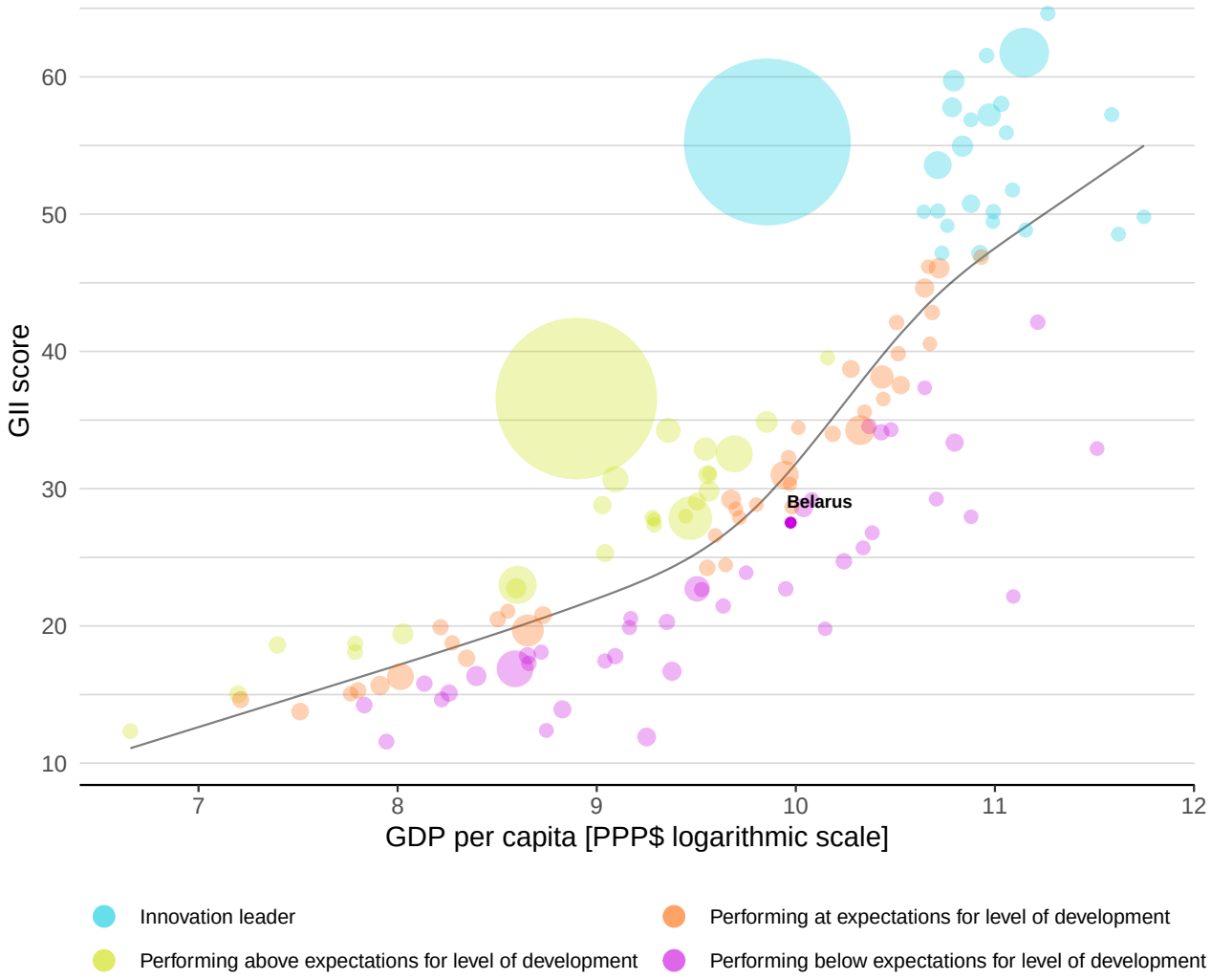
38th Belarus ranks 38th among the 39 economies in Europe.

EXPECTED VS. OBSERVED INNOVATION PERFORMANCE

The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected and those below are performing below expectations.

Relative to GDP, Belarus's performance is below expectations for its level of development.

The positive relationship between innovation and development

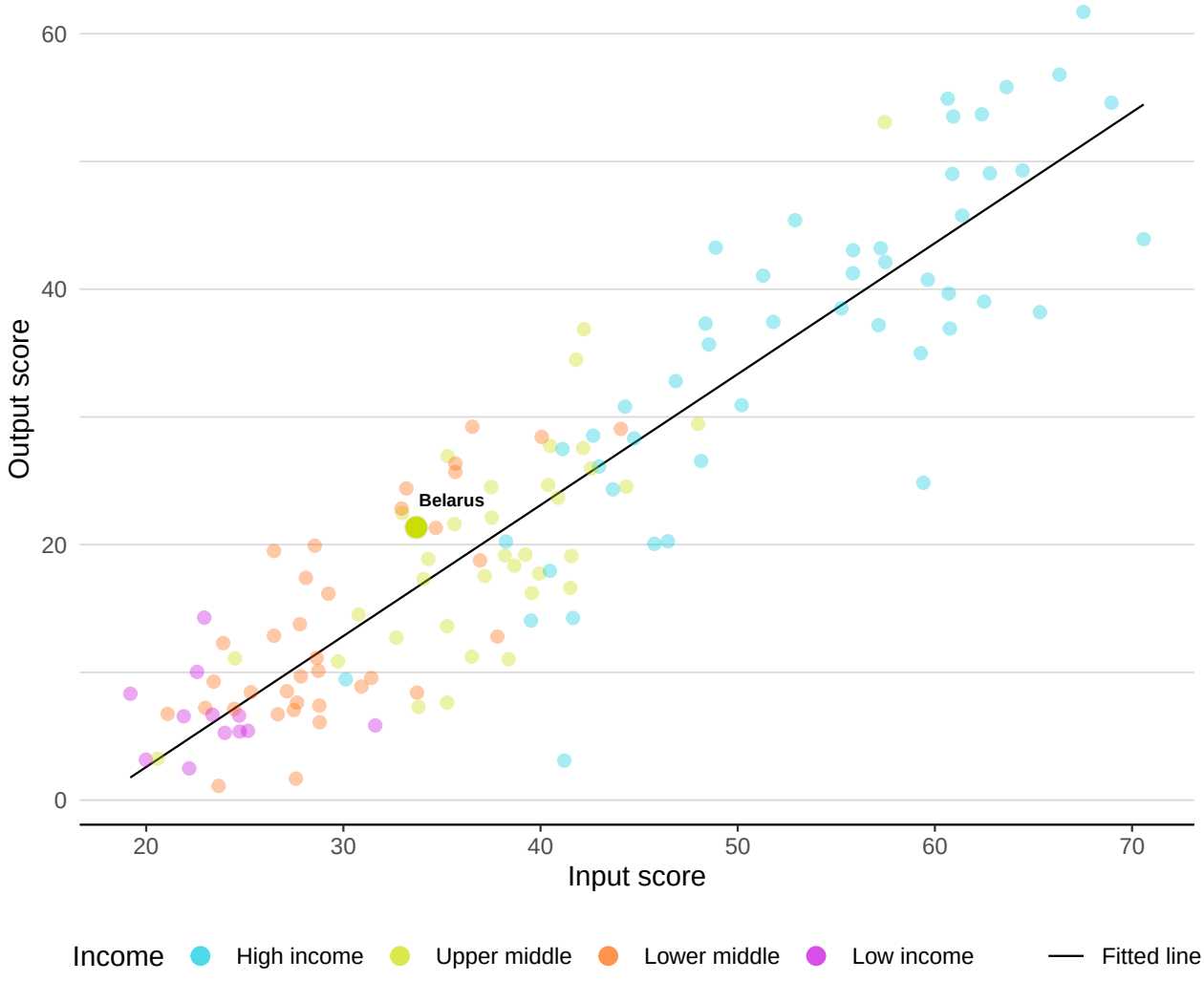


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

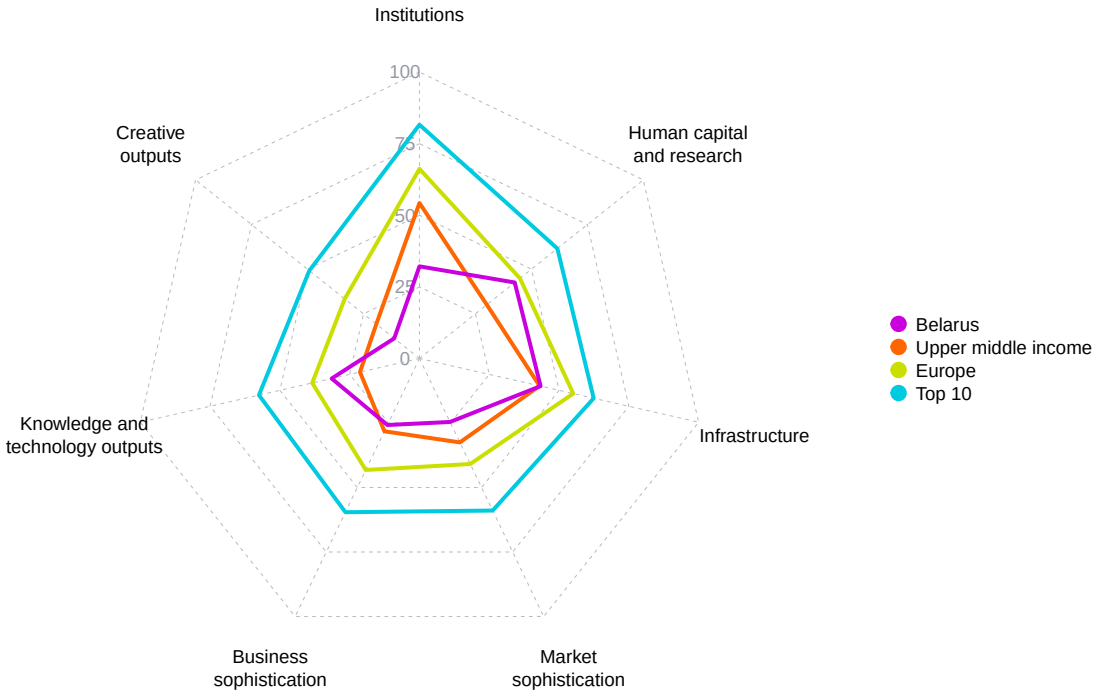
Belarus produces more innovation outputs relative to its level of innovation investments.

Innovation input to output performance



BENCHMARKING AGAINST OTHER UPPER MIDDLE-INCOME GROUP ECONOMIES AND EUROPE

The seven GII pillar scores for Belarus



Upper-middle-income group economies

Belarus performs above the upper-middle-income group average in three pillars, namely: Human capital and research; Infrastructure; and, Knowledge and technology outputs.

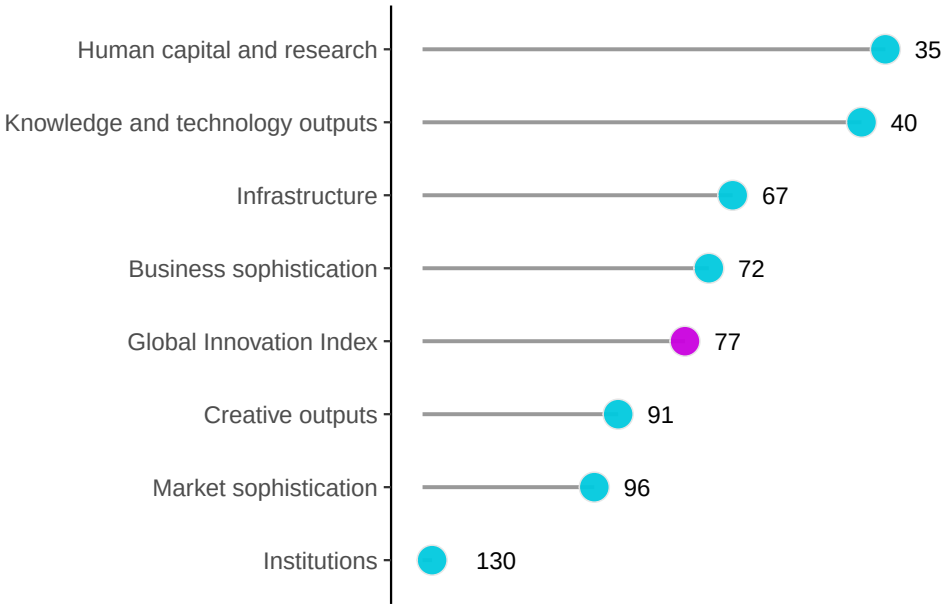
Europe

Belarus performs below the regional average in all GII pillars.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Belarus performs best in Human capital and research and its weakest performance is in Institutions.

The seven GII pillar ranks for Belarus



Note: The highest possible ranking in each pillar is 1.

The full WIPO Intellectual Property Statistics profile for Belarus can be found at:

https://www.wipo.int/ipstats/en/statistics/country_profile/profile.jsp?code=BY.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the indicator strengths and weaknesses of Belarus in the GII 2022.

Strengths and weaknesses for Belarus

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
2.1.2	Government funding/pupil, secondary, % GDP/cap	6	1.1.2	Government effectiveness	113
2.1.5	Pupil-teacher ratio, secondary	22	1.2.2	Rule of law	120
2.2.1	Tertiary enrolment, % gross	14	1.3.2	Entrepreneurship policies and culture	73
2.2.2	Graduates in science and engineering, %	8	2.3.3	Global corporate R&D investors, top 3, mn USD	38
3.1.2	ICT use	27	4.1.1	Finance for startups and scaleups	69
5.1.1	Knowledge-intensive employment, %	30	4.1.3	Loans from microfinance institutions, % GDP	55
6.1.3	Utility models by origin/bn PPP$ GDP	16	4.2.1	Market capitalization, % GDP	80
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3	4.2.2	Venture capital investors, deals/bn PPP$ GDP	89
6.3.4	ICT services exports, % total trade	10	6.2.3	Software spending, % GDP	104
7.3.4	Mobile app creation/bn PPP$ GDP	2	7.1.3	Global brand value, top 5,000, % GDP	77

GII 2022 rank

Belarus

77

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
63	86	Upper middle	EUR	9.4	200.7	21,467

		Score/ Value	Rank	
Institutions		**32.2**	**130**	○ ◇
1.1	**Political environment**	47.0	105	◇
1.1.1	Political and operational stability*	60.0	97	
1.1.2	Government effectiveness*	34.0	113	○ ◇
1.2	**Regulatory environment**	48.7	110	◇
1.2.1	Regulatory quality*	28.7	107	◇
1.2.2	Rule of law*	20.2	120	○ ◇
1.2.3	Cost of redundancy dismissal	21.7	95	
1.3	**Business environment**	0.8	[130]	
1.3.1	Policies for doing business†	n/a	n/a	
1.3.2	Entrepreneurship policies and culture*	0.8	73	○ ◇
Human capital and research		**42.6**	**35**	◆
2.1	**Education**	64.1	16	● ◆
2.1.1	Expenditure on education, % GDP	5.0	41	
2.1.2	Government funding/pupil, secondary, % GDP/cap	35.7	6	● ◆
2.1.3	School life expectancy, years	15.2	47	
2.1.4	PISA scales in reading, maths and science	472.3	36	◆
2.1.5	Pupil-teacher ratio, secondary	9.3	22	●
2.2	**Tertiary education**	53.6	8	● ◆
2.2.1	Tertiary enrolment, % gross	86.6	14	● ◆
2.2.2	Graduates in science and engineering, %	35.5	8	● ◆
2.2.3	Tertiary inbound mobility, %	5.9	43	
2.3	**Research and development (R&D)**	10.0	57	
2.3.1	Researchers, FTE/mn pop.	1,465.7	49	
2.3.2	Gross expenditure on R&D, % GDP	0.5	56	
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	○ ◇
2.3.4	QS university ranking, top 3*	16.6	56	
Infrastructure		**43.4**	**67**	
3.1	**Information and communication technologies (ICTs)**	78.2	52	
3.1.1	ICT access*	89.7	48	
3.1.2	ICT use*	77.7	27	● ◆
3.1.3	Government's online service*	70.6	65	
3.1.4	E-participation*	75.0	57	
3.2	**General infrastructure**	26.5	74	
3.2.1	Electricity output, GWh/mn pop.	4,035.1	53	
3.2.2	Logistics performance*	24.2	97	
3.2.3	Gross capital formation, % GDP	25.6	49	
3.3	**Ecological sustainability**	25.4	69	
3.3.1	GDP/unit of energy use	6.9	103	◇
3.3.2	Environmental performance*	48.5	44	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.9	49	
Market sophistication		**24.6**	**96**	
4.1	**Credit**	11.0	108	◇
4.1.1	Finance for startups and scaleups*	21.9	69	○ ◇
4.1.2	Domestic credit to private sector, % GDP	33.1	89	
4.1.3	Loans from microfinance institutions, % GDP	0.0	55	○
4.2	**Investment**	1.1	109	○
4.2.1	Market capitalization, % GDP	1.4	80	○
4.2.2	Venture capital investors, deals/bn PPP$ GDP	0.0	89	○
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	0.0	84	
4.2.4	Venture capital received, value, % GDP	0.0	84	
4.3	**Trade, diversification, and market scale**	61.7	48	
4.3.1	Applied tariff rate, weighted avg., %	1.8	56	
4.3.2	Domestic industry diversification	92.1	41	
4.3.3	Domestic market scale, bn PPP$	200.7	68	

		Score/ Value	Rank	
Business sophistication		**25.8**	**72**	
5.1	**Knowledge workers**	45.9	39	◆
5.1.1	Knowledge-intensive employment, %	41.0	30	● ◆
5.1.2	Firms offering formal training, %	31.5	53	
5.1.3	GERD performed by business, % GDP	0.4	43	
5.1.4	GERD financed by business, %	45.0	35	
5.1.5	Females employed w/advanced degrees, %	20.5	32	◆
5.2	**Innovation linkages**	6.8	[129]	
5.2.1	University-industry R&D collaboration†	n/a	n/a	
5.2.2	State of cluster development and depth†	n/a	n/a	
5.2.3	GERD financed by abroad, % GDP	0.1	41	
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	105	
5.2.5	Patent families/bn PPP$ GDP	0.1	56	
5.3	**Knowledge absorption**	24.6	91	
5.3.1	Intellectual property payments, % total trade	0.5	70	
5.3.2	High-tech imports, % total trade	6.3	103	
5.3.3	ICT services imports, % total trade	1.2	81	
5.3.4	FDI net inflows, % GDP	2.2	69	
5.3.5	Research talent, % in businesses	n/a	n/a	
Knowledge and technology outputs		**31.4**	**40**	◆
6.1	**Knowledge creation**	13.9	60	
6.1.1	Patents by origin/bn PPP$ GDP	2.2	32	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	63	
6.1.3	Utility models by origin/bn PPP$ GDP	1.4	16	●
6.1.4	Scientific and technical articles/bn PPP$ GDP	6.8	104	
6.1.5	Citable documents H-index	9.8	75	
6.2	**Knowledge impact**	41.8	19	● ◆
6.2.1	Labor productivity growth, %	2.2	30	
6.2.2	New businesses/th pop. 15–64	1.1	78	
6.2.3	Software spending, % GDP	0.0	104	○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	37.5	3	● ◆
6.2.5	High-tech manufacturing, %	29.8	45	
6.3	**Knowledge diffusion**	38.5	31	● ◆
6.3.1	Intellectual property receipts, % total trade	0.2	39	◆
6.3.2	Production and export complexity	61.1	31	◆
6.3.3	High-tech exports, % total trade	2.2	56	
6.3.4	ICT services exports, % total trade	7.5	10	● ◆
Creative outputs		**11.3**	**91**	
7.1	**Intangible assets**	7.6	107	◇
7.1.1	Intangible asset intensity, top 15, %	n/a	n/a	
7.1.2	Trademarks by origin/bn PPP$ GDP	26.2	82	
7.1.3	Global brand value, top 5,000, % GDP	0.0	77	○ ◇
7.1.4	Industrial designs by origin/bn PPP$ GDP	0.8	73	
7.2	**Creative goods and services**	9.7	[83]	
7.2.1	Cultural and creative services exports, % total trade	0.5	55	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing and other media, % manufacturing	0.5	81	
7.2.5	Creative goods exports, % total trade	0.7	53	
7.3	**Online creativity**	20.2	30	● ◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.7	82	
7.3.2	Country-code TLDs/th pop. 15–69	6.5	47	
7.3.3	GitHub commit pushes received/mn pop. 15–69	19.9	33	◆
7.3.4	Mobile app creation/bn PPP$ GDP	52.8	2	● ◆

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ◴ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [ ] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

DATA AVAILABILITY

The following tables list indicators that are either missing or outdated for Belarus.

Missing data for Belarus

Code	Indicator name	Economy year	Model year	Source
1.3.1	Policies for doing business	n/a	2021	World Economic Forum, Executive Opinion Survey (EOS)
5.2.1	University-industry R&D collaboration	n/a	2021	World Economic Forum, Executive Opinion Survey (EOS)
5.2.2	State of cluster development and depth	n/a	2021	World Economic Forum, Executive Opinion Survey (EOS)
5.3.5	Research talent, % in businesses	n/a	2020	UNESCO Institute for Statistics
7.1.1	Intangible asset intensity, top 15, %	n/a	2021	Brand Finance
7.2.2	National feature films/mn pop. 15–69	n/a	2019	OMDIA
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2021	PwC, GEMO

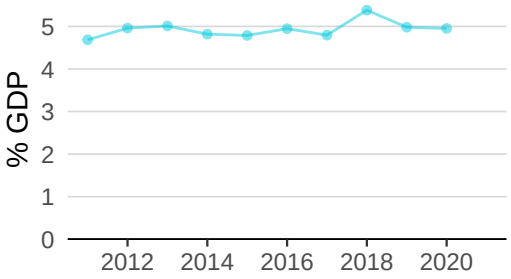
Outdated data for Belarus

Code	Indicator name	Economy year	Model year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	2017	2018	UNESCO Institute for Statistics
4.2.1	Market capitalization, % GDP	2016	2020	World Federation of Exchanges
5.1.1	Knowledge-intensive employment, %	2020	2021	International Labour Organization
5.1.2	Firms offering formal training, %	2018	2019	World Bank Enterprise Surveys
5.1.3	GERD performed by business, % GDP	2018	2020	UNESCO Institute for Statistics
5.1.4	GERD financed by business, %	2018	2019	UNESCO Institute for Statistics
5.1.5	Females employed w/advanced degrees, %	2020	2021	International Labour Organization
5.2.3	GERD financed by abroad, % GDP	2018	2019	UNESCO Institute for Statistics

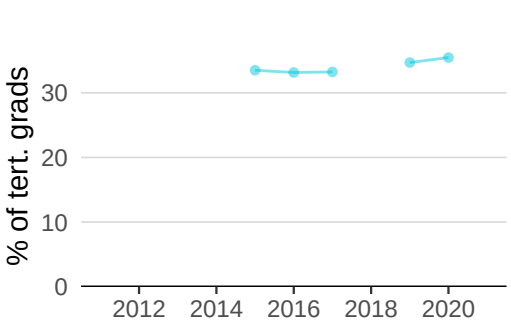
BELARUS'S INNOVATION SYSTEM

As far as practicable, the plots below present unscaled indicator data.

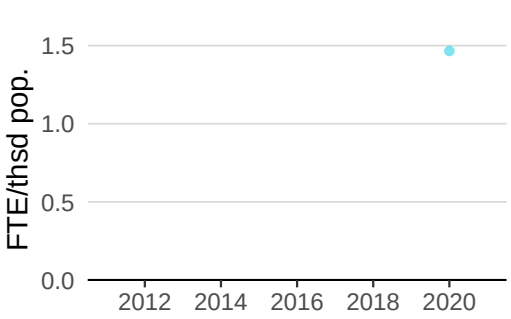
Innovation inputs



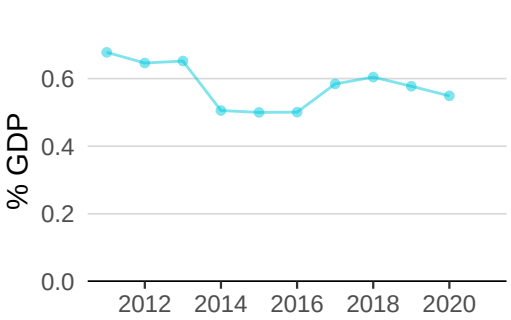
2.1.1 Expenditure on education was equal to 5.0% GDP in 2020–down by 1 percentage point from the year prior–and equivalent to an indicator rank of 41.



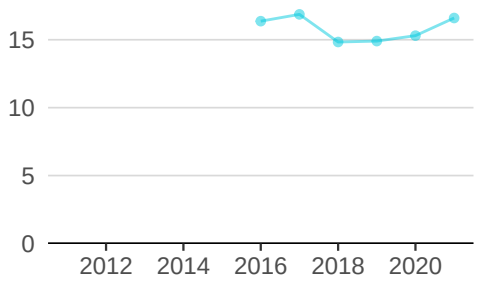
2.2.2 Graduates in science and engineering was equal to 35.5% of tert. grads in 2020–up by 2 percentage points from the year prior–and equivalent to an indicator rank of 8.



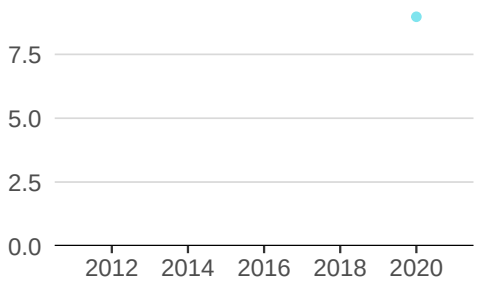
2.3.1 Researchers was equal to 1.5 FTE/thsd pop. in 2020 and equivalent to an indicator rank of 49.



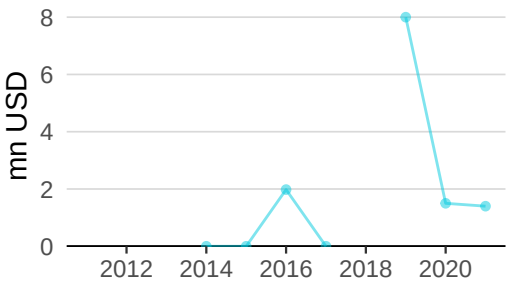
2.3.2 Gross expenditure on R&D was equal to 0.5% GDP in 2020–down by 5 percentage points from the year prior–and equivalent to an indicator rank of 56.



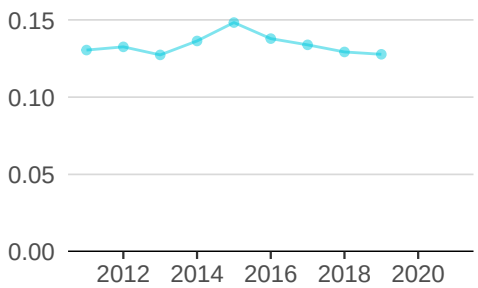
2.3.4 QS university ranking was equal to 16.6 in 2021–up by 8 percentage points from the year prior–and equivalent to an indicator rank of 56.



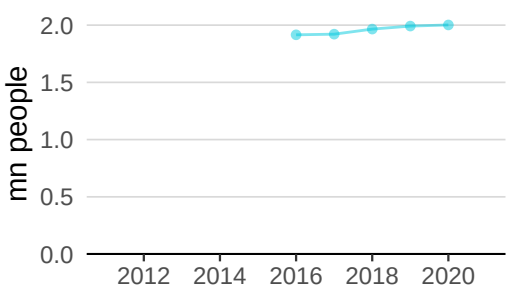
3.1.1 ICT access was equal to 9.0 in 2020 and equivalent to an indicator rank of 48.



4.2.4 Venture capital received was equal to 1.4 mn USD in 2021–down by 7 percentage points from the year prior–and equivalent to an indicator rank of 84.

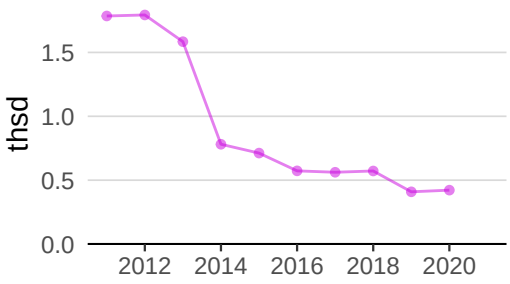


4.3.2 Domestic industry diversification was equal to 0.1 in 2019–down by 1 percentage point from the year prior–and equivalent to an indicator rank of 41.

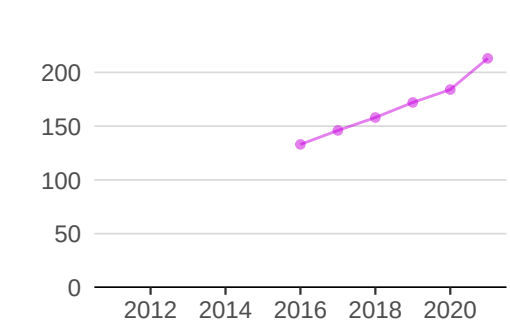


5.1.1 Knowledge-intensive employment was equal to 2.0 mn people in 2020–effectively unchanged from the year prior–and equivalent to an indicator rank of 30.

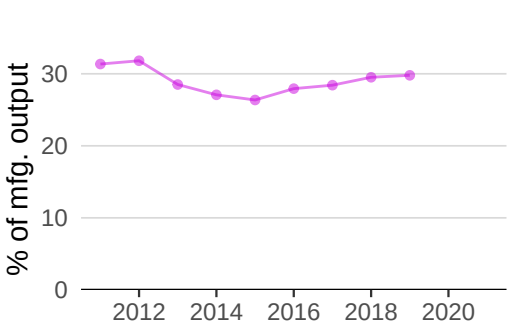
Innovation outputs



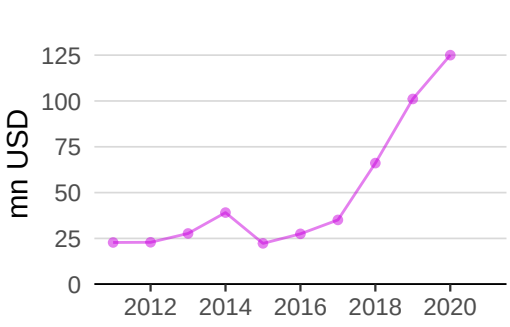
6.1.1 Patents by origin was equal to 0.4 thsd in 2020–up by 3 percentage points from the year prior–and equivalent to an indicator rank of 32.



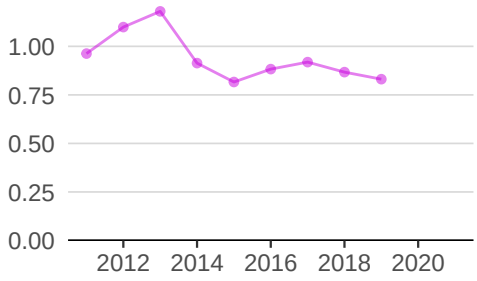
6.1.5 Citable documents H-index was equal to 213.0 in 2021–up by 16 percentage points from the year prior–and equivalent to an indicator rank of 75.



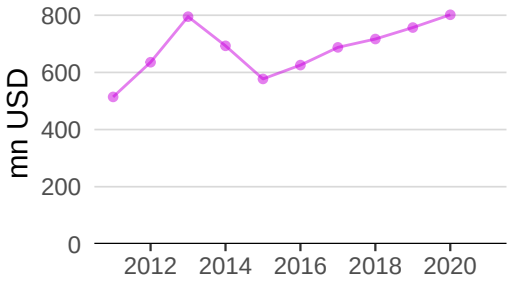
6.2.5 High-tech manufacturing was equal to 29.8% of mfg. output in 2019–up by 1 percentage point from the year prior–and equivalent to an indicator rank of 45.



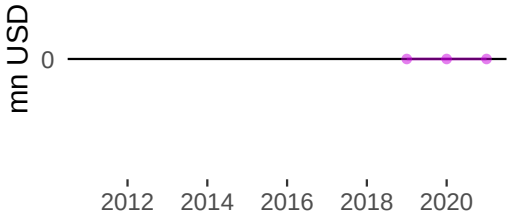
6.3.1 Intellectual property receipts was equal to 125.0 mn USD in 2020–up by 24 percentage points from the year prior–and equivalent to an indicator rank of 39.



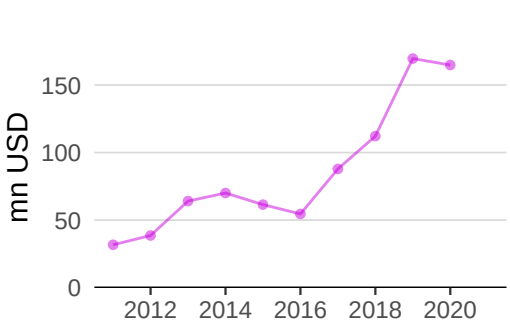
6.3.2 Production and export complexity was equal to 0.8 in 2019–down by 4 percentage points from the year prior–and equivalent to an indicator rank of 31.



6.3.3 High-tech exports was equal to 801.6 mn USD in 2020–up by 6 percentage points from the year prior–and equivalent to an indicator rank of 56.



7.1.3 Global brand value was equal to 0.0 mn USD in 2021–effectively unchanged from the year prior–and equivalent to an indicator rank of 77.



7.2.1 Cultural and creative services exports was equal to 164.8 mn USD in 2020–down by 3 percentage points from the year prior–and equivalent to an indicator rank of 55.

BELARUS'S INNOVATION TOP PERFORMERS

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank

No observations

Source: European Commission's Joint Research Centre (https://iri.jrc.ec.europa.eu/scoreboard/2021-eu-industrial-rd-investment-scoreboard).

2.3.4 QS university ranking

University	Score	Rank
BELARUSIAN STATE UNIVERSITY	34.9	295=
BELARUSIAN NATIONAL TECHNICAL UNIVERSITY	14.9	751-800

Source: QS Quacquarelli Symonds Ltd (https://www.topuniversities.com/university-rankings/world-university-rankings/2022).
Note: QS Quacquarelli Symonds Ltd annually assesses over 1,200 universities across the globe and scores them between [0,100]. Ranks can represent a single value "x", a tie "x=" or a range "x-y".

7.1.1 Intangible asset intensity, top 15

Firm	Rank

No observations

Source: Brand Finance (https://brandirectory.com/reports/gift-2021).

7.1.3 Global brand value, top 5,000

Brand	Industry	Rank

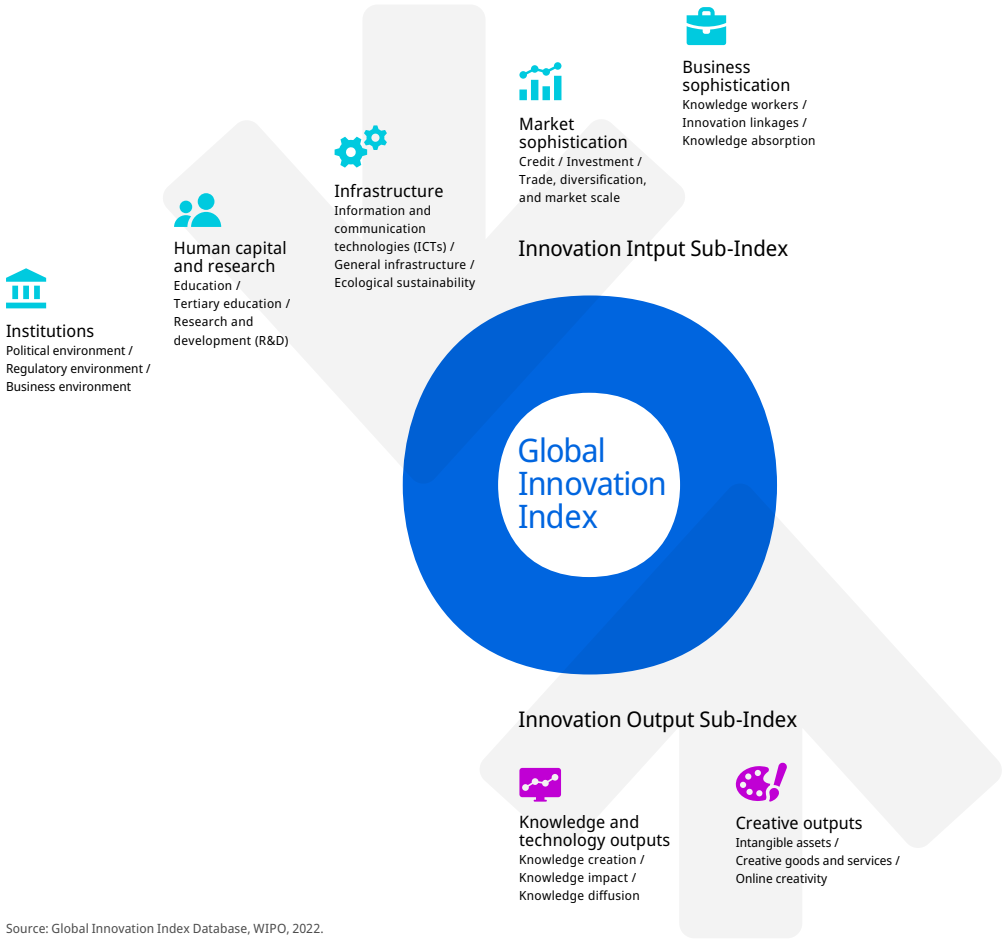
No observations

Source: Brand Finance (https://brandirectory.com).

ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is published by the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations.

Recognizing that innovation is a key driver of economic development, the GII aims to provide an innovation ranking and rich analysis referencing around 130 economies. Over the last decade, the GII has established itself as both a leading reference on innovation and a “tool for action” for economies that incorporate the GII into their innovation agendas.



Source: Global Innovation Index Database, WIPO, 2022.

The Index is a ranking of the innovation capabilities and results of world economies. It measures innovation based on criteria that include institutions, human capital and research, infrastructure, credit, investment, linkages; the creation, absorption and diffusion of knowledge; and creative outputs.

The GII has two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index, and seven pillars, each consisting of three sub-pillars.