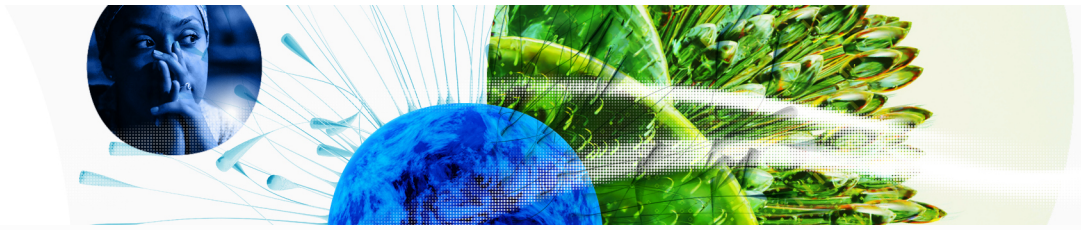# Global Innovation Index 2023

The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities.**
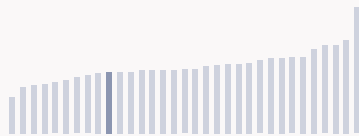
Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation**.
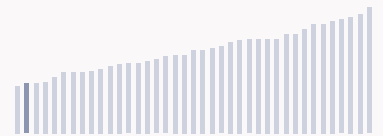
Belarus ranking in the Global Innovation Index 2023

> Belarus ranks **80th** among the 132 economies featured in the GII 2023.
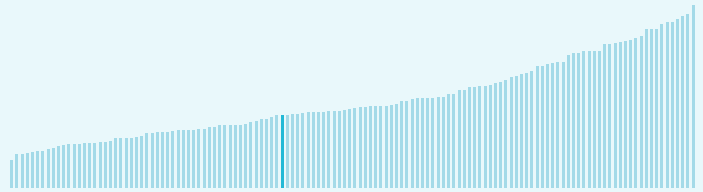
> Belarus ranks 24th among the 33 upper-middle-income group economies.

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

> ### Belarus GII Ranking (2020-2023)

The table shows the rankings of Belarus over the past four years. 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 2023 is between ranks 58 and 82.

	GII Position		Innovation Inputs	Innovation Outputs
2020	64th		67th	61st
2021	62nd		68th	62nd
2022	77th		86th	63rd
2023	80th		88th	66th

Belarus performs better in **innovation outputs** than **innovation inputs** in 2023.

This year Belarus ranks 88th in innovation inputs. This position is lower than last year.

Belarus ranks 66th in innovation outputs. This position is lower than last year.

Global Innovation Index 2023
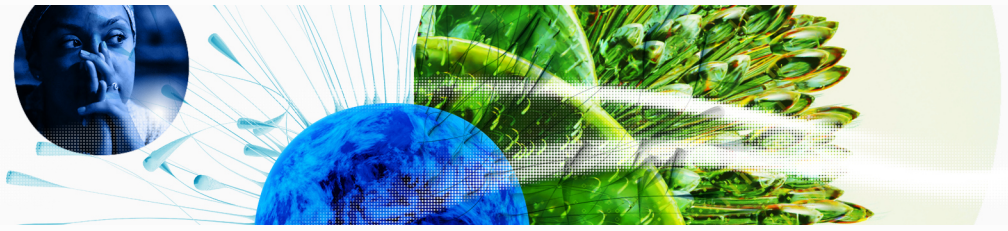
→ ## Expected vs. observed innovation performance

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.

> ### Innovation overperformers relative to their economic development
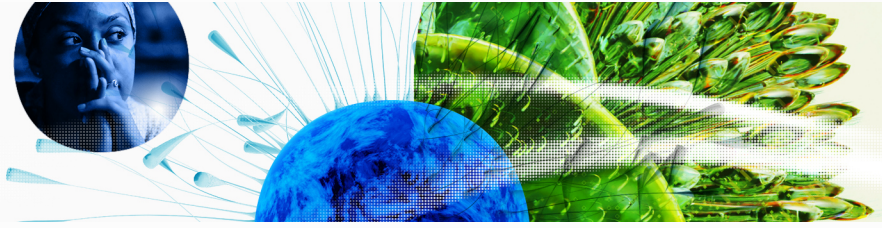

↑ GII Score
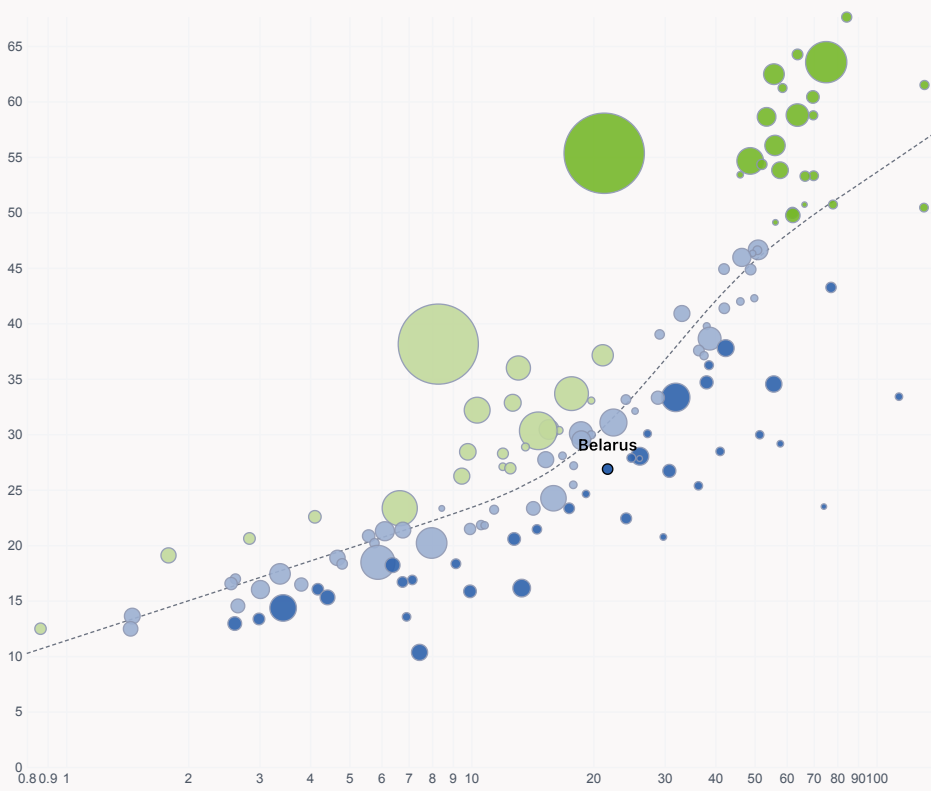
- ● Innovation leader
- ● Performing above expectations for level of development
- ● Performing at expectations for level of development
- ● Performing below expectations for level of development

Size legend (Population)

1.4B
713M
373K

Belarus

→ GDP per capita, PPP logarithmic scale (thousands of $)
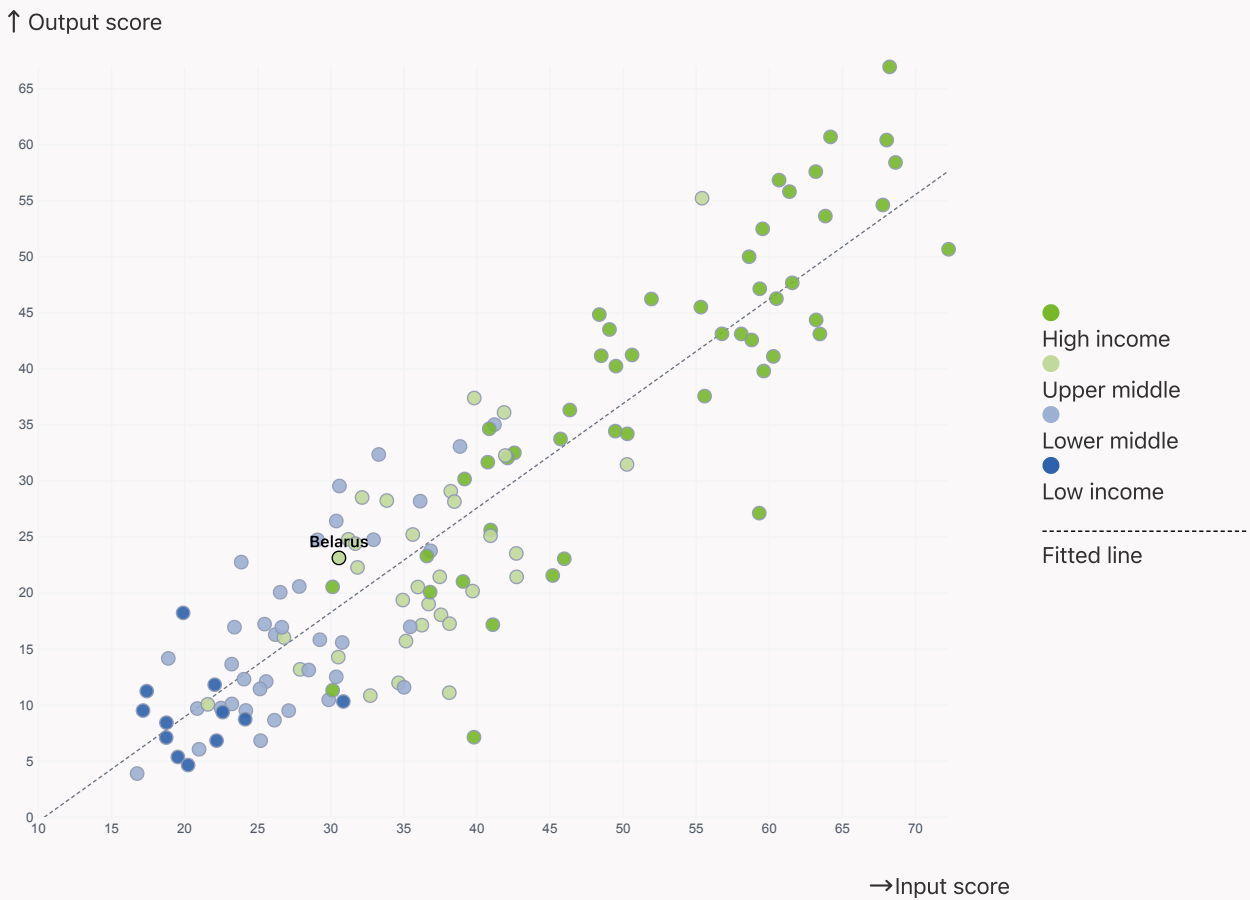
Global Innovation Index 2023

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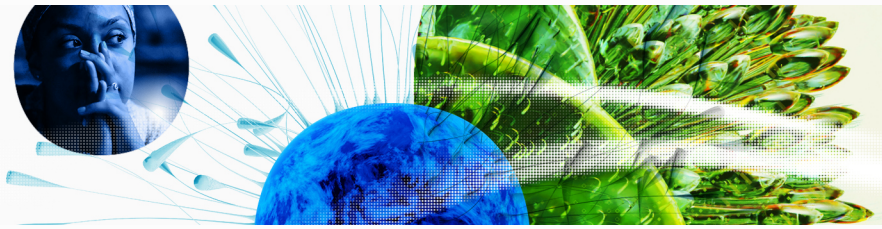
> ⊳ Belarus produces more innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs

↑ Output score

Legend:
- High income
- Upper middle
- Lower middle
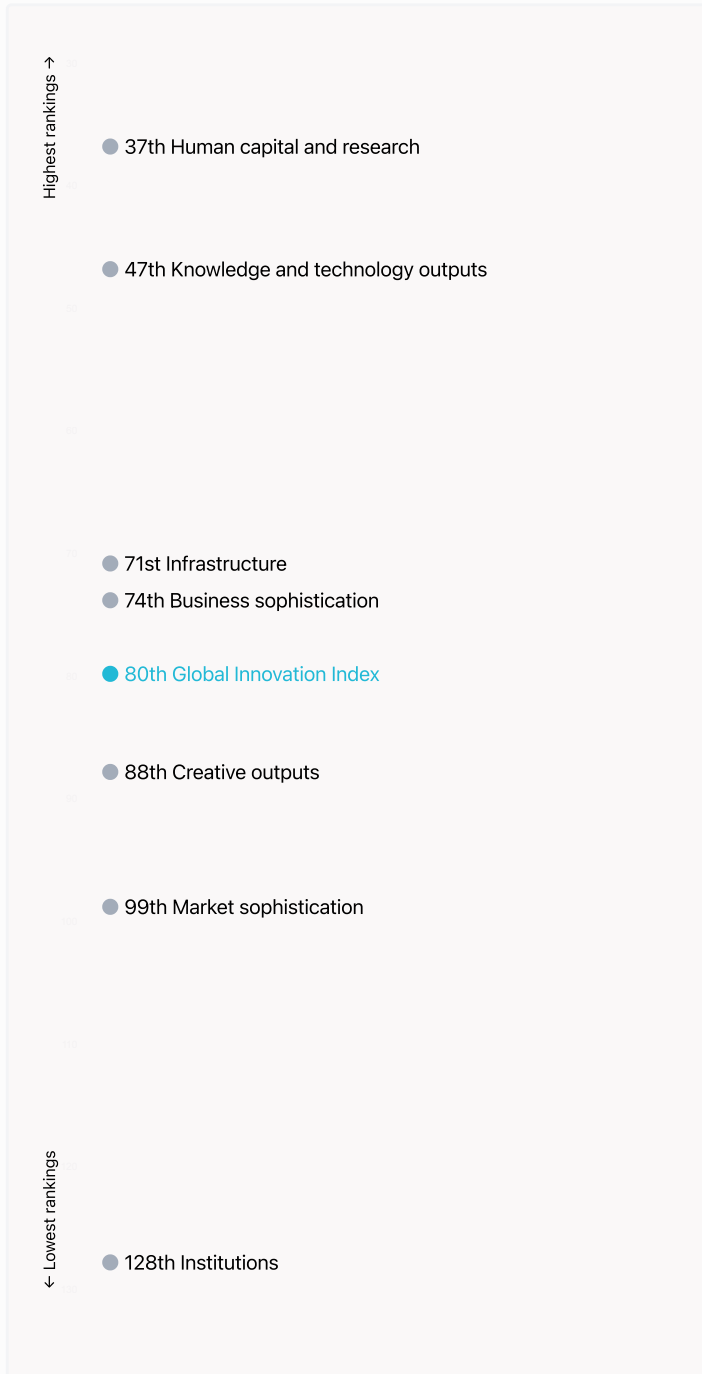- Low income
- Fitted line

→Input score

Global Innovation Index 2023

→ Overview of Belarus's rankings in the seven areas of the GII in 2023

The chart shows the ranking for each of the seven areas that the GII comprises. The strongest areas for Belarus are those that rank above the GII (shown in blue) and the weakest are those that rank below.

Highest rankings →

● 37th Human capital and research

● 47th Knowledge and technology outputs

● 71st Infrastructure
● 74th Business sophistication

● 80th Global Innovation Index

● 88th Creative outputs

● 99th Market sophistication

← Lowest rankings

● 128th Institutions

> Highest rankings

Belarus ranks highest in Human capital and research (37th), Knowledge and technology outputs (47th), Infrastructure (71st) and Business sophistication (74th).
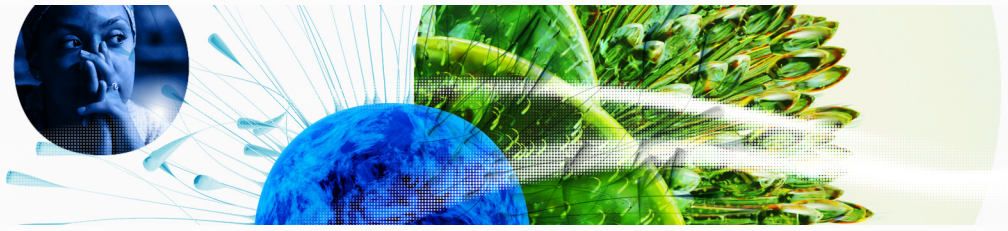
> Lowest rankings

Belarus ranks lowest in Institutions (128th), Market sophistication (99th) and Creative outputs (88th).

The full WIPO Intellectual Property Statistics profile for Belarus can be found on this link.

Global Innovation Index 2023

→ **Benchmark of Belarus against other country groupings for each of the seven areas of the GII Index**

The charts shows the relative position of Belarus (blue bar) against other country groupings (grey bars), for each of the seven areas of the GII Index.

> **Upper-Middle-Income economies**

Belarus performs below the upper-middle-income group average in Creative outputs, Business sophistication, Market sophistication, Infrastructure, Institutions.
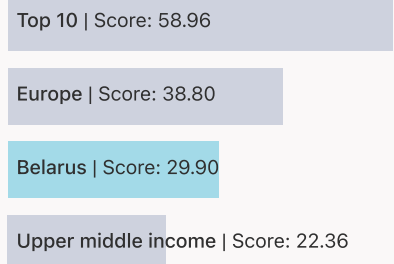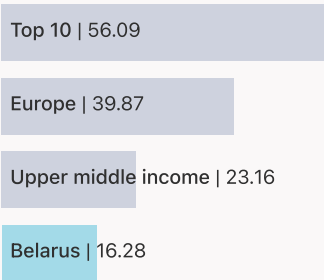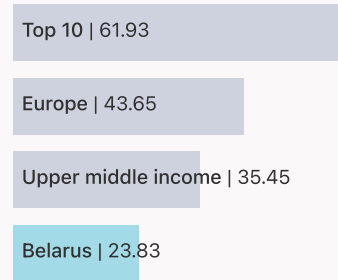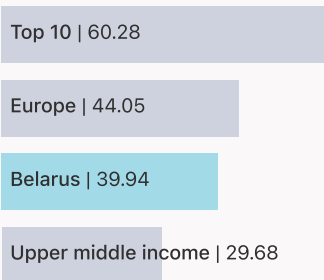
> **Europe**

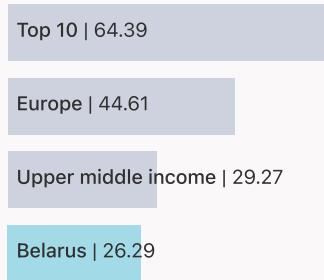Belarus performs below the regional average in all the pillars.

Knowledge and technology outputs

Top 10 | Score: 58.96

Europe | Score: 38.80

Belarus | Score: 29.90

Upper middle income | Score: 22.36

Creative outputs

Top 10 | 56.09

Europe | 39.87

Upper middle income | 23.16

Belarus | 16.28

Business sophistication

Top 10 | 64.39

Europe | 44.61

Upper middle income | 29.27

Belarus | 26.29

Market sophistication

Top 10 | 61.93

Europe | 43.65

Upper middle income | 35.45

Belarus | 23.83

Human capital and research

Top 10 | 60.28

Europe | 44.05

Belarus | 39.94

Upper middle income | 29.68

Infrastructure

Top 10 | 62.83

Europe | 54.69

Upper middle income | 40.40

Belarus | 38.66

Institutions

Top 10 | 79.85

Europe | 61.69

Upper middle income | 47.71

Belarus | 24.29

Global Innovation Index 2023

→ Innovation strengths and weaknesses in Belarus

The table below gives an overview of the indicator strengths and weaknesses of Belarus in the GII 2023.

> Belarus's main innovation strengths are **Mobile app creation/bn PPP$ GDP** (rank 2), **ISO 9001 quality/bn PPP$ GDP** (rank 2) and **Graduates in science and engineering, %** (rank 9).

| Strengths			Weaknesses		
Rank	Code	Indicator name	Rank	Code	Indicator name
2	7.3.4	Mobile app creation/bn PPP$ GDP	126	1.2.2	Rule of law
2	6.3.5	ISO 9001 quality/bn PPP$ GDP	121	1.2.1	Regulatory quality
9	2.2.2	Graduates in science and engineering, %	96	4.2.4	VC received, value, % GDP
10	6.3.4	ICT services exports, % total trade	90	4.2.2	Venture capital (VC) investors, deals/bn PPP$ GDP
12	6.1.3	Utility models by origin/bn PPP$ GDP	82	1.3.2	Entrepreneurship policies and culture
22	3.1.1	ICT access	81	4.1.1	Finance for startups and scaleups
22	2.2.1	Tertiary enrolment, % gross	77	4.2.1	Market capitalization, % GDP
24	2.1.5	Pupil-teacher ratio, secondary	74	7.1.3	Global brand value, top 5,000
27	5.1.1	Knowledge-intensive employment, %	48	6.2.2	Unicorn valuation, % GDP
28	3.1.2	ICT use	40	2.3.3	Global corporate R&D investors, top 3, mn US$
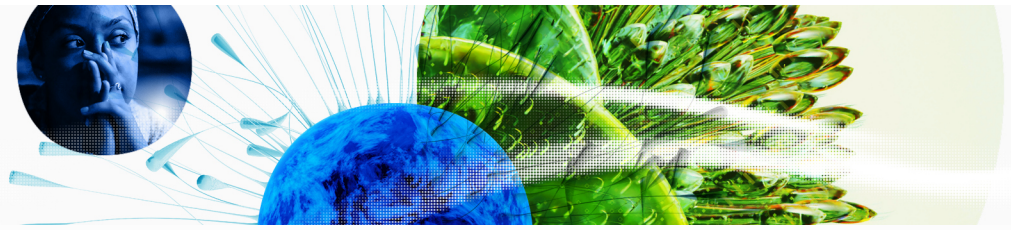
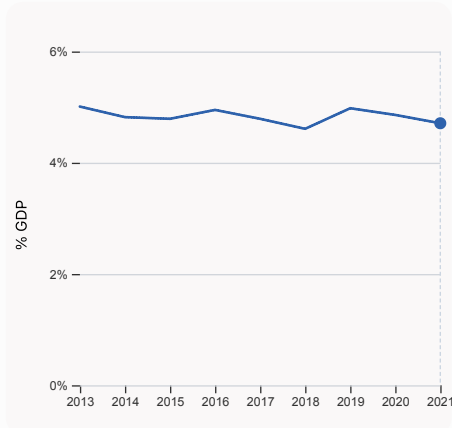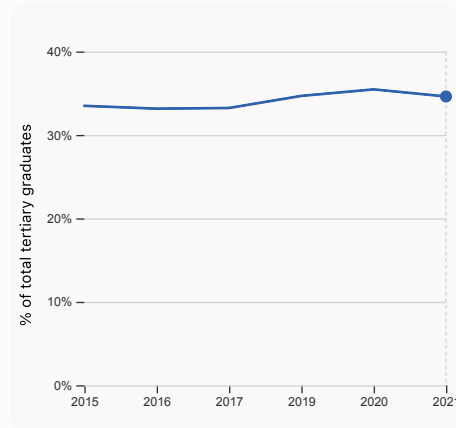## → Belarus's innovation system

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

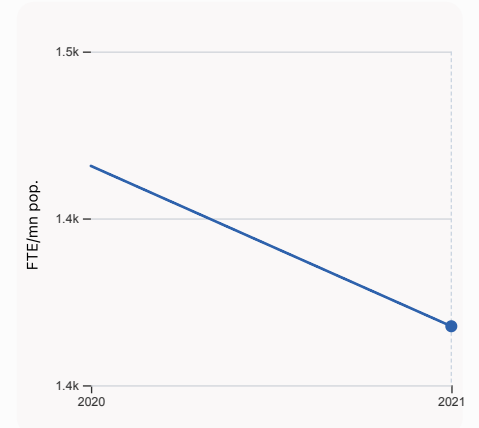### > Innovation inputs in Belarus

2.1.1 Expenditure on education, % GDP

was equal to 4.71% GDP in 2021, down by 0.15 percentage points from the year prior – and equivalent to an indicator rank of 45.

2.2.2 Graduates in science and engineering, %

was equal to 34.61% of total tertiary graduates in 2021, down by 0.85 percentage points from the year prior – and equivalent to an indicator rank of 9.

2.3.1 Researchers, FTE/mn pop.

was equal to 1,417.68 FTE/mn pop. in 2021, down by 3.28% from the year prior – and equivalent to an indicator rank of 49.
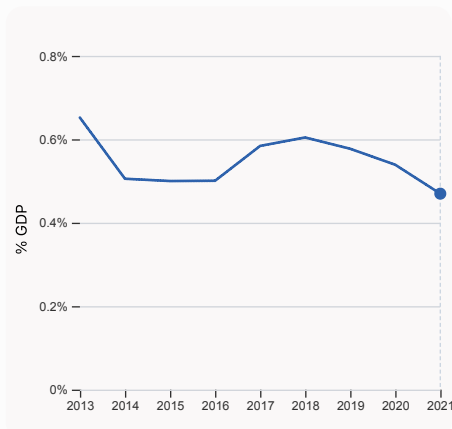
2.3.2 Gross expenditure on R&D, % GDP

was equal to 0.47% GDP in 2021, down by 0.069 percentage points from the year prior – and equivalent to an indicator rank of 62.
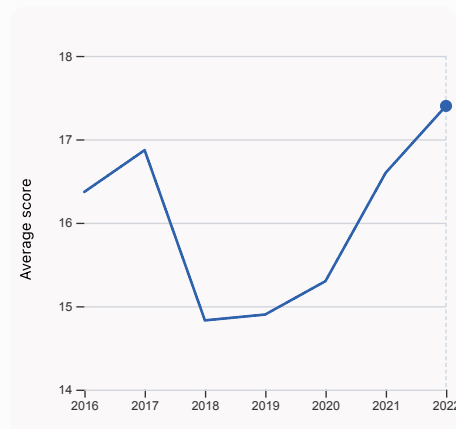
2.3.4 QS university ranking, top 3

was equal to an average score of 17.4 for the top 3 universities in 2022, up by 4.82% from the year prior – and equivalent to an indicator rank of 56.

3.1.1 ICT access

was equal to a score of 9.33 in 2021, up by 4.013% from the year prior – and equivalent to an indicator rank of 22.

Global Innovation Index 2023
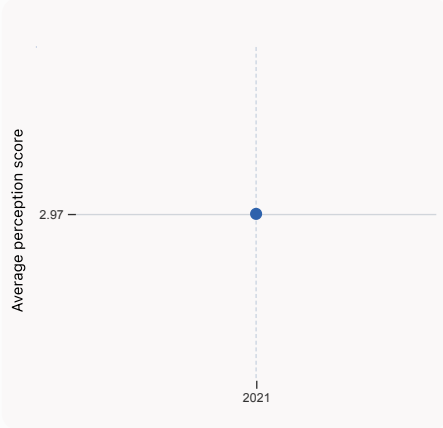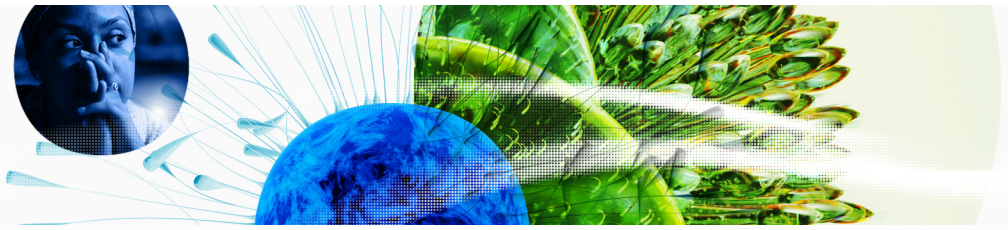
4.1.1 Finance for startups and scaleups

was equal to an average perception score of 2.97 in 2021, equivalent to an indicator rank of 81.
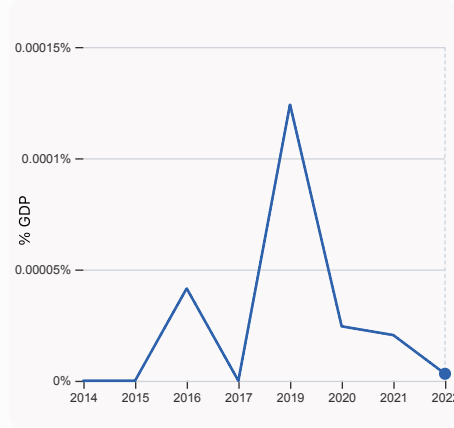
4.2.4 VC received, value, % GDP

was equal to 0% GDP in 2022, down by 0.000017 percentage points from the year prior – and equivalent to an indicator rank of 96.
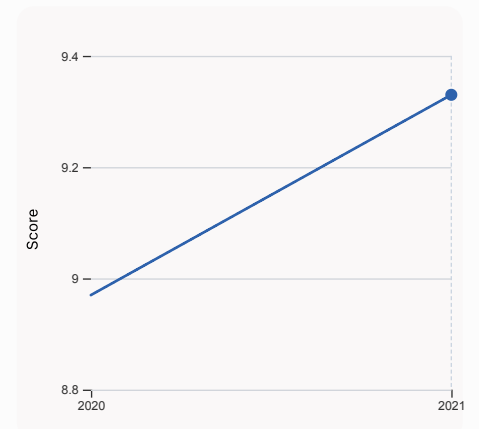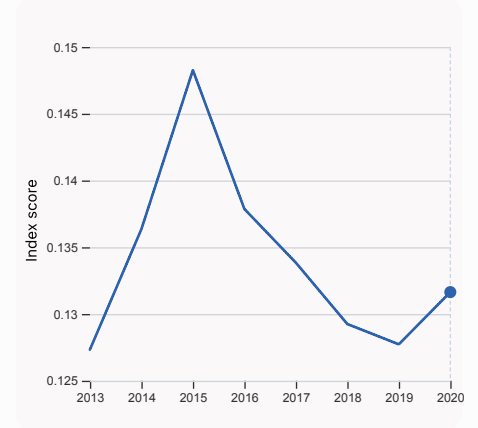

4.3.2 Domestic industry diversification

was equal to an index score of 0.132 in 2020, up by 3.062% from the year prior – and equivalent to an indicator rank of 40.
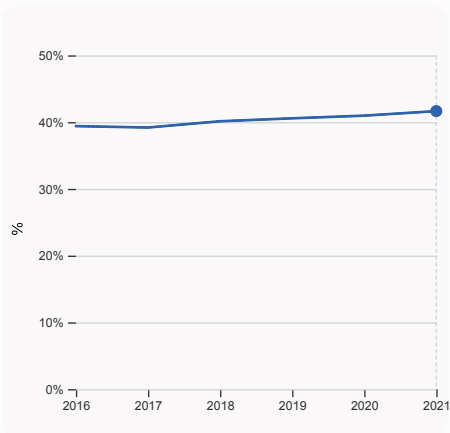
5.1.1 Knowledge-intensive employment, %

was equal to 41.65% in 2021, up by 0.68 percentage points from the year prior – and equivalent to an indicator rank of 27.
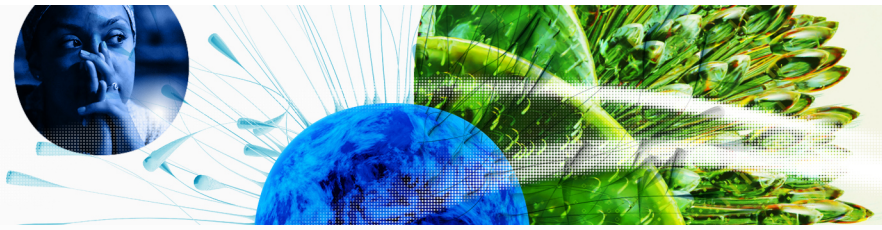
> Innovation outputs in Belarus
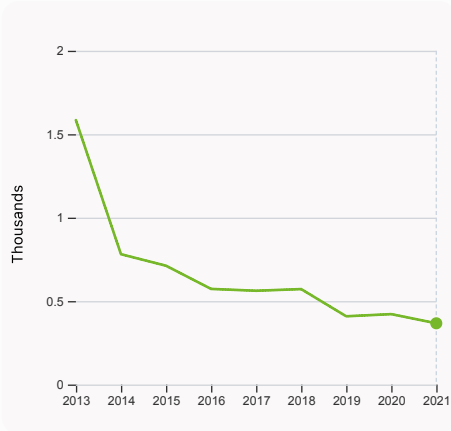
6.1.1 Patents by origin

was equal to 0.37 Thousands in 2021, down by 13.033% from the year prior – and equivalent to an indicator rank of 37.
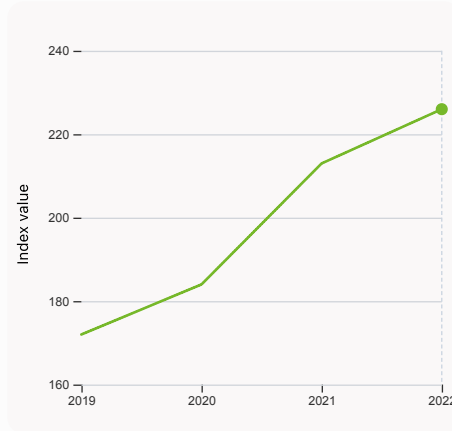
6.1.5 Citable documents H-index

was equal to an index value of 226 in 2022, up by 6.1% from the year prior – and equivalent to an indicator rank of 78.
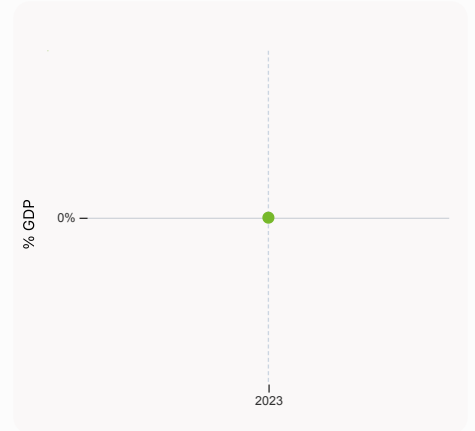
6.2.2 Unicorn valuation, % GDP

was equal to 0 % GDP in 2023 – and equivalent to an indicator rank of 48.
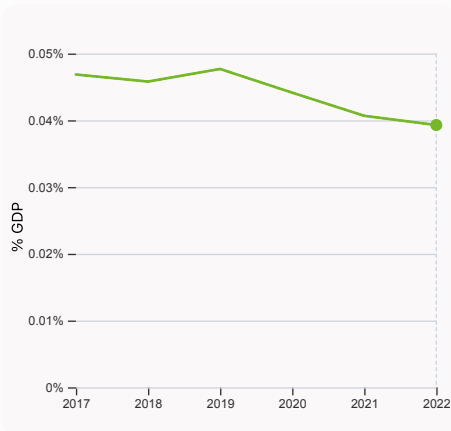
6.2.3 Software spending, % GDP

was equal to 0.039% GDP in 2022, down by 0.0014 percentage points from the year prior – and equivalent to an indicator rank of 111.
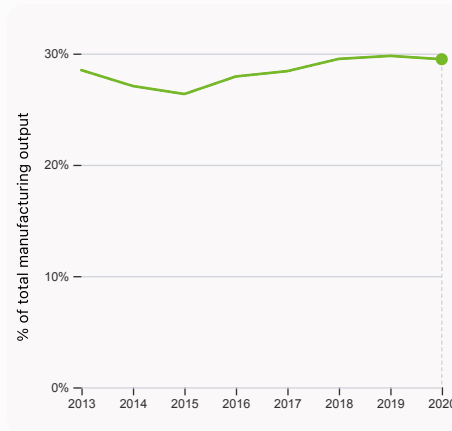
6.2.4 High-tech manufacturing, %

was equal to 29.49% of total manufacturing output in 2020, down by 0.3 percentage points from the year prior – and equivalent to an indicator rank of 40.
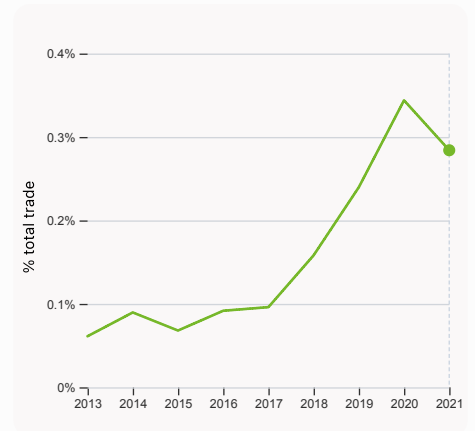
6.3.1 Intellectual property receipts, % total trade

was equal to 0.284% total trade in 2021, down by 0.06 percentage points from the year prior – and equivalent to an indicator rank of 38.

Global Innovation Index 2023
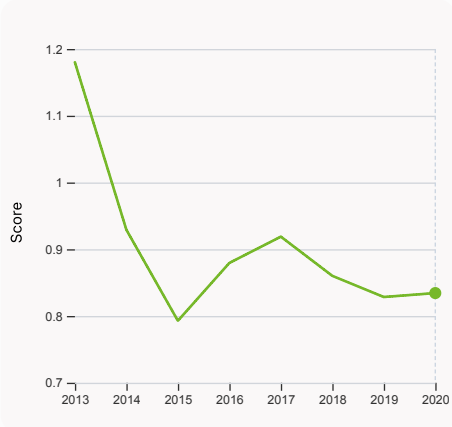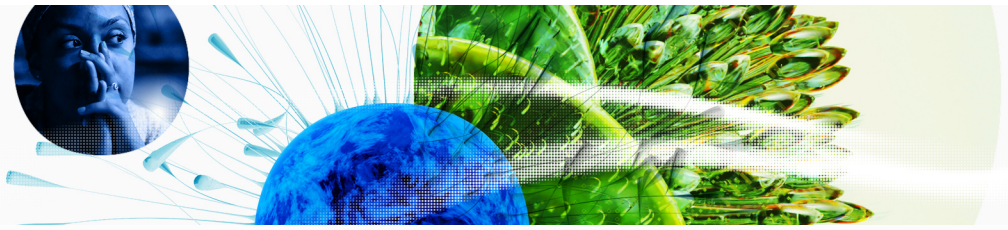
6.3.2 Production and export complexity

was equal to a score of 0.834 in 2020, up by 0.71% from the year prior – and equivalent to an indicator rank of 31.
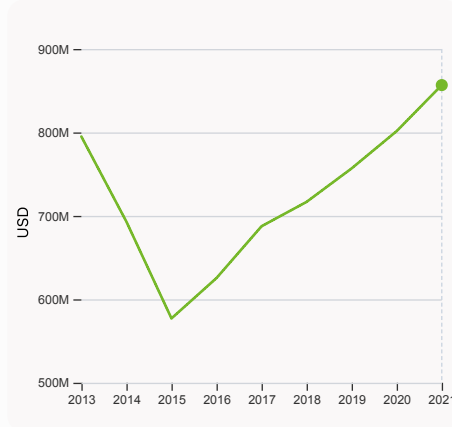
6.3.3 High-tech exports

was equal to 856,741,800 USD in 2021, up by 6.87% from the year prior – and equivalent to an indicator rank of 63.
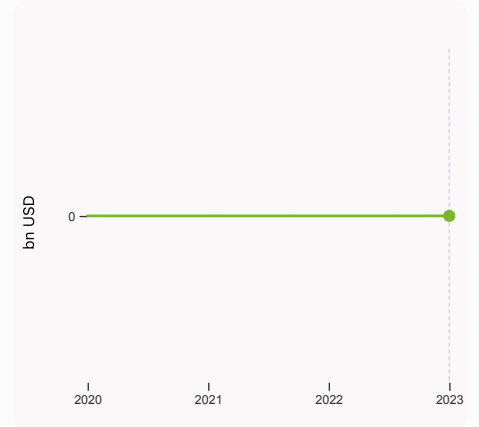
7.1.3 Global brand value, top 5,000

was equal to 0 bn USD in 2023 – and equivalent to an indicator rank of 74.
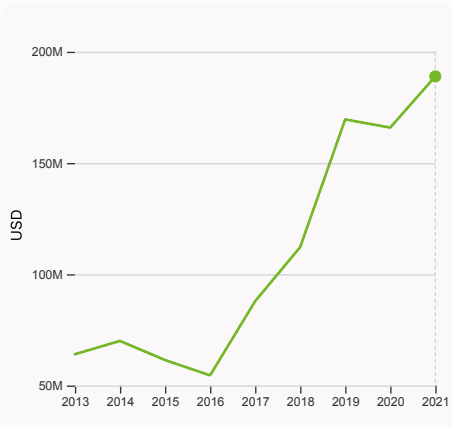
7.2.1 Cultural and creative services exports

was equal to 188,930,000 USD in 2021, up by 13.87% from the year prior – and equivalent to an indicator rank of 61.
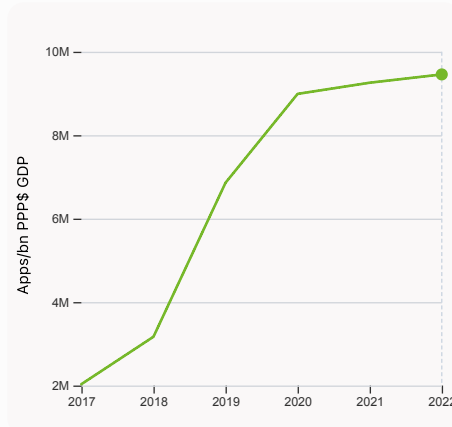
7.3.4 Mobile app creation/bn PPP$ GDP

was equal to 9,457,084.35 Apps/bn PPP$ GDP in 2022, up by 2.15% from the year prior – and equivalent to an indicator rank of 2.
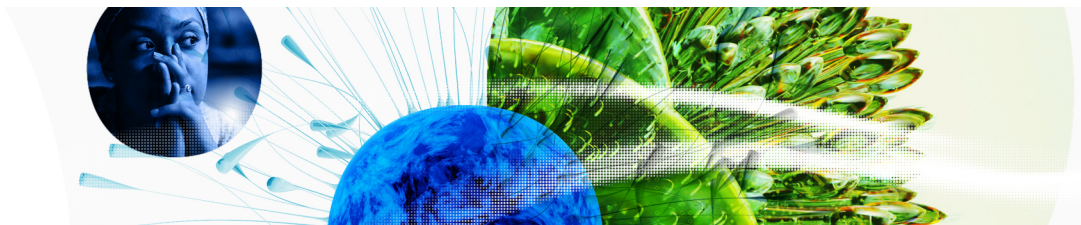
→ Belarus's innovation top performers

> 2.3.4 QS university ranking of Belarus's top universities

Rank	University	Score
288	BELARUSIAN STATE UNIVERSITY	36.00
751–800	BELARUSIAN NATIONAL TECHNICAL UNIVERSITY (BNTU)	16.20
1001–1200	BELARUSIAN STATE UNIVERSITY OF INFORMATICS AND RADIOELECTRONICS	7.80

Source: QS Quacquarelli Symonds Ltd (https://www.topuniversities.com/university-rankings/world-university-rankings/2023).
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".

Global Innovation Index 2023
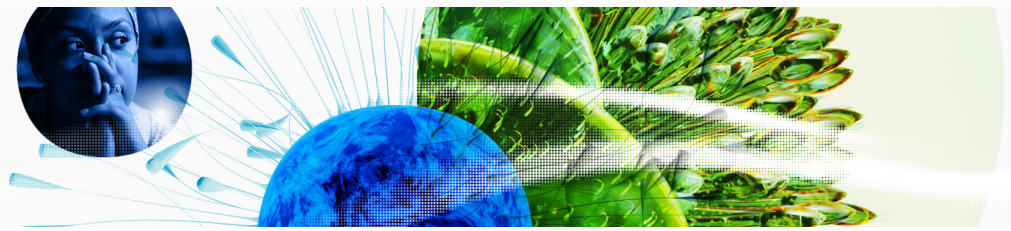
Belarus

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
66	**88**	**Upper middle**	**EUR**	**9.5**	**202.0**	**21,709.3**

|	Score / Value	Rank	
🏛 **Institutions**	**24.3**	**128**	◇
1.1 Institutional environment	25.4	110	◇
1.1.1 Operational stability for businesses*	35.4	108	◇
1.1.2 Government effectiveness*	15.5	117	◇
1.2 Regulatory environment	42.9	115	◇
1.2.1 Regulatory quality*	18.2	121	○ ◇
1.2.2 Rule of law*	7.5	126	○ ◇
1.2.3 Cost of redundancy dismissal	21.7	96	
1.3 Business environment	4.5	130	
1.3.1 Policies for doing business†	n/a	n/a	
1.3.2 Entrepreneurship policies and culture†	◕ 4.5	82	○ ◇
👥 **Human capital and research**	**39.9**	**37**	
2.1 Education	61.6	26	
2.1.1 Expenditure on education, % GDP	4.7	45	
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3 School life expectancy, years	15.1	47	
2.1.4 PISA scales in reading, maths and science	472.3	36	
2.1.5 Pupil-teacher ratio, secondary	9.4	24	●
2.2 Tertiary education	48.1	13	
2.2.1 Tertiary enrolment, % gross	82.2	22	●
2.2.2 Graduates in science and engineering, %	34.6	9	●
2.2.3 Tertiary inbound mobility, %	6.5	38	
2.3 Research and development (R&D)	10.1	59	
2.3.1 Researchers, FTE/mn pop.	1,417.7	49	
2.3.2 Gross expenditure on R&D, % GDP	0.5	62	
2.3.3 Global corporate R&D investors, top 3, mn US$	0.0	40	○ ◇
2.3.4 QS university ranking, top 3*	17.6	56	
⚙ **Infrastructure**	**38.7**	**71**	
3.1 Information and communication technologies (ICTs)	66.8	74	
3.1.1 ICT access*	90.0	22	●
3.1.2 ICT use*	87.2	28	●
3.1.3 Government's online service*	48.1	94	◇
3.1.4 E-participation*	41.9	87	
3.2 General infrastructure	22.6	81	
3.2.1 Electricity output, GWh/mn pop.	◕ 4,109.8	54	
3.2.2 Logistics performance*	27.3	76	
3.2.3 Gross capital formation, % GDP	23.8	68	
3.3 Ecological sustainability	26.6	59	
3.3.1 GDP/unit of energy use	7.1	97	
3.3.2 Environmental performance*	50.2	44	
3.3.3 ISO 14001 environment/bn PPP$ GDP	2.0	45	
📊 **Market sophistication**	**23.8**	**99**	◇
4.1 Credit	8.9	116	◇
4.1.1 Finance for startups and scaleups†	◕ 15.9	81	○ ◇
4.1.2 Domestic credit to private sector, % GDP	32.5	92	
4.1.3 Loans from microfinance institutions, % GDP	0.0	54	
4.2 Investment	0.7	109	
4.2.1 Market capitalization, % GDP	◕ 1.4	77	○
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	◕ 0.0	90	○
4.2.3 VC recipients, deals/bn PPP$ GDP	0.0	90	
4.2.4 VC received, value, % GDP	0.0	96	○
4.3 Trade, diversification, and market scale	61.9	50	
4.3.1 Applied tariff rate, weighted avg., %	1.8	56	
4.3.2 Domestic industry diversification	92.8	40	
4.3.3 Domestic market scale, bn PPP$	202.0	69	

	Score / Value	Rank	
💼 **Business sophistication**	**26.3**	**74**	
5.1 Knowledge workers	46.2	38	
5.1.1 Knowledge-intensive employment, %	◕ 41.7	27	●
5.1.2 Firms offering formal training, %	◕ 31.5	54	
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, %	◕ 20.9	30	
5.2 Innovation linkages	6.0	127	
5.2.1 University-industry R&D collaboration†	n/a	n/a	
5.2.2 State of cluster development†	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	26.7	95	
5.3.1 Intellectual property payments, % total trade	0.5	69	
5.3.2 High-tech imports, % total trade	4.7	119	
5.3.3 ICT services imports, % total trade	1.0	86	
5.3.4 FDI net inflows, % GDP	2.0	70	
5.3.5 Research talent, % in businesses	n/a	n/a	
🧭 **Knowledge and technology outputs**	**29.9**	**47**	
6.1 Knowledge creation	16.7	60	
6.1.1 Patents by origin/bn PPP$ GDP	1.8	37	
6.1.2 PCT patents by origin/bn PPP$ GDP	0.1	66	
6.1.3 Utility models by origin/bn PPP$ GDP	1.5	12	●
6.1.4 Scientific and technical articles/bn PPP$ GDP	n/a	n/a	
6.1.5 Citable documents H-index	10.2	78	
6.2 Knowledge impact	23.1	88	
6.2.1 Labor productivity growth, %	0.9	66	
6.2.2 Unicorn valuation, % GDP	0.0	48	○ ◇
6.2.3 Software spending, % GDP	0.0	111	◇
6.2.4 High-tech manufacturing, %	29.5	40	
6.3 Knowledge diffusion	49.9	18	
6.3.1 Intellectual property receipts, % total trade	0.3	38	
6.3.2 Production and export complexity	70.0	31	
6.3.3 High-tech exports, % total trade	1.8	63	
6.3.4 ICT services exports, % total trade	6.8	10	●
6.3.5 ISO 9001 quality/bn PPP$ GDP	34.6	2	●
🎨 **Creative outputs**	**16.3**	**88**	
7.1 Intangible assets	12.8	103	
7.1.1 Intangible asset intensity, top 15, %	n/a	n/a	
7.1.2 Trademarks by origin/bn PPP$ GDP	22.7	88	
7.1.3 Global brand value, top 5,000	0.0	74	○ ◇
7.1.4 Industrial designs by origin/bn PPP$ GDP	1.4	58	
7.2 Creative goods and services	9.2	71	
7.2.1 Cultural and creative services exports, % total trade	0.4	61	
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 Creative goods exports, % total trade	0.9	48	
7.3 Online creativity	30.3	40	
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	2.0	84	
7.3.2 Country-code TLDs/th pop. 15-69	6.6	48	
7.3.3 GitHub commits/mn pop. 15-69	24.2	39	
7.3.4 Mobile app creation/bn PPP$ GDP	88.4	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/gii-ranking. Square brackets [ ] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Global Innovation Index 2023
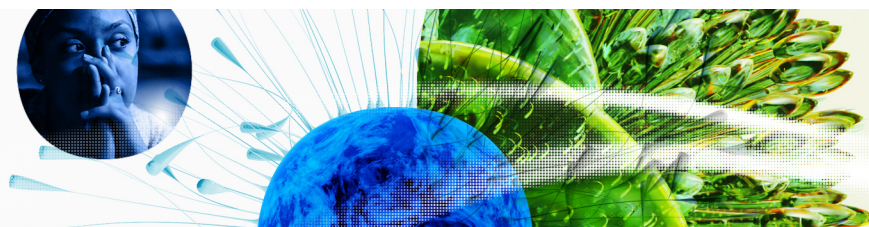
→ Data availability

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

> Belarus has missing data for eight indicators and outdated data for twelve indicators.

> Missing data for Belarus

Code	Indicator name	Economy Year	Model Year	Source
1.3.1	Policies for doing business	n/a	2022	World Economic Forum, Executive Opinion Survey (EOS)
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2019	UNESCO Institute for Statistics
5.2.1	University-industry R&D collaboration	n/a	2022	World Economic Forum, Executive Opinion Survey (EOS)
5.2.2	State of cluster development	n/a	2022	World Economic Forum, Executive Opinion Survey (EOS)
5.3.5	Research talent, % in businesses	n/a	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
7.1.1	Intangible asset intensity, top 15, %	n/a	2022	Brand Finance
7.2.2	National feature films/mn pop. 15-69	n/a	2021	OMDIA; United Nations, World Population Prospects
7.2.3	Entertainment and media market/th pop. 15-69	n/a	2022	PwC, GEMO; United Nations, World Population Prospects; International Monetary Fund

> Outdated data for Belarus

Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture	2021	2022	Global Entrepreneurship Monitor
3.2.1	Electricity output, GWh/mn pop.	2020	2021	International Energy Agency
4.1.1	Finance for startups and scaleups	2021	2022	Global Entrepreneurship Monitor
4.2.1	Market capitalization, % GDP	2016	2020	World Federation of Exchanges; World Bank
4.2.2	Venture capital (VC) investors, deals/bn PPP$ GDP	2021	2022	Refinitiv; International Monetary Fund
5.1.1	Knowledge-intensive employment, %	2021	2022	International Labour Organization

Global Innovation Index 2023
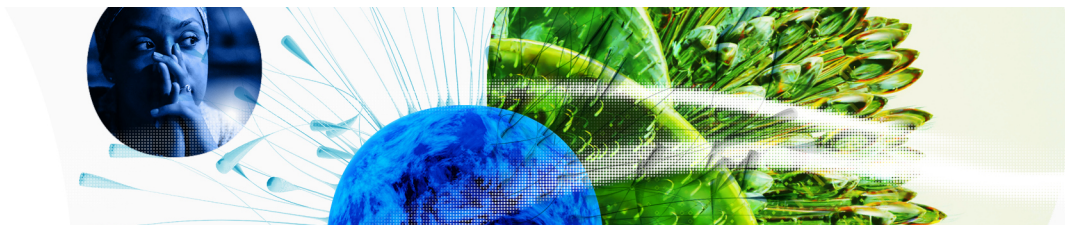
Code	Indicator name	Economy Year	Model Year	Source
5.1.2	Firms offering formal training, %	2018	2019	World Bank Enterprise Surveys
5.1.3	GERD performed by business, % GDP	2018	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.4	GERD financed by business, %	2018	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.5	Females employed w/advanced degrees, %	2021	2022	International Labour Organization
5.2.3	GERD financed by abroad, % GDP	2018	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	2021	2022	Refinitiv; International Monetary Fund
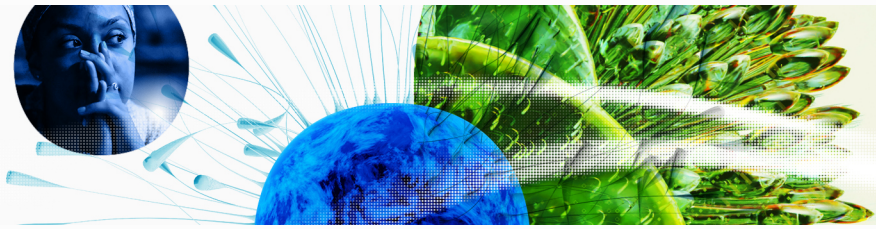
→ **About the Global Innovation Index**

- 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.

Institutions
Institutional environment /
Regulatory environment /
Business environment

Human capital and research
Education /
Tertiary education /
Research and development (R&D)

Infrastructure
Information and communication technologies (ICTs) / General infrastructure / Ecological sustainability

Market sophistication
Credit / Investment / Trade, diversification, and market scale

Business sophistication
Knowledge workers / Innovation linkages / Knowledge absorption

Innovation Input Sub-Index

Global Innovation Index

Innovation Output Sub-Index

Knowledge and technology outputs
Knowledge creation / Knowledge impact / Knowledge diffusion

Creative outputs
Intangible assets / Creative goods and services / Online creativity

Source: Global Innovation Index Database, WIPO, 2023.

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.