

# 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.

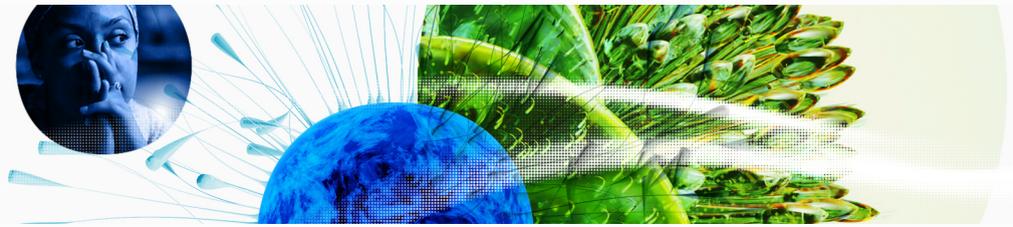
	GII Position	Innovation Inputs	Innovation Outputs
2020	64th	67th	61st
2021	62nd	68th	62nd
2022	77th	86th	63rd
2023	80th	88th	66th

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

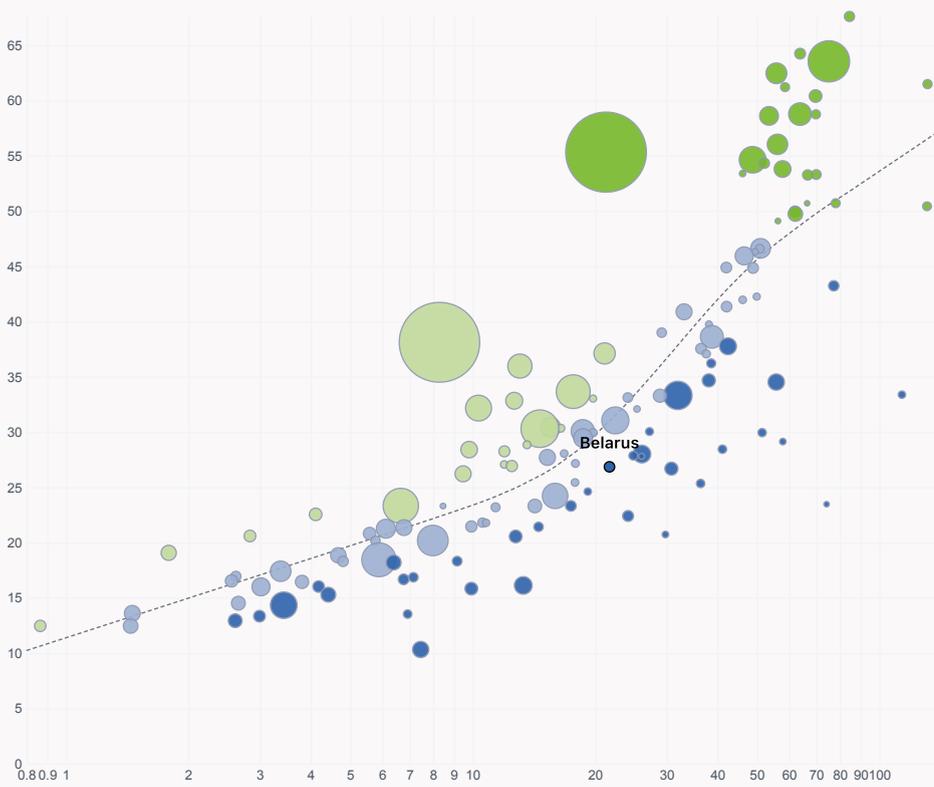
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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



→ GDP per capita, PPP logarithmic scale (thousands of \$)

# Global Innovation Index 2023



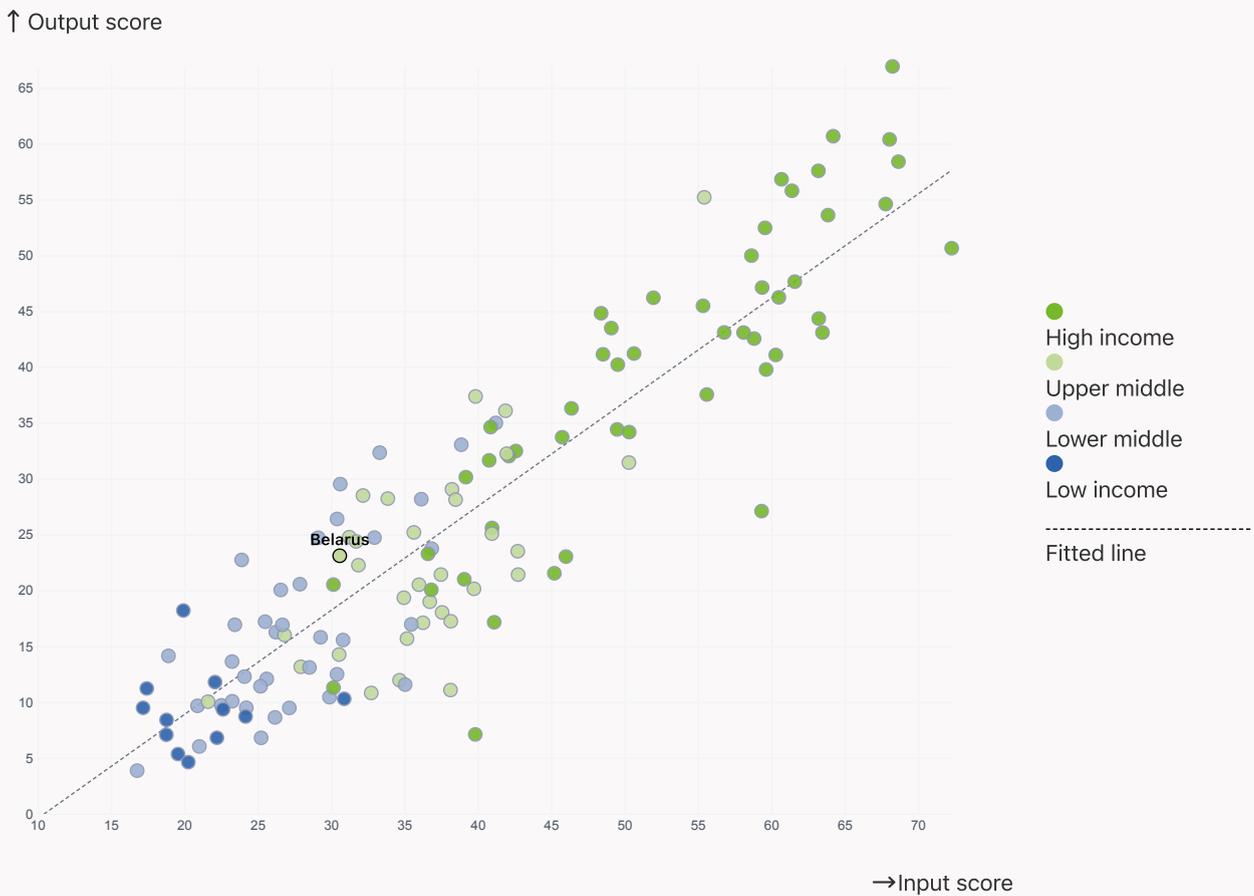
## → Effectively translating innovation investments into innovation outputs

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



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## → 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



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](#).

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

The charts show 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.

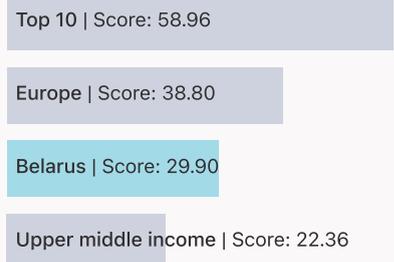


### > Europe

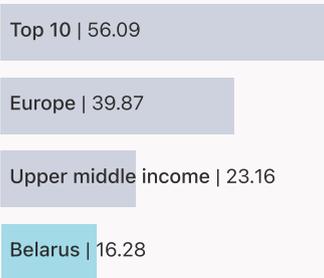
Belarus performs below the regional average in all the pillars.



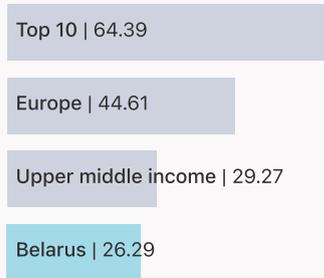
### Knowledge and technology outputs



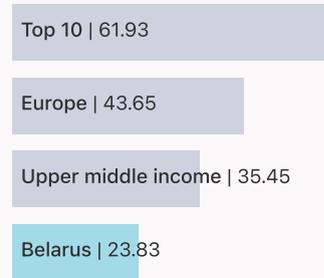
### Creative outputs



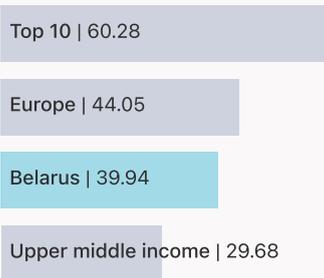
### Business sophistication



### Market sophistication



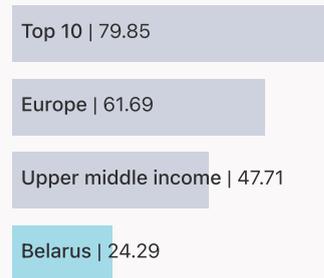
### Human capital and research



### Infrastructure



### Institutions



# 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\$

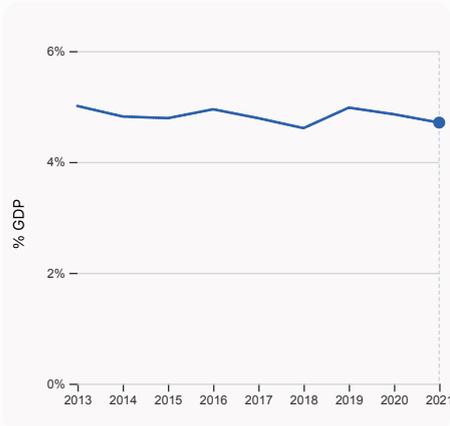
# Global Innovation Index 2023



## → Belarus's innovation system

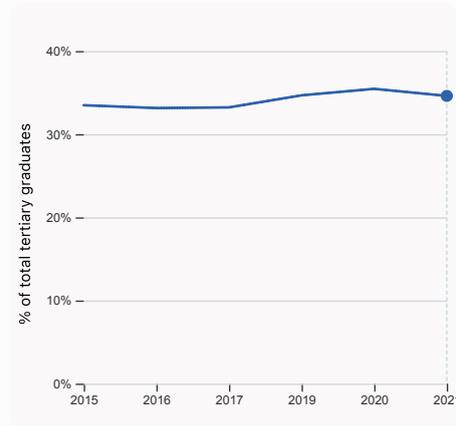
As far as practicable, the plots below present unscaled indicator data.

### > Innovation inputs in Belarus



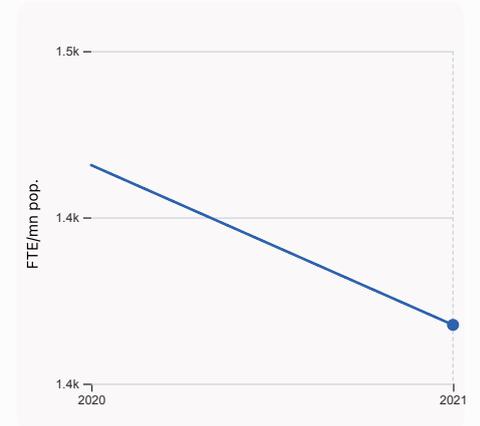
#### 2.1.1 Expenditure on education, % GDP

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.



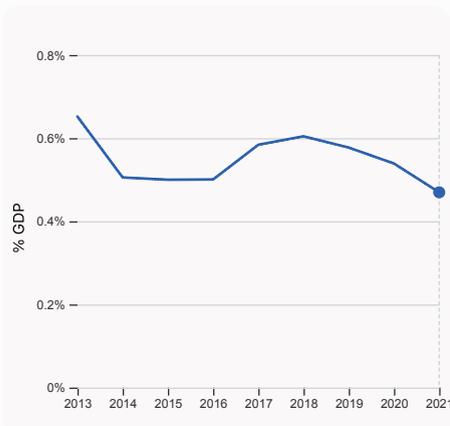
#### 2.2.2 Graduates in science and engineering, %

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.



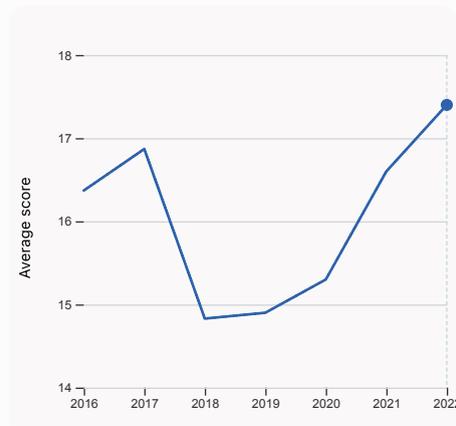
#### 2.3.1 Researchers, FTE/mn pop.

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.



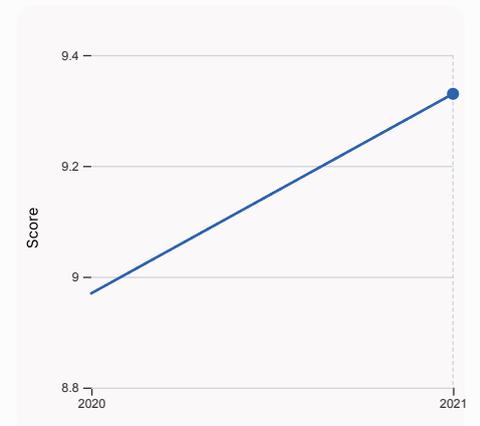
#### 2.3.2 Gross expenditure on R&D, % GDP

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

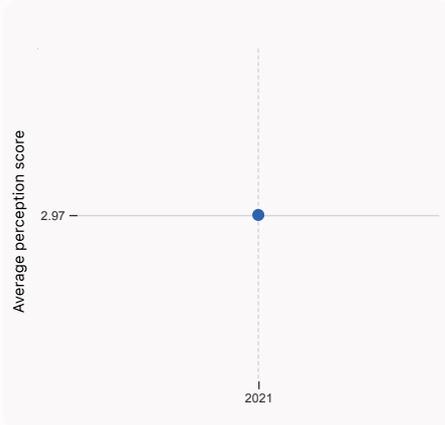
was equal to an average score of 17.4 for the top 3 universities in 2022, up by 4.82% from the year prior – and equivalent to an indicator rank of 56.



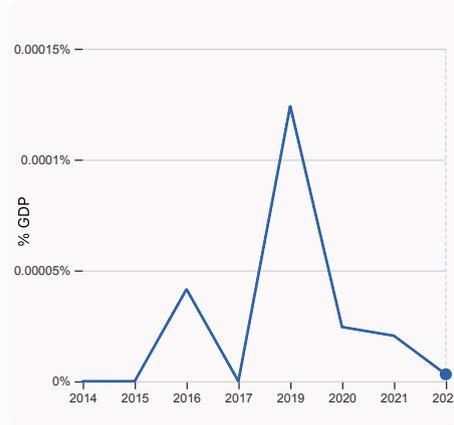
#### 3.1.1 ICT access

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.

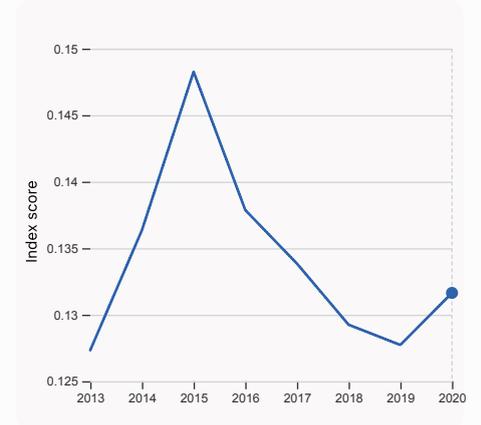
# Global Innovation Index 2023



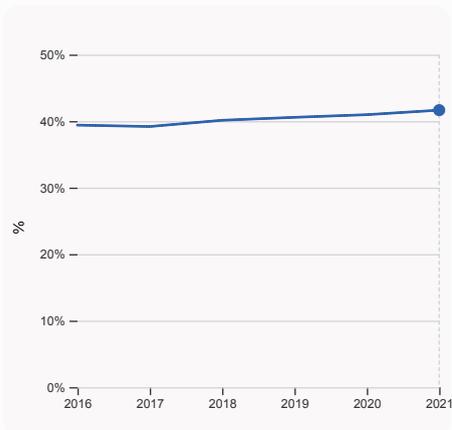
**4.1.1 Finance for startups and scaleups** was equal to an average perception score of 2.97 in 2021, equivalent to an indicator rank of 81.



**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.

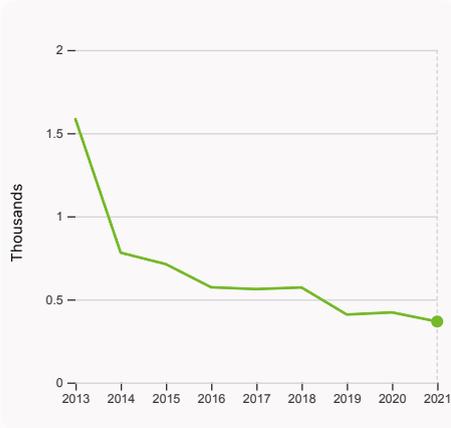


**5.1.1 Knowledge-intensive employment, %** was equal to 41.65% in 2021, up by 0.68 percentage points from the year prior – and equivalent to an indicator rank of 27.

# Global Innovation Index 2023

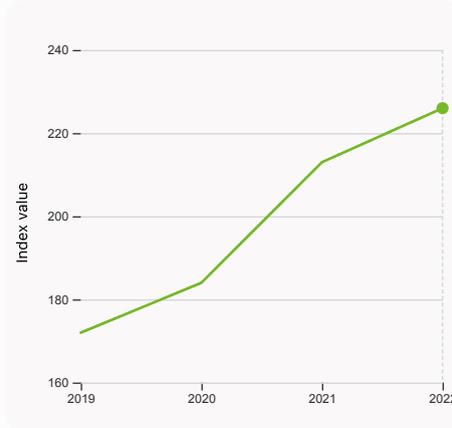


## > Innovation outputs in Belarus



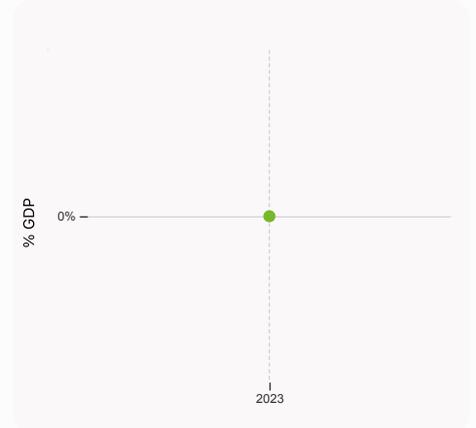
### 6.1.1 Patents by origin

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



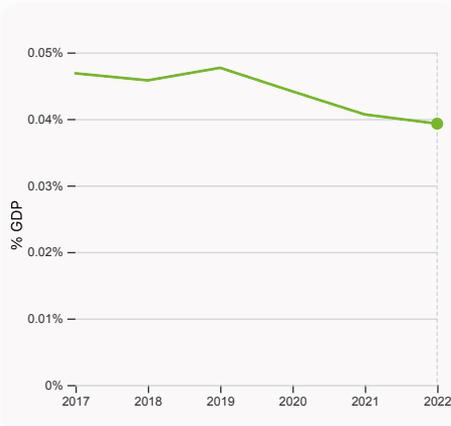
### 6.1.5 Citable documents H-index

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.



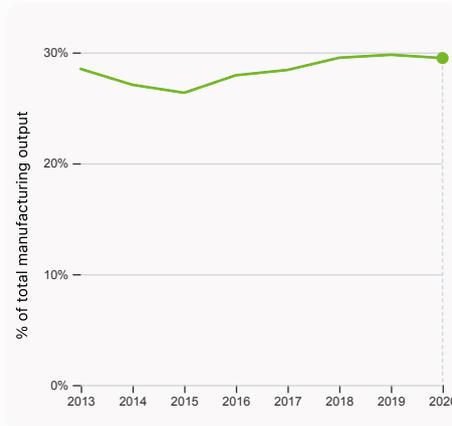
### 6.2.2 Unicorn valuation, % GDP

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



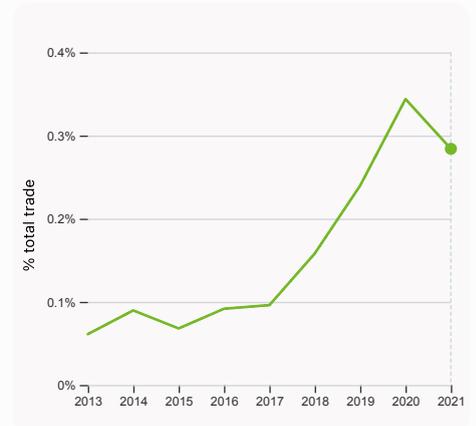
### 6.2.3 Software spending, % GDP

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, %

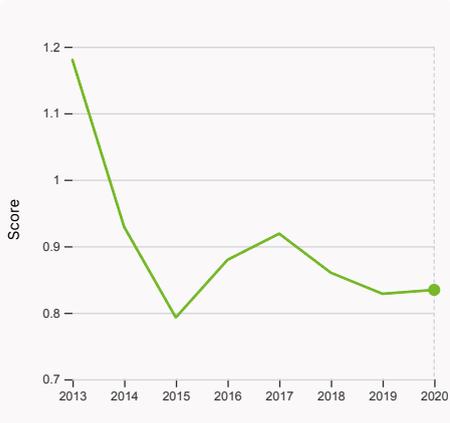
was equal to 29.49% of total manufacturing output in 2020, down by 0.3 percentage points from the year prior – and equivalent to an indicator rank of 40.



### 6.3.1 Intellectual property receipts, % total trade

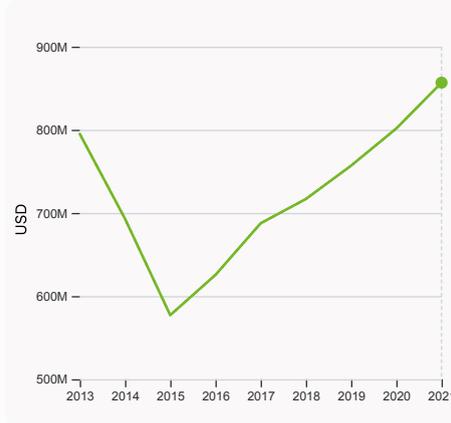
was equal to 0.284% total trade in 2021, down by 0.06 percentage points from the year prior – and equivalent to an indicator rank of 38.

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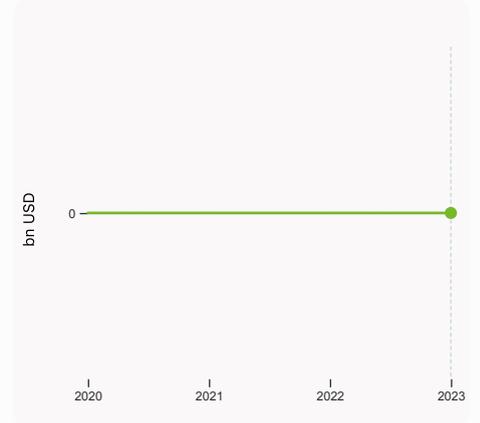
### 6.3.2 Production and export complexity

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.



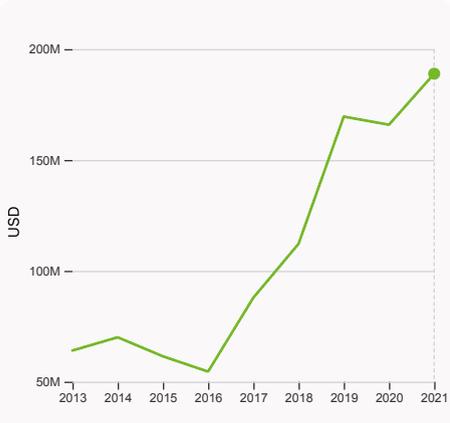
### 6.3.3 High-tech exports

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.



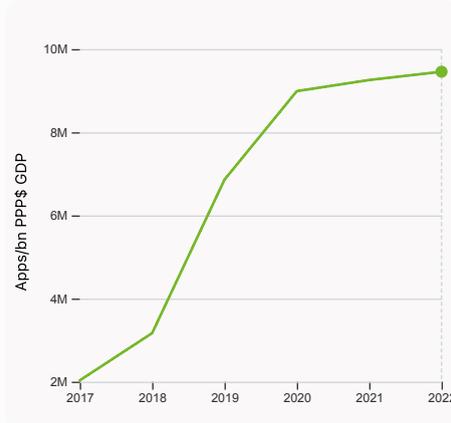
### 7.1.3 Global brand value, top 5,000

was equal to 0 bn USD in 2023 – and equivalent to an indicator rank of 74.



### 7.2.1 Cultural and creative services exports

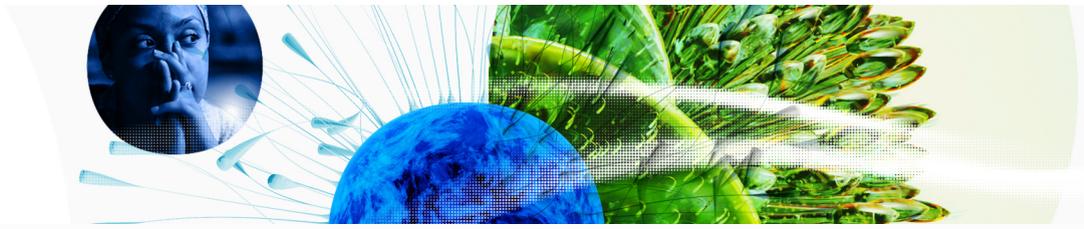
was equal to 188,930,000 USD in 2021, up by 13.87% from the year prior – and equivalent to an indicator rank of 61.



### 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.

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## → 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



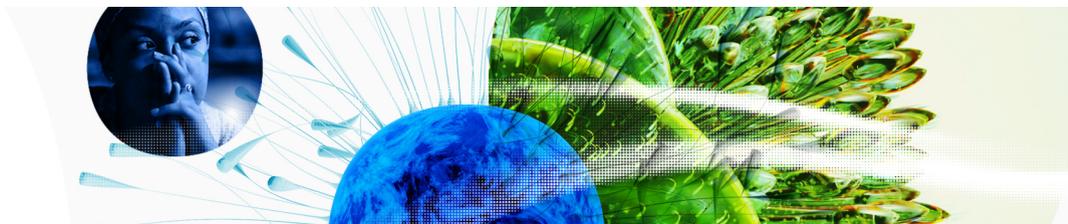
GII 2023 rank

**80**

## 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				Score / Value Rank		
<b>Institutions</b> 24.3 128 ◊				<b>Business sophistication</b> 26.3 74		
<b>1.1 Institutional environment</b> 25.4 110 ◊				<b>5.1 Knowledge workers</b> 46.2 38 ◆		
1.1.1 Operational stability for businesses* 35.4 108 ◊				5.1.1 Knowledge-intensive employment, % 41.7 27 ◆◆		
1.1.2 Government effectiveness* 15.5 117 ◊				5.1.2 Firms offering formal training, % 31.5 54		
<b>1.2 Regulatory environment</b> 42.9 115 ◊				5.1.3 GERD performed by business, % GDP 0.4 43		
1.2.1 Regulatory quality* 18.2 121 ◊				5.1.4 GERD financed by business, % 45.0 35		
1.2.2 Rule of law* 7.5 126 ◊				5.1.5 Females employed w/advanced degrees, % 20.9 30 ◆		
1.2.3 Cost of redundancy dismissal 21.7 96				<b>5.2 Innovation linkages</b> 6.0 [127]		
<b>1.3 Business environment</b> 4.5 [130]				5.2.1 University-industry R&D collaboration+ n/a n/a		
1.3.1 Policies for doing business+ n/a n/a				5.2.2 State of cluster development+ n/a n/a		
1.3.2 Entrepreneurship policies and culture+ 4.5 82 ◊				5.2.3 GERD financed by abroad, % GDP 0.1 41		
<b>Human capital and research</b> 39.9 37 ◆				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP 0.0 105		
<b>2.1 Education</b> 61.6 26 ◆◆				5.2.5 Patent families/bn PPP\$ GDP 0.1 56		
2.1.1 Expenditure on education, % GDP 4.7 45				<b>5.3 Knowledge absorption</b> 26.7 95		
2.1.2 Government funding/pupil, secondary, % GDP/cap n/a n/a				5.3.1 Intellectual property payments, % total trade 0.5 69		
2.1.3 School life expectancy, years 15.1 47				5.3.2 High-tech imports, % total trade 4.7 119		
2.1.4 PISA scales in reading, maths and science 472.3 36 ◆				5.3.3 ICT services imports, % total trade 1.0 86		
2.1.5 Pupil-teacher ratio, secondary 9.4 24 ◆◆				5.3.4 FDI net inflows, % GDP 2.0 70		
<b>2.2 Tertiary education</b> 48.1 13 ◆◆				5.3.5 Research talent, % in businesses n/a n/a		
2.2.1 Tertiary enrolment, % gross 82.2 22 ◆◆				<b>Knowledge and technology outputs</b> 29.9 47		
2.2.2 Graduates in science and engineering, % 34.6 9 ◆◆				<b>6.1 Knowledge creation</b> 16.7 60		
2.2.3 Tertiary inbound mobility, % 6.5 38				6.1.1 Patents by origin/bn PPP\$ GDP 1.8 37		
<b>2.3 Research and development (R&amp;D)</b> 10.1 59				6.1.2 PCT patents by origin/bn PPP\$ GDP 0.1 66		
2.3.1 Researchers, FTE/mn pop. 1,417.7 49				6.1.3 Utility models by origin/bn PPP\$ GDP 1.5 12 ◆◆		
2.3.2 Gross expenditure on R&D, % GDP 0.5 62				6.1.4 Scientific and technical articles/bn PPP\$ GDP n/a n/a		
2.3.3 Global corporate R&D investors, top 3, mn US\$ 0.0 40 ◊				6.1.5 Citable documents H-index 10.2 78		
2.3.4 QS university ranking, top 3* 17.6 56				<b>6.2 Knowledge impact</b> 23.1 88		
<b>Infrastructure</b> 38.7 71				6.2.1 Labor productivity growth, % 0.9 66		
<b>3.1 Information and communication technologies (ICTs)</b> 66.8 74				6.2.2 Unicorn valuation, % GDP 0.0 48 ◊		
3.1.1 ICT access* 90.0 22 ◆◆				6.2.3 Software spending, % GDP 0.0 111 ◊		
3.1.2 ICT use* 87.2 28 ◆◆				6.2.4 High-tech manufacturing, % 29.5 40		
3.1.3 Government's online service* 48.1 94 ◊				<b>6.3 Knowledge diffusion</b> 49.9 18 ◆◆		
3.1.4 E-participation* 41.9 87				6.3.1 Intellectual property receipts, % total trade 0.3 38 ◆		
<b>3.2 General infrastructure</b> 22.6 81				6.3.2 Production and export complexity 70.0 31 ◆		
3.2.1 Electricity output, GWh/mn pop. 4,109.8 54				6.3.3 High-tech exports, % total trade 1.8 63		
3.2.2 Logistics performance* 27.3 76				6.3.4 ICT services exports, % total trade 6.8 10 ◆◆		
3.2.3 Gross capital formation, % GDP 23.8 68				6.3.5 ISO 9001 quality/bn PPP\$ GDP 34.6 2 ◆◆		
<b>3.3 Ecological sustainability</b> 26.6 59				<b>Creative outputs</b> 16.3 88		
3.3.1 GDP/unit of energy use 7.1 97				<b>7.1 Intangible assets</b> 12.8 103		
3.3.2 Environmental performance* 50.2 44				7.1.1 Intangible asset intensity, top 15, % n/a n/a		
3.3.3 ISO 14001 environment/bn PPP\$ GDP 2.0 45				7.1.2 Trademarks by origin/bn PPP\$ GDP 22.7 88		
<b>Market sophistication</b> 23.8 99 ◊				7.1.3 Global brand value, top 5,000 0.0 74 ◊		
<b>4.1 Credit</b> 8.9 116 ◊				7.1.4 Industrial designs by origin/bn PPP\$ GDP 1.4 58		
4.1.1 Finance for startups and scaleups+ 15.9 81 ◊				<b>7.2 Creative goods and services</b> 9.2 [71]		
4.1.2 Domestic credit to private sector, % GDP 32.5 92				7.2.1 Cultural and creative services exports, % total trade 0.4 61		
4.1.3 Loans from microfinance institutions, % GDP 0.0 54				7.2.2 National feature films/mn pop. 15-69 n/a n/a		
<b>4.2 Investment</b> 0.7 109 ◊				7.2.3 Entertainment and media market/th pop. 15-69 n/a n/a		
4.2.1 Market capitalization, % GDP 1.4 77 ◊				7.2.4 Creative goods exports, % total trade 0.9 48		
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP 0.0 90 ◊				<b>7.3 Online creativity</b> 30.3 40 ◆		
4.2.3 VC recipients, deals/bn PPP\$ GDP 0.0 90				7.3.1 Generic top-level domains (TLDs)/th pop. 15-69 2.0 84		
4.2.4 VC received, value, % GDP 0.0 96 ◊				7.3.2 Country-code TLDs/th pop. 15-69 6.6 48		
<b>4.3 Trade, diversification, and market scale</b> 61.9 50				7.3.3 GitHub commits/mn pop. 15-69 24.2 39 ◆		
4.3.1 Applied tariff rate, weighted avg., % 1.8 56				7.3.4 Mobile app creation/bn PPP\$ GDP 88.4 2 ◆◆		
4.3.2 Domestic industry diversification 92.8 40						
4.3.3 Domestic market scale, bn PPP\$ 202.0 69						

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.



## → 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.

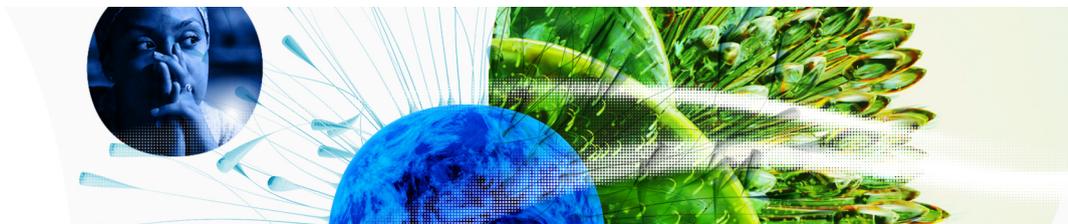
## > Missing data for Belarus

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

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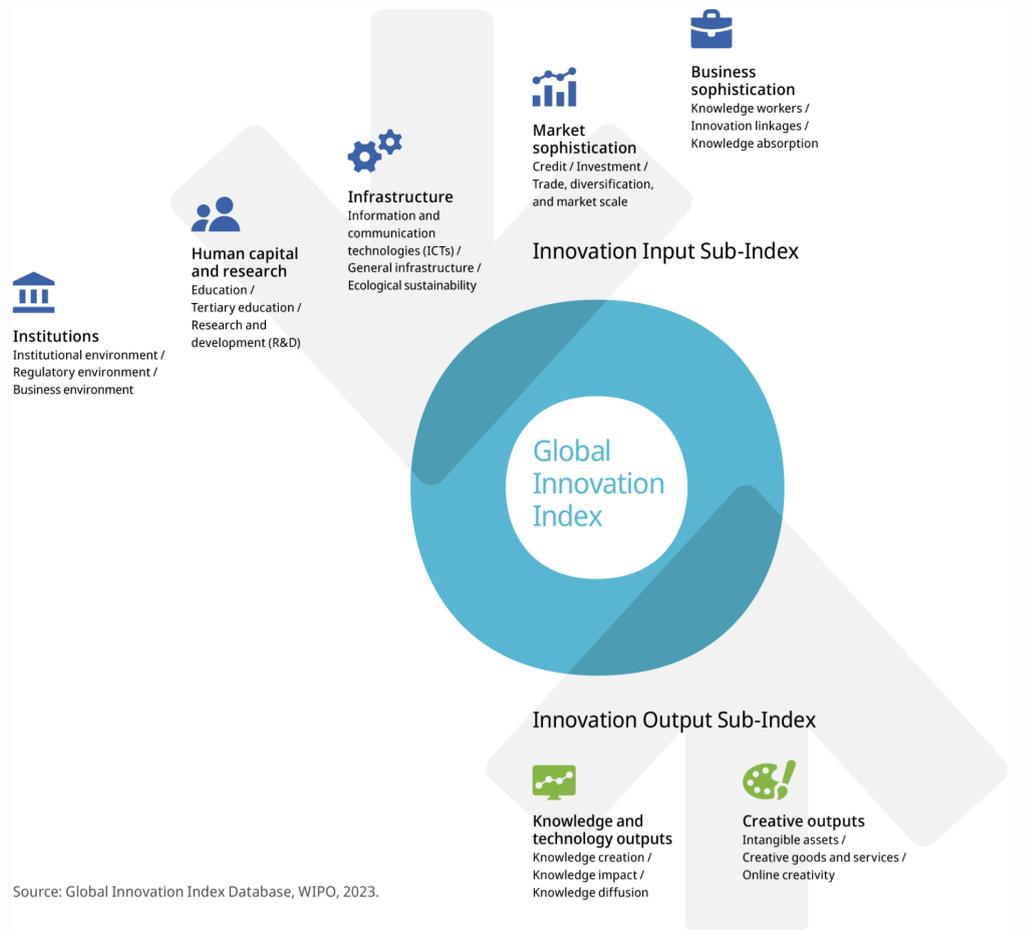
Code	Indicator name	Economy Year	Model Year	Source
5.1.1	Knowledge-intensive employment, %	2021	2022	International Labour Organization
5.1.2	Firms offering formal training, %	2018	2019	World Bank Enterprise Surveys
5.1.3	GERD performed by business, % GDP	2018	2021	UNESCO Institute for Statistics; Eurostat; 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

# Global Innovation Index 2023



## → 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.



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.