

Global Innovation Index 2023

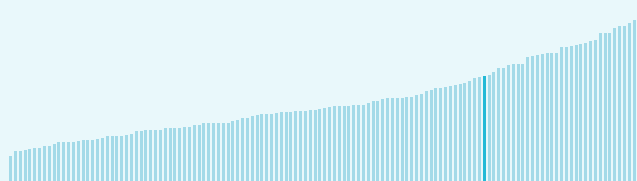


The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities.**

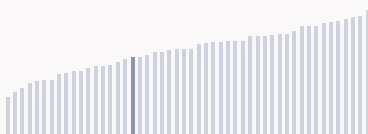
Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation.**

Lithuania ranking in the Global Innovation Index 2023

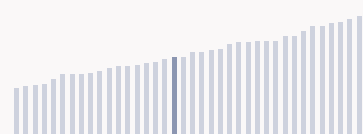
> Lithuania ranks **34th** among the 132 economies featured in the GII 2023.



> Lithuania ranks **33rd** among the 50 high-income group economies.



> Lithuania ranks **22nd** among the 39 economies in Europe.



> Lithuania GII Ranking (2020-2023)

The table shows the rankings of Lithuania 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 Lithuania in the GII 2023 is between ranks 32 and 35.

	GII Position	Innovation Inputs	Innovation Outputs
2020	40th	36th	42nd
2021	39th	35th	43rd
2022	39th	34th	47th
2023	34th	32nd	37th

Lithuania performs worse in innovation outputs than innovation inputs in 2023.

This year Lithuania ranks 32nd in innovation inputs. This position is higher than last year.

Lithuania ranks 37th in innovation outputs. This position is higher than last year.

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→ Expected vs. observed innovation performance

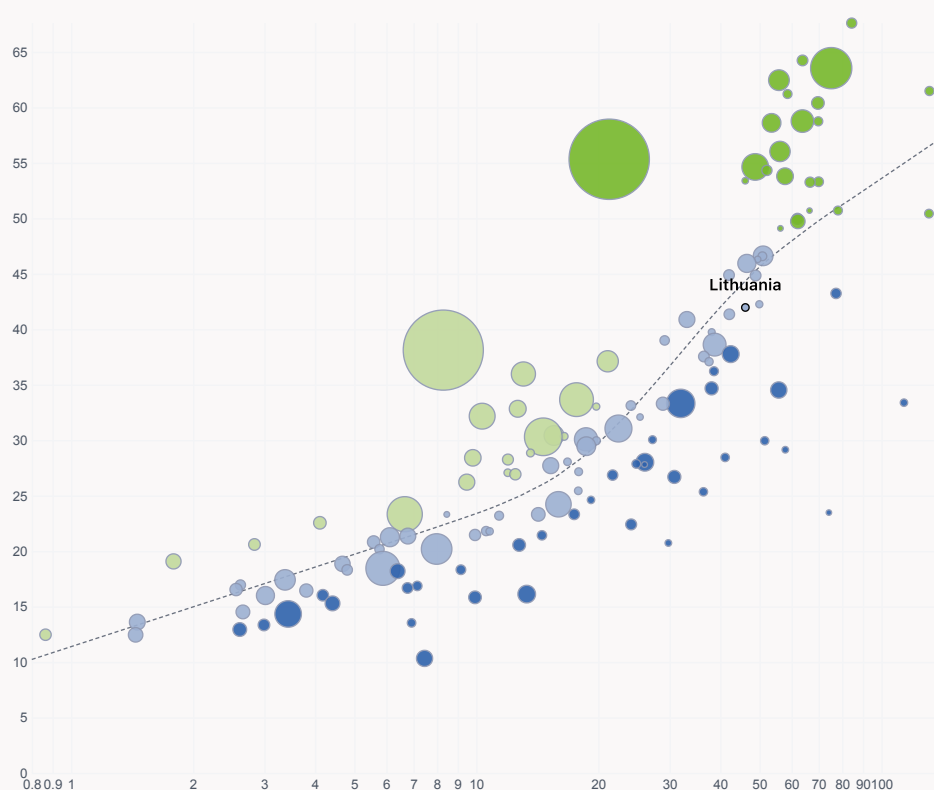
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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



> Relative to GDP, Lithuania's performance is at 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 \$)

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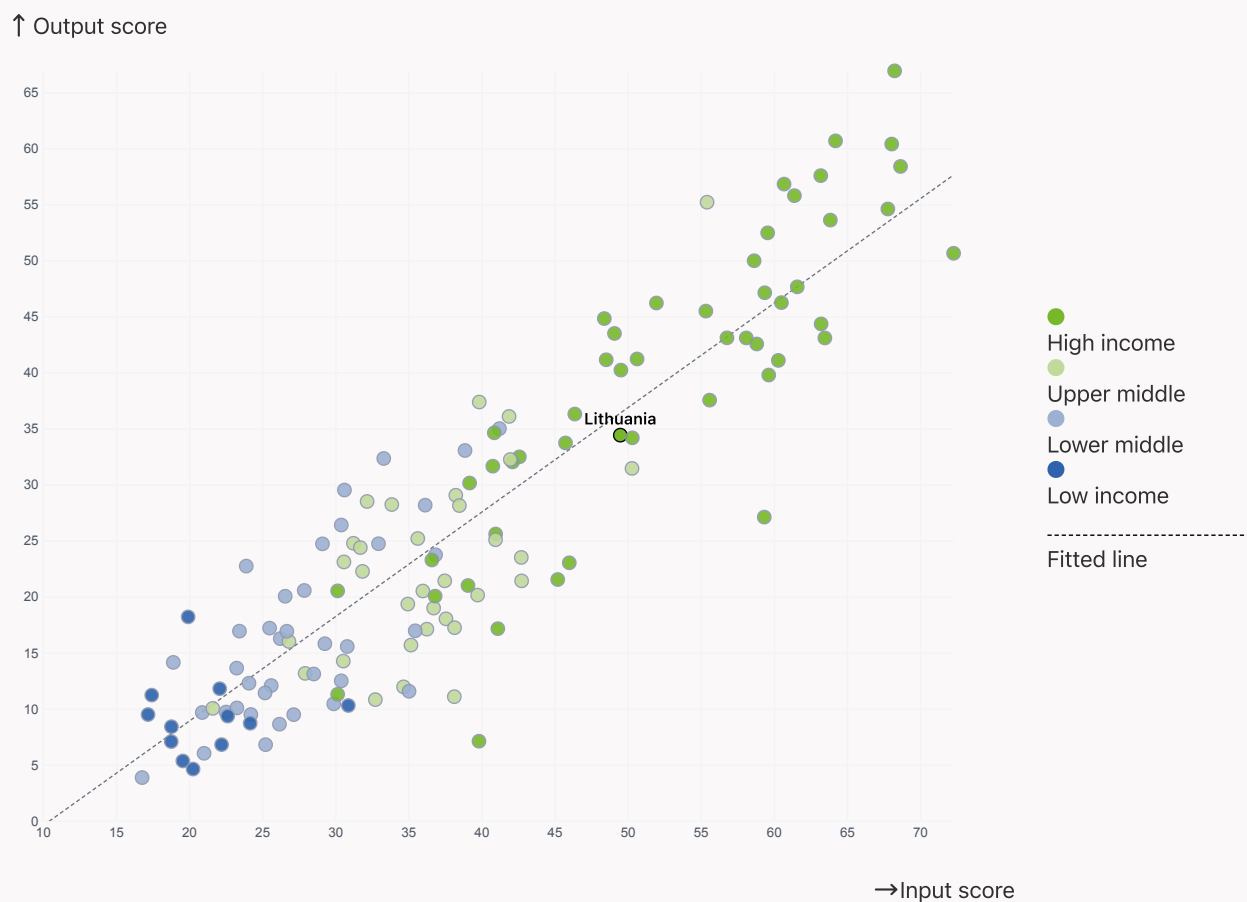
→ Effectively translating innovation investments into innovation outputs

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.



> Lithuania produces less innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs



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→ Overview of Lithuania'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 Lithuania are those that rank above the GII (shown in blue) and the weakest are those that rank below.

Highest rankings →

● 19th Institutions

● 29th Knowledge and technology outputs

● 34th 1 pillar and the [Global Innovation Index](#) *

● 35th Business sophistication

← Lowest rankings

● 41st Creative outputs

● 42nd Human capital and research

● 43rd Infrastructure

* Market sophistication

> Highest rankings



Lithuania ranks highest in Institutions (19th), Knowledge and technology outputs (29th) and Market sophistication (34th).

> Lowest rankings



Lithuania ranks lowest in Infrastructure (43rd), Human capital and research (42nd) and Creative outputs (41st).



The full WIPO Intellectual Property Statistics profile for Lithuania can be found on [this link](#).

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

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

> High-Income economies

Lithuania performs below the high-income group average in Knowledge and technology outputs, Creative outputs, Business sophistication, Market sophistication, Human capital and research, Infrastructure.



> Europe

Lithuania performs below the regional average in Knowledge and technology outputs, Creative outputs, Business sophistication, Human capital and research, Infrastructure.



Knowledge and technology outputs

Top 10 | Score: 58.96

Europe | Score: 38.80

High income | Score: 38.62

Lithuania | Score: 35.31

Creative outputs

Top 10 | 56.09

High income | 40.27

Europe | 39.87

Lithuania | 33.49

Business sophistication

Top 10 | 64.39

High income | 46.38

Europe | 44.61

Lithuania | 39.35

Market sophistication

Top 10 | 61.93

High income | 46.42

Lithuania | 45.33

Europe | 43.65

Human capital and research

Top 10 | 60.28

High income | 46.30

Europe | 44.05

Lithuania | 37.43

Infrastructure

Top 10 | 62.83

High income | 55.85

Europe | 54.69

Lithuania | 51.93

Institutions

Top 10 | 79.85

Lithuania | 73.49

High income | 68.16

Europe | 61.69

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→ Innovation strengths and weaknesses in Lithuania

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



> Lithuania's main innovation strengths are **Females employed w/advanced degrees, %** (rank 1), **Unicorn valuation, % GDP** (rank 1) and **Mobile app creation/bn PPP\$ GDP** (rank 7).

Strengths

Rank	Code	Indicator name
1	5.1.5	Females employed w/advanced degrees, %
1	6.2.2	Unicorn valuation, % GDP
7	7.3.4	Mobile app creation/bn PPP\$ GDP
8	5.2.3	GERD financed by abroad, % GDP
9	1.3.2	Entrepreneurship policies and culture
10	4.1.1	Finance for startups and scaleups
10	2.1.5	Pupil-teacher ratio, secondary
13	3.1.1	ICT access
13	3.3.3	ISO 14001 environment/bn PPP\$ GDP
15	5.3.4	FDI net inflows, % GDP

Weaknesses

Rank	Code	Indicator name
103	3.2.3	Gross capital formation, % GDP
99	6.2.3	Software spending, % GDP
90	3.2.1	Electricity output, GWh/mn pop.
90	5.3.1	Intellectual property payments, % total trade
88	4.1.2	Domestic credit to private sector, % GDP
74	7.1.3	Global brand value, top 5,000
69	2.1.2	Government funding/pupil, secondary, % GDP/cap
67	7.1.1	Intangible asset intensity, top 15, %
60	5.1.2	Firms offering formal training, %
40	2.3.3	Global corporate R&D investors, top 3, mn US\$

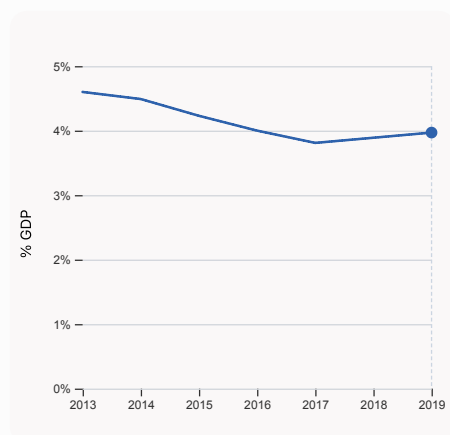
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→ Lithuania's innovation system

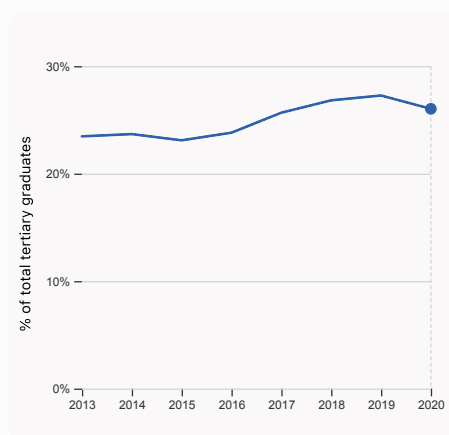
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Lithuania



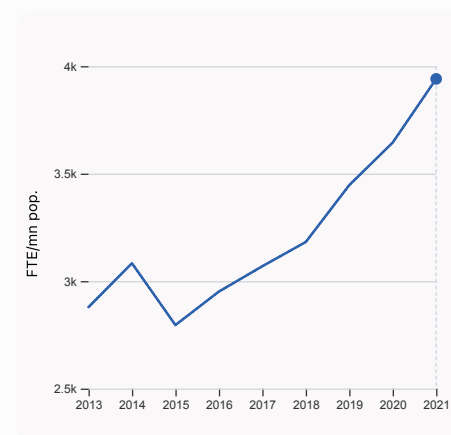
2.1.1 Expenditure on education, % GDP

was equal to 3.97% GDP in 2019, up by 0.08 percentage points from the year prior – and equivalent to an indicator rank of 73.



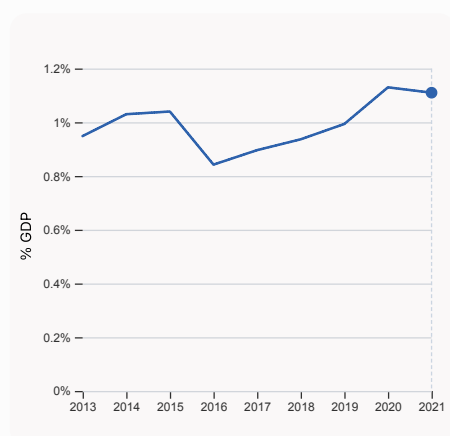
2.2.2 Graduates in science and engineering, %

was equal to 26.03% of total tertiary graduates in 2020, down by 1.24 percentage points from the year prior – and equivalent to an indicator rank of 38.



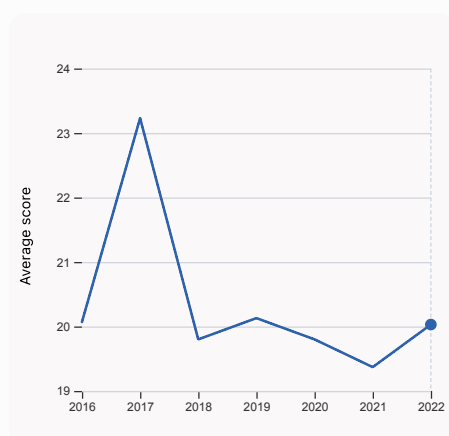
2.3.1 Researchers, FTE/mn pop.

was equal to 3,940.72 FTE/mn pop. in 2021, up by 8.13% from the year prior – and equivalent to an indicator rank of 28.



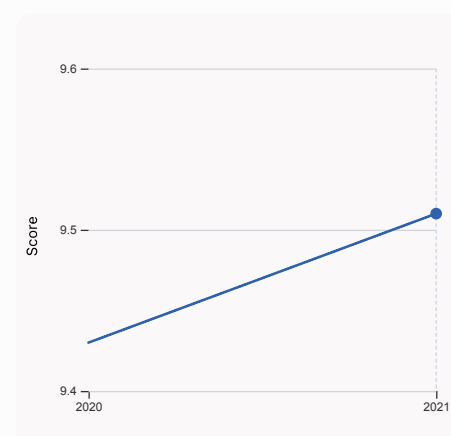
2.3.2 Gross expenditure on R&D, % GDP

was equal to 1.11% GDP in 2021, down by 0.02 percentage points from the year prior – and equivalent to an indicator rank of 36.



2.3.4 QS university ranking, top 3

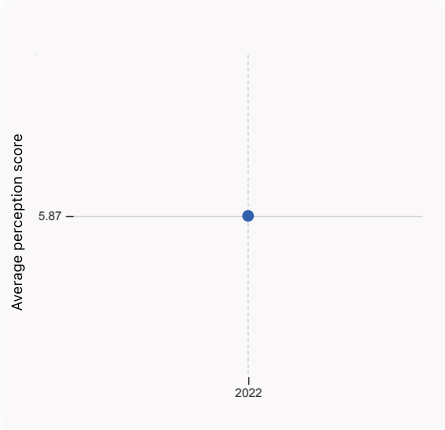
was equal to an average score of 20.03 for the top 3 universities in 2022, up by 3.41% from the year prior – and equivalent to an indicator rank of 52.



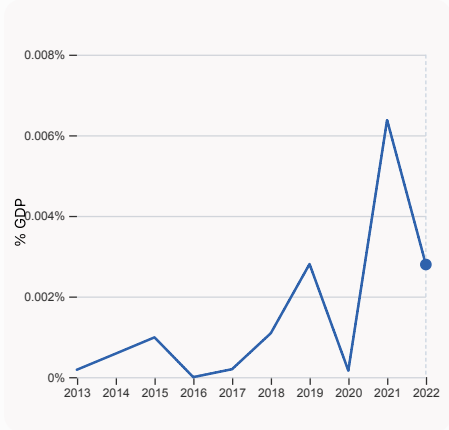
3.1.1 ICT access

was equal to a score of 9.51 in 2021, up by 0.85% from the year prior – and equivalent to an indicator rank of 13.

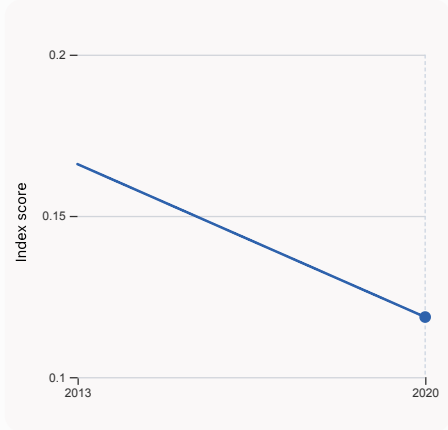
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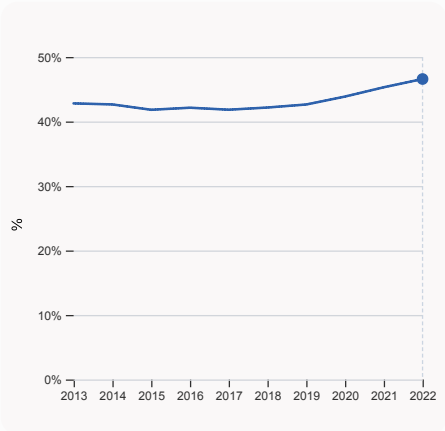
4.1.1 Finance for startups and scaleups
was equal to an average perception score of 5.87 in 2022, equivalent to an indicator rank of 10.



4.2.4 VC received, value, % GDP
was equal to 0.00279% GDP in 2022, down by 0.0036 percentage points from the year prior – and equivalent to an indicator rank of 23.



4.3.2 Domestic industry diversification
was equal to an index score of 0.119 in 2020, down by 28.56% from the year prior – and equivalent to an indicator rank of 31.

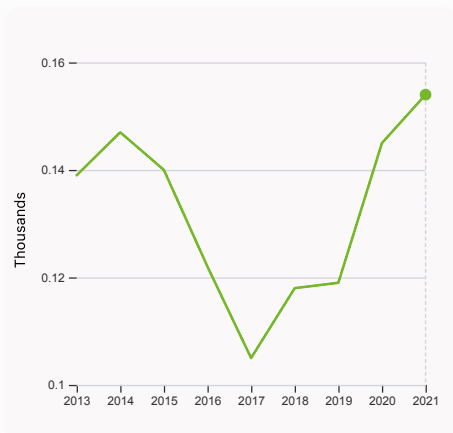


5.1.1 Knowledge-intensive employment, %
was equal to 46.59% in 2022, up by 1.28 percentage points from the year prior – and equivalent to an indicator rank of 19.

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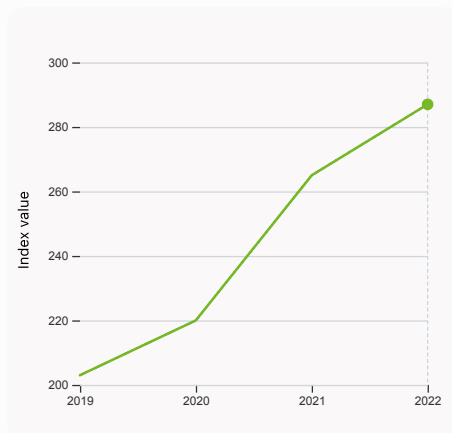


> Innovation outputs in Lithuania



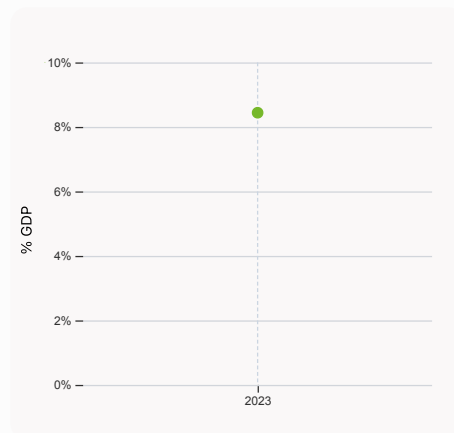
6.1.1 Patents by origin

was equal to 0.15 Thousands in 2021, up by 6.21% from the year prior – and equivalent to an indicator rank of 51.



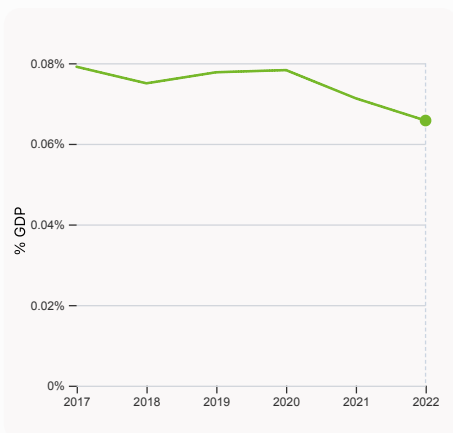
6.1.5 Citable documents H-index

was equal to an index value of 287 in 2022, up by 8.3% from the year prior – and equivalent to an indicator rank of 62.



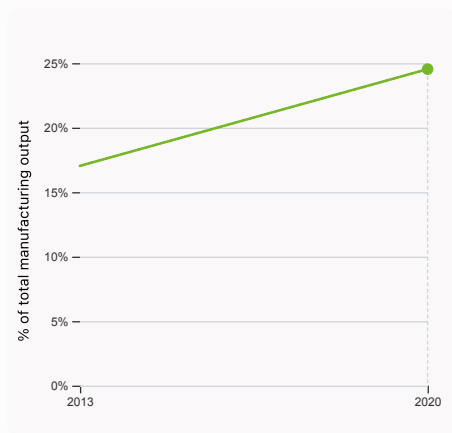
6.2.2 Unicorn valuation, % GDP

was equal to 8.44 % GDP in 2023 – and equivalent to an indicator rank of 1.



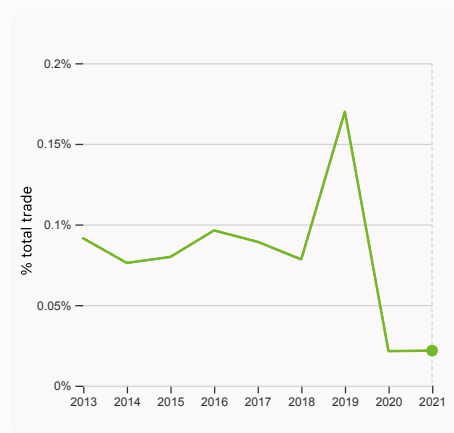
6.2.3 Software spending, % GDP

was equal to 0.066% GDP in 2022, down by 0.0055 percentage points from the year prior – and equivalent to an indicator rank of 99.



6.2.4 High-tech manufacturing, %

was equal to 24.54% of total manufacturing output in 2020, up by 7.5 percentage points from the year prior – and equivalent to an indicator rank of 52.



6.3.1 Intellectual property receipts, % total trade

was equal to 0.022% total trade in 2021, up by 0.00033 percentage points from the year prior – and equivalent to an indicator rank of 66.

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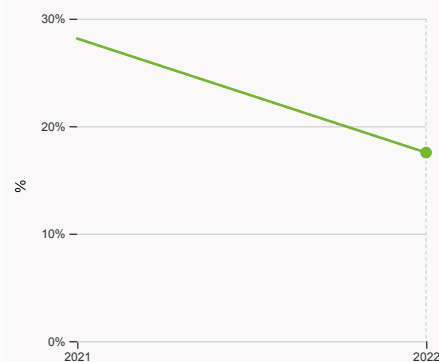
6.3.2 Production and export complexity

was equal to a score of 0.855 in 2020, up by 12.092% from the year prior – and equivalent to an indicator rank of 29.



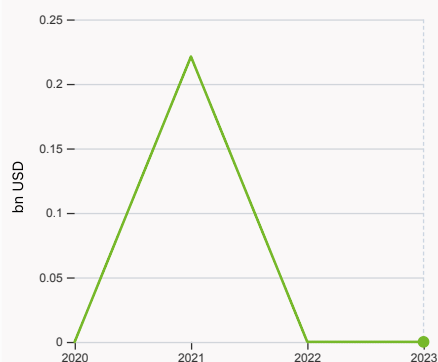
6.3.3 High-tech exports

was equal to 3,107,136,411 USD in 2021, up by 18.63% from the year prior – and equivalent to an indicator rank of 31.



7.1.1 Intangible asset intensity, top 15, %

was equal to 17.54% in 2022, down by 10.61 percentage points from the year prior – and equivalent to an indicator rank of 67.



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

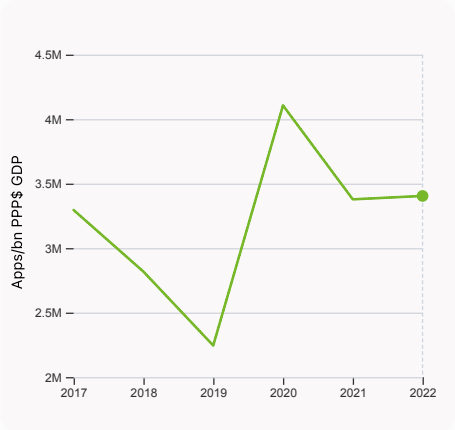
was equal to 469,017,000 USD in 2021, up by 44.45% from the year prior – and equivalent to an indicator rank of 33.



7.2.2 National feature films/mn pop. 15-69

was equal to 6.67 films/mn pop. 15-69 in 2021, up by 9.88% from the year prior – and equivalent to an indicator rank of 14.

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7.3.4 Mobile app creation/bn PPP\$ GDP

was equal to 3,404,601.52 Apps/bn PPP\$ GDP in 2022, up by 0.78% from the year prior – and equivalent to an indicator rank of 7.

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→ Lithuania's innovation top performers

> 2.3.4 QS university ranking of Lithuania's top universities

Rank	University	Score
400	VILNIUS UNIVERSITY	28.40
701-750)	VILNIUS GEDIMINAS TECHNICAL UNIVERSITY	16.90
801-1000	KAUNAS UNIVERSITY OF TECHNOLOGY	14.80

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".

> 6.2.2 Top Unicorn Companies in Lithuania

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	VINTED	E-commerce & direct-to-consumer	Vilnius	5
2	NORD SECURITY	Cybersecurity	Vilnius	2

Source: CBInsights, Tracker – The Complete List of Unicorn Companies: <https://www.cbinsights.com/research-unicorn-companies>

> 7.1.1 Top 15 intangible-asset intensive companies in Lithuania

Rank	Firm	Intensity, %
1	LITGRID AB	27.32
2	NOVATURAS AB	144.40
3	AB AMBER GRID	7.01

Source: Brand Finance (<https://brandirectory.com/reports/gift-2022>).

Note: Brand Finance only provides within economy ranks.

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GII 2023 rank

Lithuania

34

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
37	32	High	EUR	2.8	130.7	46,158.6

Score / Value Rank

Score / Value Rank

Institutions 73.5 19

1.1 Institutional environment	70.5	22
1.1.1 Operational stability for businesses*	75.0	17
1.1.2 Government effectiveness*	65.9	30
1.2 Regulatory environment	81.9	25
1.2.1 Regulatory quality*	75.2	23
1.2.2 Rule of law*	72.2	26
1.2.3 Cost of redundancy dismissal	13.0	41
1.3 Business environment	68.1	24
1.3.1 Policies for doing business*	57.3	44
1.3.2 Entrepreneurship policies and culture*	79.0	9 ●

Human capital and research 37.4 42

2.1 Education	55.1	54
2.1.1 Expenditure on education, % GDP	4.0	73
2.1.2 Government funding/pupil, secondary, % GDP/cap	16.8	69 ○ ◇
2.1.3 School life expectancy, years	16.2	32
2.1.4 PISA scales in reading, maths and science	479.7	32
2.1.5 Pupil-teacher ratio, secondary	8.0	10 ●
2.2 Tertiary education	37.0	41
2.2.1 Tertiary enrolment, % gross	70.8	33
2.2.2 Graduates in science and engineering, %	26.0	38
2.2.3 Tertiary inbound mobility, %	6.2	41
2.3 Research and development (R&D)	20.2	43
2.3.1 Researchers, FTE/mn pop.	3,940.7	28
2.3.2 Gross expenditure on R&D, % GDP	1.1	36
2.3.3 Global corporate R&D investors, top 3, mn US\$	0.0	40 ○ ◇
2.3.4 QS university ranking, top 3*	20.3	52

Infrastructure 51.9 43

3.1 Information and communication technologies (ICTs)	79.5	40
3.1.1 ICT access*	92.8	13 ●
3.1.2 ICT use*	90.0	22
3.1.3 Government's online service*	81.7	28
3.1.4 E-participation*	53.5	67
3.2 General infrastructure	26.3	66 ◇
3.2.1 Electricity output, GWh/mn pop.	1,559.0	90 ○ ◇
3.2.2 Logistics performance*	59.1	37
3.2.3 Gross capital formation, % GDP	19.2	103 ○ ◇
3.3 Ecological sustainability	50.0	22
3.3.1 GDP/unit of energy use	13.2	36
3.3.2 Environmental performance*	62.7	30
3.3.3 ISO 14001 environment/bn PPP\$ GDP	7.0	13 ●

Market sophistication 45.3 34

4.1 Credit	45.3	35
4.1.1 Finance for startups and scaleups*	78.0	10 ●
4.1.2 Domestic credit to private sector, % GDP	37.4	88 ○ ◇
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a
4.2 Investment	28.1	25
4.2.1 Market capitalization, % GDP	n/a	n/a
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.2	29
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	15
4.2.4 VC received, value, % GDP	0.0	23
4.3 Trade, diversification, and market scale	62.6	49
4.3.1 Applied tariff rate, weighted avg., %	1.5	20
4.3.2 Domestic industry diversification	94.6	31
4.3.3 Domestic market scale, bn PPP\$	130.7	81

Business sophistication 39.3 35

5.1 Knowledge workers	51.7	27
5.1.1 Knowledge-intensive employment, %	46.6	19
5.1.2 Firms offering formal training, %	27.5	60 ○
5.1.3 GERD performed by business, % GDP	0.5	37
5.1.4 GERD financed by business, %	37.3	51
5.1.5 Females employed w/advanced degrees, %	30.8	1 ●
5.2 Innovation linkages	35.4	34
5.2.1 University-industry R&D collaboration*	63.9	29
5.2.2 State of cluster development*	41.1	68
5.2.3 GERD financed by abroad, % GDP	0.4	8 ●
5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	60
5.2.5 Patent families/bn PPP\$ GDP	0.4	36
5.3 Knowledge absorption	31.0	75 ◇
5.3.1 Intellectual property payments, % total trade	0.2	90 ○ ◇
5.3.2 High-tech imports, % total trade	7.3	80
5.3.3 ICT services imports, % total trade	1.3	69
5.3.4 FDI net inflows, % GDP	6.2	15 ●
5.3.5 Research talent, % in businesses	30.9	42

Knowledge and technology outputs 35.3 29

6.1 Knowledge creation	21.6	49
6.1.1 Patents by origin/bn PPP\$ GDP	1.3	51
6.1.2 PCT patents by origin/bn PPP\$ GDP	0.3	37
6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
6.1.4 Scientific and technical articles/bn PPP\$ GDP	n/a	n/a
6.1.5 Citable documents H-index	13.6	62
6.2 Knowledge impact	49.5	17
6.2.1 Labor productivity growth, %	2.0	33
6.2.2 Unicorn valuation, % GDP	8.4	1 ●
6.2.3 Software spending, % GDP	0.1	99 ○ ◇
6.2.4 High-tech manufacturing, %	24.5	52
6.3 Knowledge diffusion	34.8	43
6.3.1 Intellectual property receipts, % total trade	0.1	66
6.3.2 Production and export complexity	70.4	29
6.3.3 High-tech exports, % total trade	6.1	31
6.3.4 ICT services exports, % total trade	2.9	45
6.3.5 ISO 9001 quality/bn PPP\$ GDP	10.8	27

Creative outputs 33.5 41

7.1 Intangible assets	32.4	63
7.1.1 Intangible asset intensity, top 15, %	17.5	67 ○
7.1.2 Trademarks by origin/bn PPP\$ GDP	45.8	50
7.1.3 Global brand value, top 5,000	0.0	74 ○ ◇
7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.7	36
7.2 Creative goods and services	26.6	37
7.2.1 Cultural and creative services exports, % total trade	0.9	33
7.2.2 National feature films/mn pop. 15-69	6.7	14
7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
7.2.4 Creative goods exports, % total trade	1.6	33
7.3 Online creativity	42.5	28
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	15.7	33
7.3.2 Country-code TLDs/th pop. 15-69	34.8	21
7.3.3 GitHub commits/mn pop. 15-69	36.6	28
7.3.4 Mobile app creation/bn PPP\$ GDP	82.8	7 ●

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 Lithuania.



> Lithuania has missing data for four indicators and outdated data for one indicator.

> Missing data for Lithuania

Code	Indicator name	Economy Year	Model Year	Source
4.1.3	Loans from microfinance institutions, % GDP	n/a	2021	International Monetary Fund, Financial Access Survey (FAS)
4.2.1	Market capitalization, % GDP	n/a	2020	World Federation of Exchanges; World Bank
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2021	World Intellectual Property Organization; International Monetary Fund
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 Lithuania

Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	2019	2021	UNESCO Institute for Statistics

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→ 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.