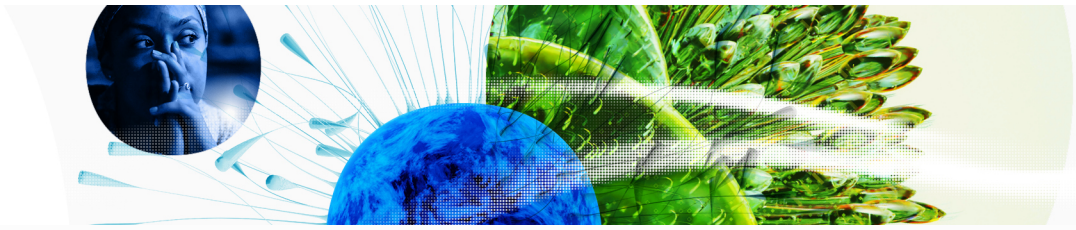
Global Innovation Index 2023



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**.

Latvia ranking in the Global Innovation Index 2023

> Latvia ranks 37th among the 132 economies featured in the GII 2023.

> Latvia ranks 35th among the 50 high-income group economies.

> Latvia ranks 24th among the 39 economies in Europe.

> Latvia GII Ranking (2020-2023)

The table shows the rankings of Latvia 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 Latvia in the GII 2023 is between ranks 37 and 40.

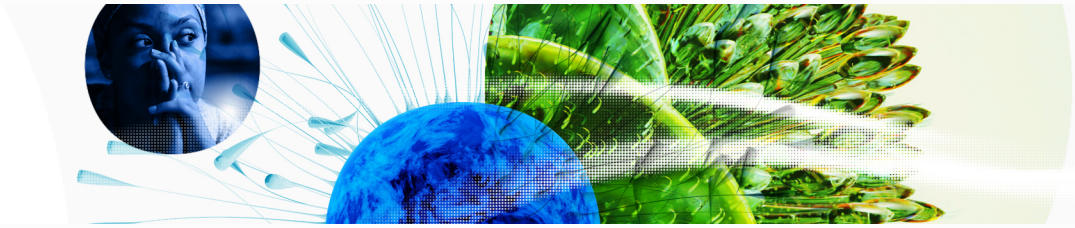
	GII Position	Innovation Inputs	Innovation Outputs
2020	36th	35th	35th
2021	38th	38th	39th
2022	41st	39th	42nd
2023	37th	38th	39th

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

This year **Latvia ranks 38th in innovation inputs.** This position is higher than last year.

Latvia ranks 39th in innovation outputs. This position is higher than last year.

Global Innovation Index 2023

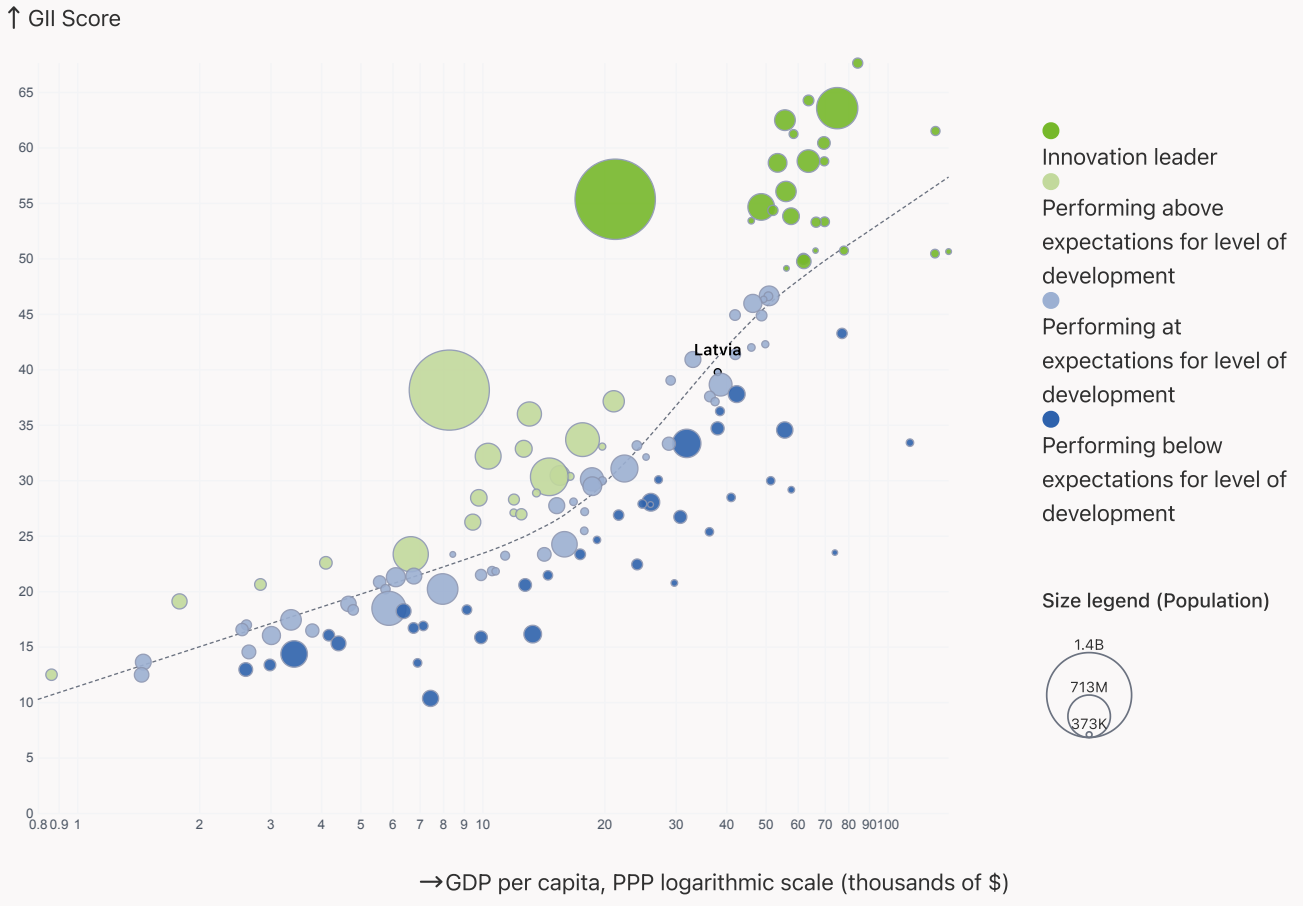


→ Expected vs. observed innovation performance

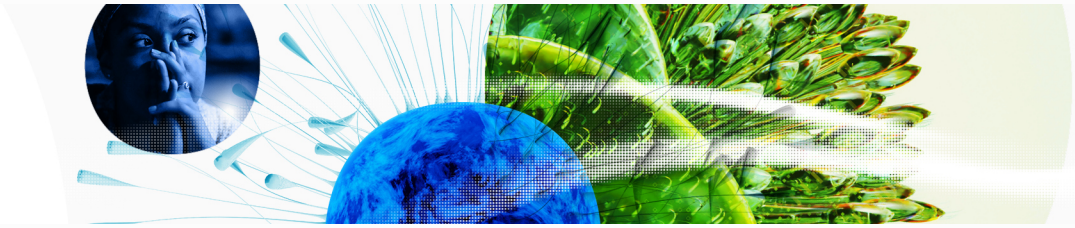
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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

> Relative to GDP, Latvia's performance is at expectations for its level of development.

> Innovation overperformers relative to their economic development



Global Innovation Index 2023

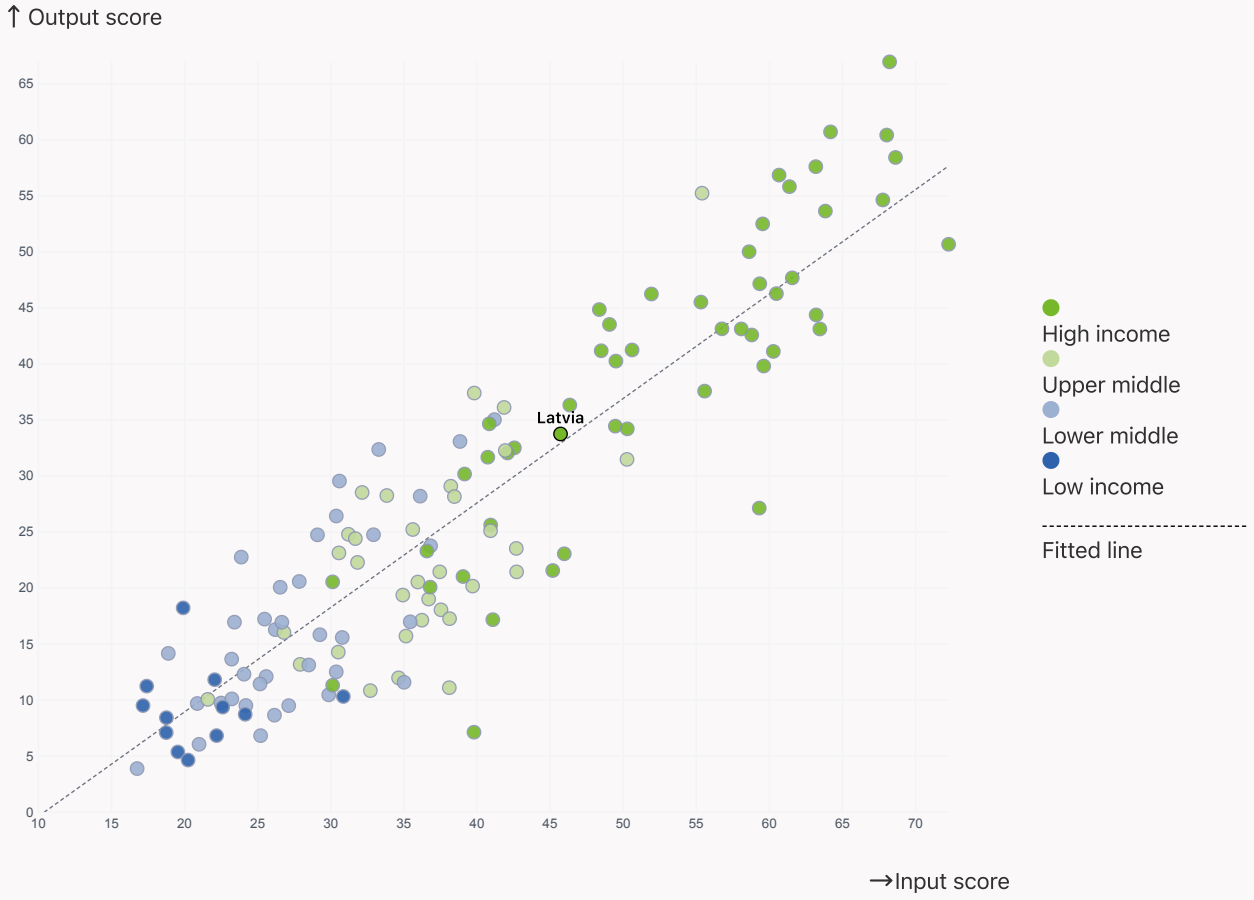


→ Effectively translating innovation investments into innovation outputs

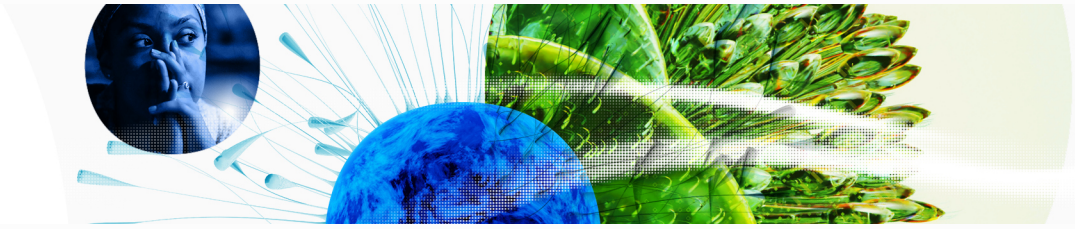
The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

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

> Relationship between innovation inputs and outputs

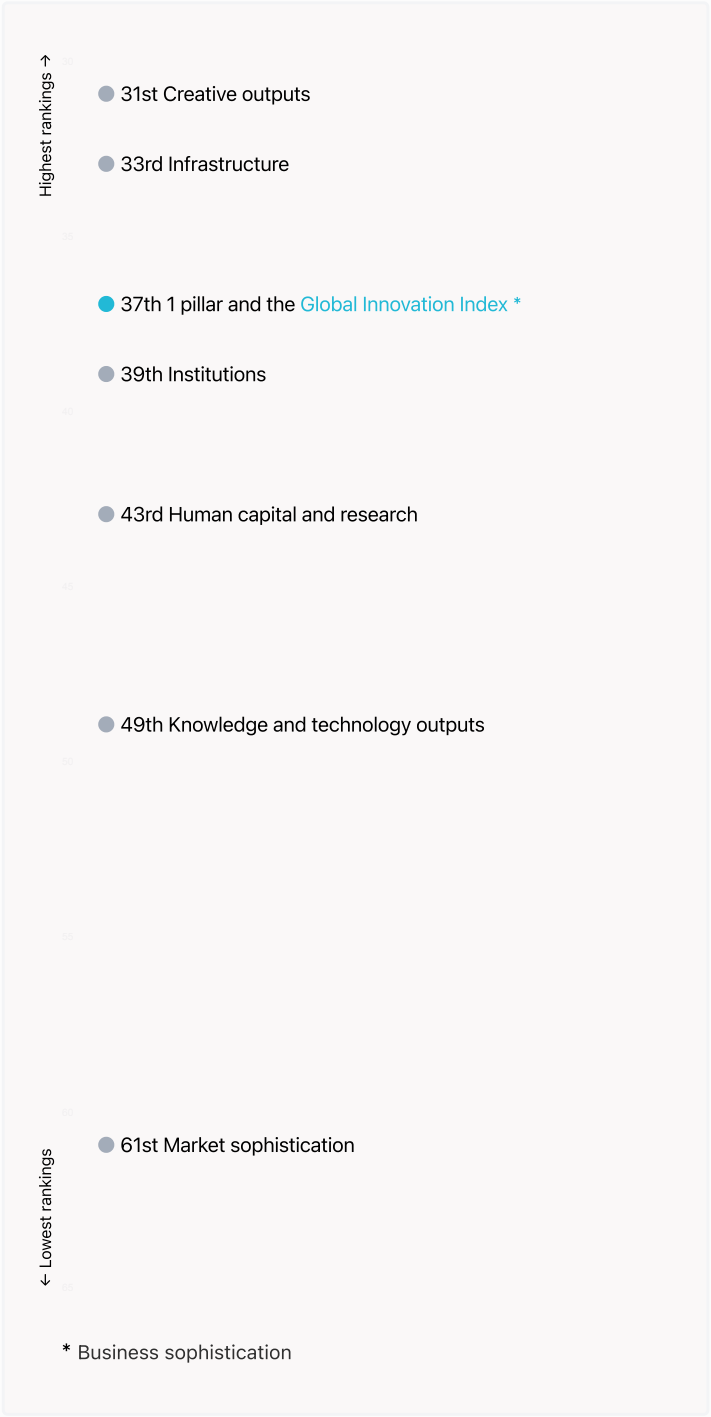


Global Innovation Index 2023



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



> Highest rankings

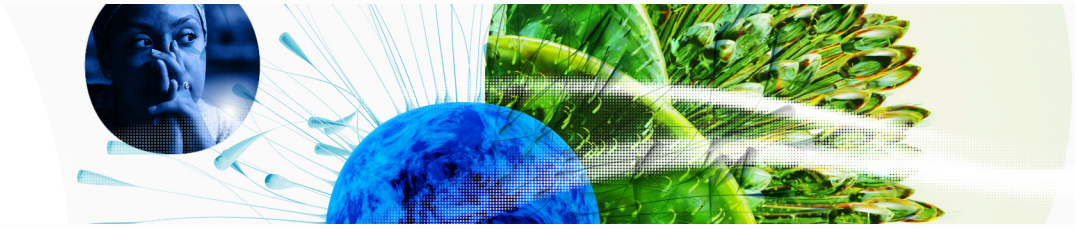
Latvia ranks highest in Creative outputs (31st), Infrastructure (33rd) and Business sophistication (37th).

> Lowest rankings

Latvia ranks lowest in Market sophistication (61st), Knowledge and technology outputs (49th) and Human capital and research (43rd).

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

Global Innovation Index 2023



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

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

> High-Income economies

Latvia performs below the high-income group average in all the pillars.

> Europe

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

Knowledge and technology outputs

- Top 10 | Score: 58.96
- Europe | Score: 38.80
- High income | Score: 38.62
- Latvia | Score: 28.03

Creative outputs

- Top 10 | 56.09
- High income | 40.27
- Europe | 39.87
- Latvia | 39.37

Business sophistication

- Top 10 | 64.39
- High income | 46.38
- Europe | 44.61
- Latvia | 38.06

Market sophistication

- Top 10 | 61.93
- High income | 46.42
- Europe | 43.65
- Latvia | 35.97

Human capital and research

- Top 10 | 60.28
- High income | 46.30
- Europe | 44.05
- Latvia | 37.42

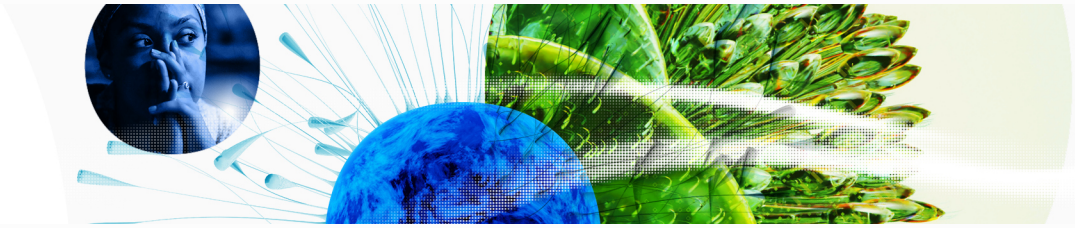
Infrastructure

- Top 10 | 62.83
- High income | 55.85
- Europe | 54.69
- Latvia | 54.55

Institutions

- Top 10 | 79.85
- High income | 68.16
- Latvia | 62.80
- Europe | 61.69

Global Innovation Index 2023



→ Innovation strengths and weaknesses in Latvia

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

> Latvia's main innovation strengths are **National feature films/mn pop. 15-69** (rank 1), **Tertiary enrolment, % gross** (rank 8) and **Cultural and creative services exports, % total trade** (rank 10).

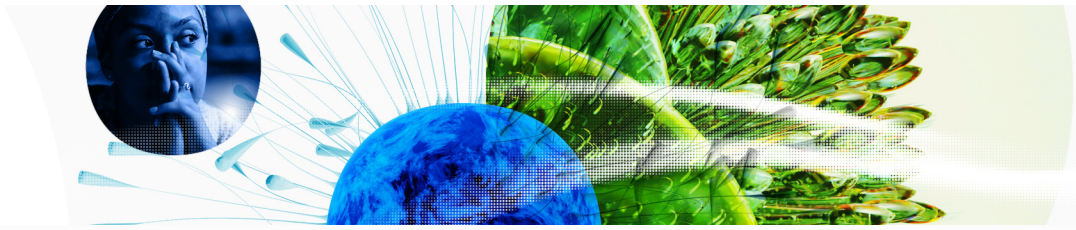
Strengths

Rank	Code	Indicator name
1	7.2.2	National feature films/mn pop. 15-69
8	2.2.1	Tertiary enrolment, % gross
10	7.2.1	Cultural and creative services exports, % total trade
12	5.1.5	Females employed w/advanced degrees, %
15	3.3.2	Environmental performance
17	7.2.4	Creative goods exports, % total trade
17	3.1.2	ICT use
17	2.2.3	Tertiary inbound mobility, %
18	5.3.4	FDI net inflows, % GDP
20	5.3.2	High-tech imports, % total trade

Weaknesses

Rank	Code	Indicator name
96	4.3.3	Domestic market scale, bn PPP$
95	1.3.1	Policies for doing business
91	6.2.3	Software spending, % GDP
91	4.1.2	Domestic credit to private sector, % GDP
91	5.3.1	Intellectual property payments, % total trade
80	2.2.2	Graduates in science and engineering, %
74	7.1.3	Global brand value, top 5,000
73	7.1.1	Intangible asset intensity, top 15, %
48	6.2.2	Unicorn valuation, % GDP
40	2.3.3	Global corporate R&D investors, top 3, mn US$

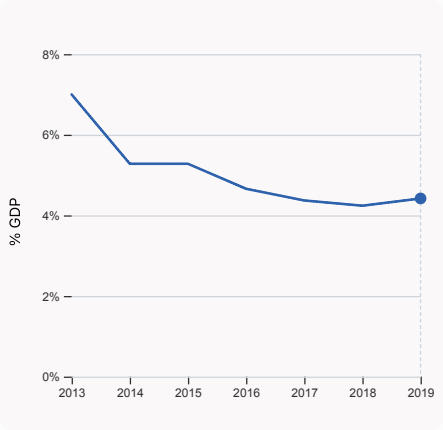
Global Innovation Index 2023



→ Latvia's innovation system

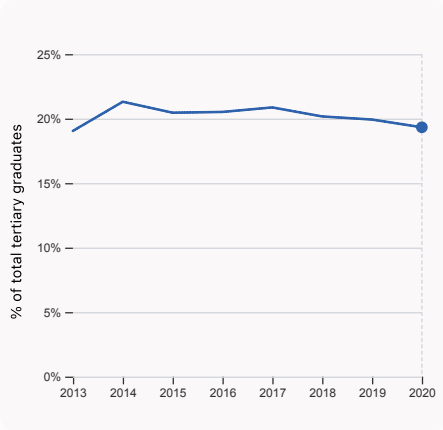
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Latvia



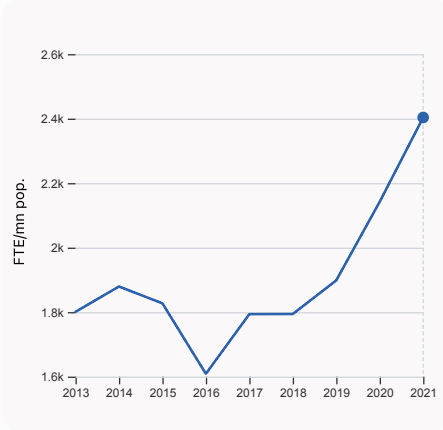
2.1.1 Expenditure on education, % GDP

was equal to 4.42% GDP in 2019, up by 0.18 percentage points from the year prior – and equivalent to an indicator rank of 57.



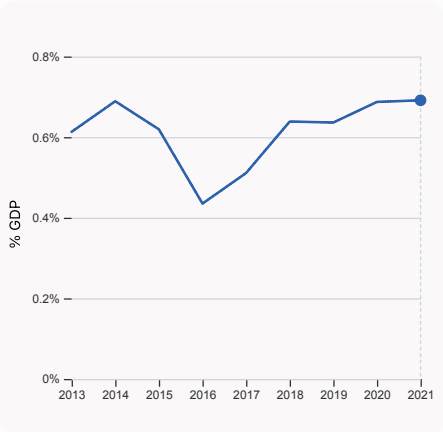
2.2.2 Graduates in science and engineering, %

was equal to 19.33% of total tertiary graduates in 2020, down by 0.6 percentage points from the year prior – and equivalent to an indicator rank of 80.



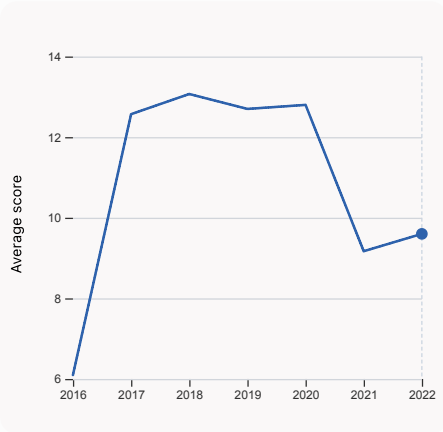
2.3.1 Researchers, FTE/mn pop.

was equal to 2,403.59 FTE/mn pop. in 2021, up by 12.2% from the year prior – and equivalent to an indicator rank of 35.



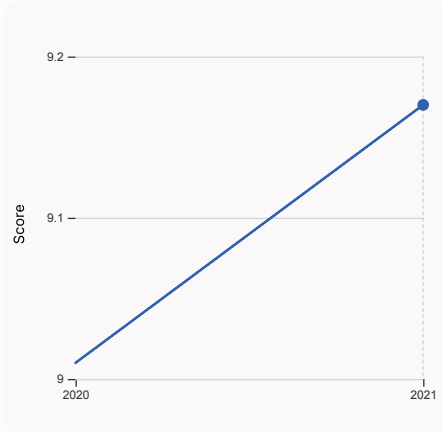
2.3.2 Gross expenditure on R&D, % GDP

was equal to 0.691% GDP in 2021, up by 0.004 percentage points from the year prior – and equivalent to an indicator rank of 51.



2.3.4 QS university ranking, top 3

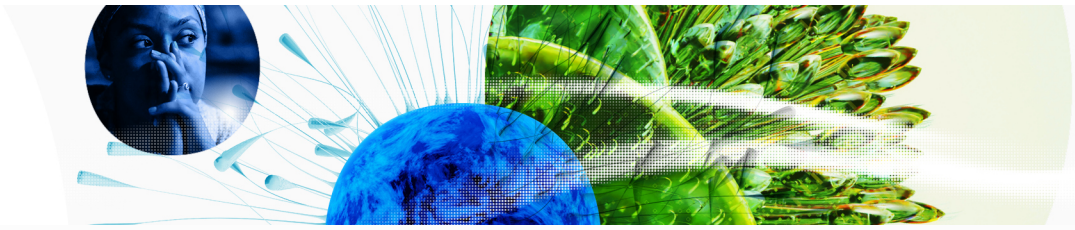
was equal to an average score of 9.6 for the top 3 universities in 2022, up by 4.69% from the year prior – and equivalent to an indicator rank of 67.

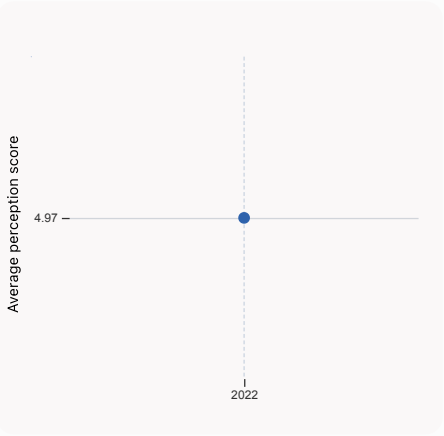


3.1.1 ICT access

was equal to a score of 9.17 in 2021, up by 1.78% from the year prior – and equivalent to an indicator rank of 36.

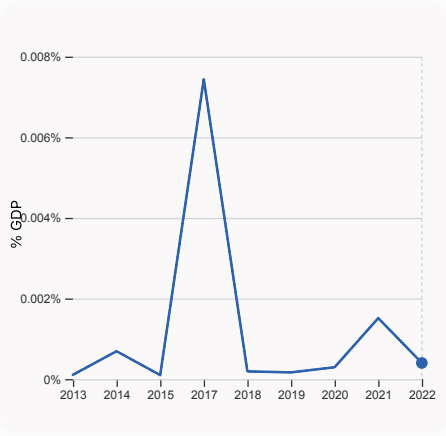
Global Innovation Index 2023





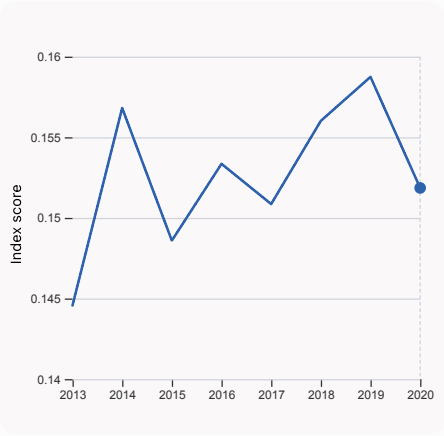
4.1.1 Finance for startups and scaleups

was equal to an average perception score of 4.97 in 2022, equivalent to an indicator rank of 34.



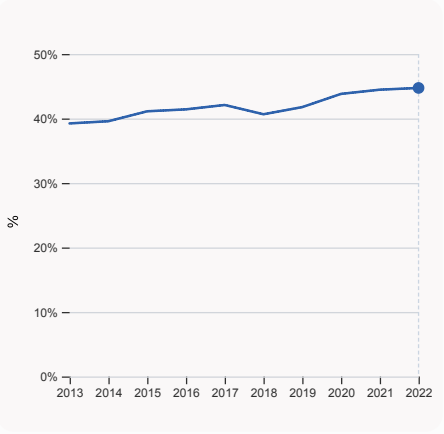
4.2.4 VC received, value, % GDP

was equal to 0.0004% GDP in 2022, down by 0.0011 percentage points from the year prior – and equivalent to an indicator rank of 54.



4.3.2 Domestic industry diversification

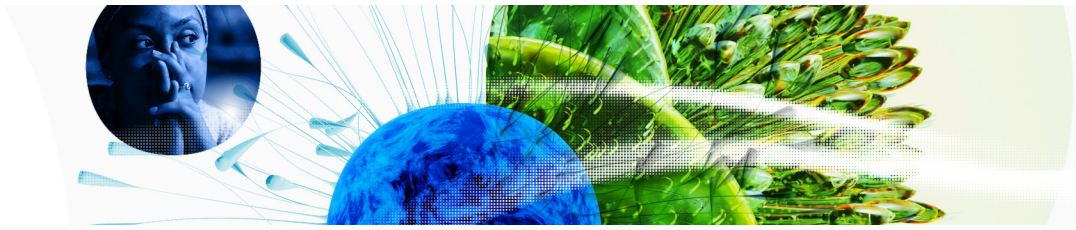
was equal to an index score of 0.152 in 2020, down by 4.34% from the year prior – and equivalent to an indicator rank of 48.



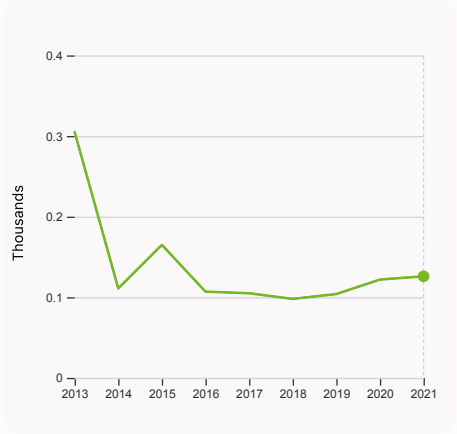
5.1.1 Knowledge-intensive employment, %

was equal to 44.74% in 2022, up by 0.27 percentage points from the year prior – and equivalent to an indicator rank of 23.

Global Innovation Index 2023

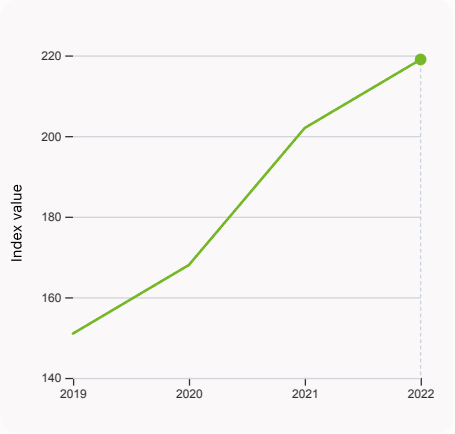


> Innovation outputs in Latvia



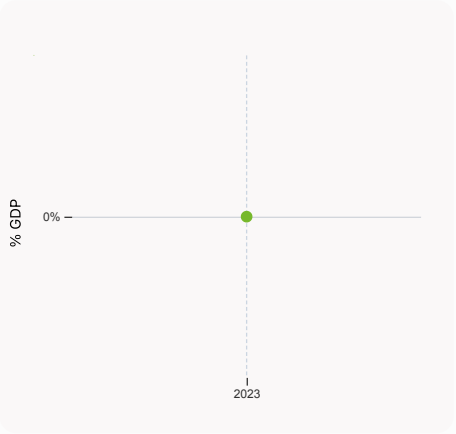
6.1.1 Patents by origin

was equal to 0.13 Thousands in 2021, up by 3.28% from the year prior – and equivalent to an indicator rank of 36.



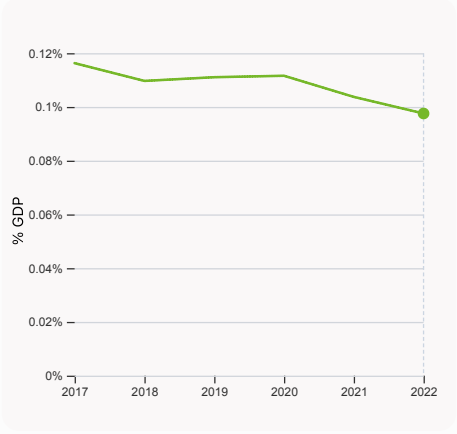
6.1.5 Citable documents H-index

was equal to an index value of 219 in 2022, up by 8.42% from the year prior – and equivalent to an indicator rank of 80.



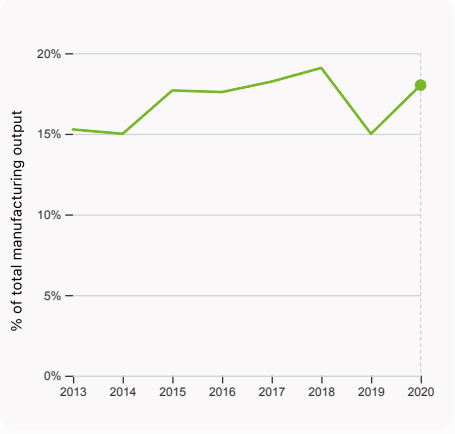
6.2.2 Unicorn valuation, % GDP

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



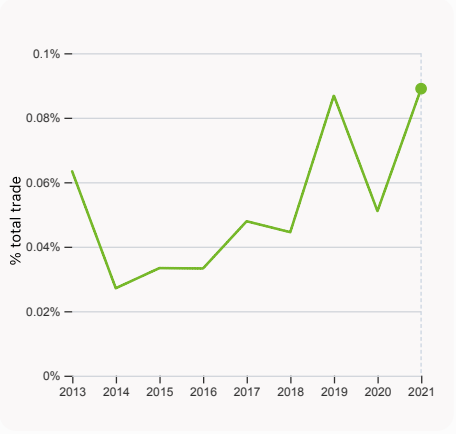
6.2.3 Software spending, % GDP

was equal to 0.098% GDP in 2022, down by 0.0062 percentage points from the year prior – and equivalent to an indicator rank of 91.



6.2.4 High-tech manufacturing, %

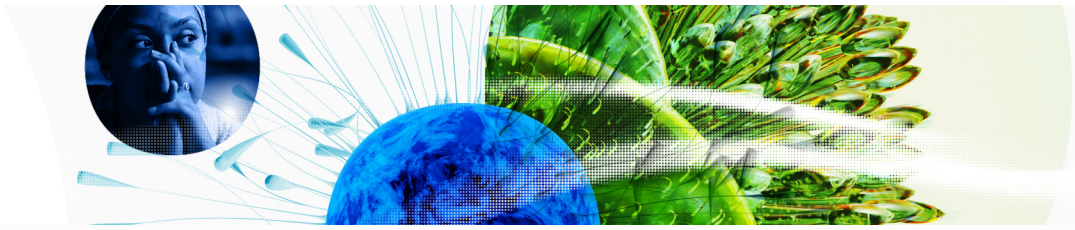
was equal to 18.02% of total manufacturing output in 2020, up by 3.02 percentage points from the year prior – and equivalent to an indicator rank of 66.

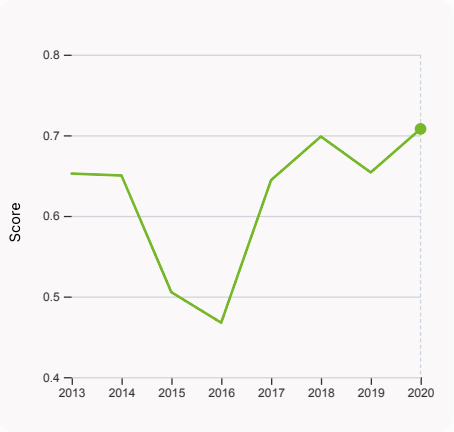


6.3.1 Intellectual property receipts, % total trade

was equal to 0.089% total trade in 2021, up by 0.038 percentage points from the year prior – and equivalent to an indicator rank of 63.

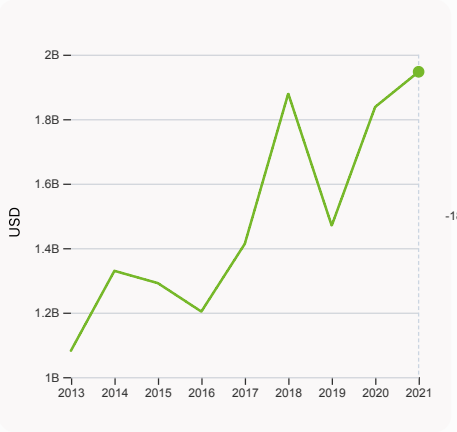
Global Innovation Index 2023





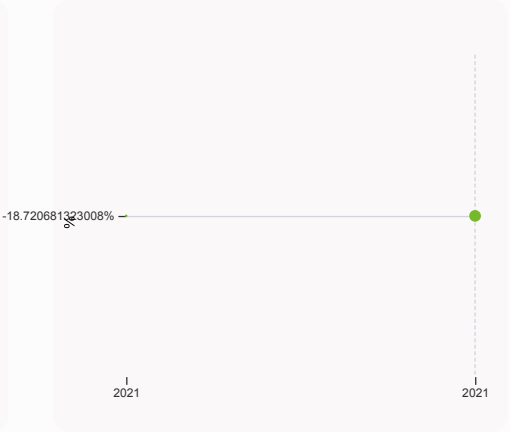
6.3.2 Production and export complexity

was equal to a score of 0.708 in 2020, up by 8.25% from the year prior – and equivalent to an indicator rank of 35.



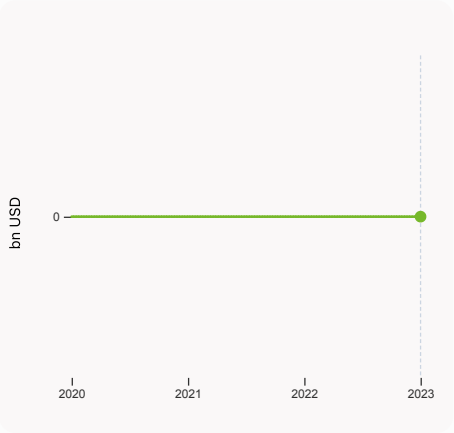
6.3.3 High-tech exports

was equal to 1,946,931,319 USD in 2021, up by 5.94% from the year prior – and equivalent to an indicator rank of 25.



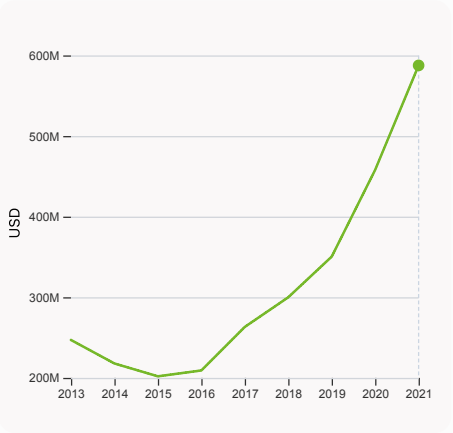
7.1.1 Intangible asset intensity, top 15, %

was equal to -18.721% in 2021, up by with no change from the year prior – and equivalent to an indicator rank of 73.



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.



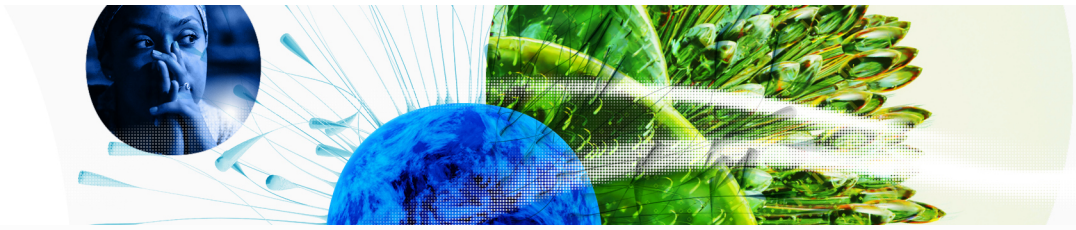
7.2.1 Cultural and creative services exports

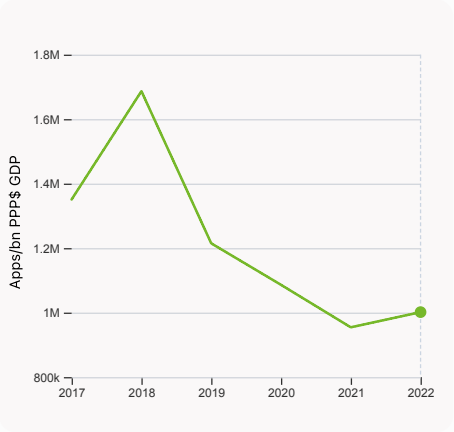
was equal to 587,601,000 USD in 2021, up by 28.29% from the year prior – and equivalent to an indicator rank of 10.

7.2.2 National feature films/mn pop. 15-69

was equal to 15.51 films/mn pop. 15–69 in 2021, up by 84.2% from the year prior – and equivalent to an indicator rank of 1.

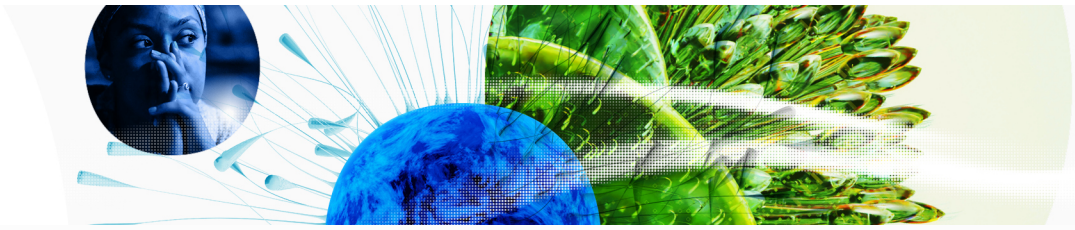
Global Innovation Index 2023





7.3.4 Mobile app creation/bn PPP$ GDP

was equal to 1,001,534.38 Apps/bn PPP$ GDP in 2022, up by 4.93% from the year prior – and equivalent to an indicator rank of 19.



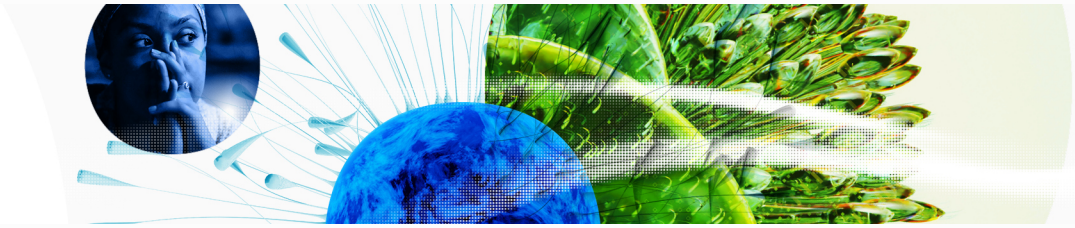
→ Latvia's innovation top performers

> 2.3.4 QS university ranking of Latvia’s top universities

Rank	University	Score
751-800	RIGA TECHNICAL UNIVERSITY	15.80
801-1000	RIGA STRADINS UNIVERSITY	13.00
1001-1200	UNIVERSITY OF LATVIA	10.30

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



Latvia

GII 2023 rank **37**

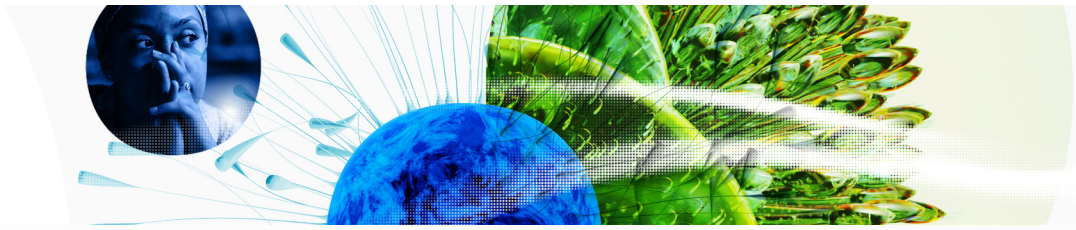
Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
39	38	High	EUR	1.9	72.0	38,124.0

	Score / Value	Rank	
Institutions	**62.8**	**39**	
1.1 Institutional environment	**66.5**	**33**	
1.1.1 Operational stability for businesses*	72.2	22	
1.1.2 Government effectiveness*	60.8	35	
1.2 Regulatory environment	**80.6**	**28**	
1.2.1 Regulatory quality*	73.9	25	
1.2.2 Rule of law*	68.5	28	
1.2.3 Cost of redundancy dismissal	13.0	41	
1.3 Business environment	**41.2**	**80**	
1.3.1 Policies for doing business†	37.1	95	○ ◇
1.3.2 Entrepreneurship policies and culture†	45.4	40	
Human capital and research	**37.4**	**43**	
2.1 Education	**58.7**	**41**	
2.1.1 Expenditure on education, % GDP	4.4	57	
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.2	40	
2.1.3 School life expectancy, years	16.2	34	
2.1.4 PISA scales in reading, maths and science	487.4	28	
2.1.5 Pupil-teacher ratio, secondary	9.0	21	
2.2 Tertiary education	**41.8**	**30**	
2.2.1 Tertiary enrolment, % gross	94.5	8	●
2.2.2 Graduates in science and engineering, %	19.3	80	○
2.2.3 Tertiary inbound mobility, %	12.8	17	●
2.3 Research and development (R&D)	**11.7**	**56**	◇
2.3.1 Researchers, FTE/mn pop.	2,403.6	35	
2.3.2 Gross expenditure on R&D, % GDP	0.7	51	
2.3.3 Global corporate R&D investors, top 3, mn US$	0.0	40	○ ◇
2.3.4 QS university ranking, top 3*	9.7	67	◇
Infrastructure	**54.5**	**33**	
3.1 Information and communication technologies (ICTs)	**83.0**	**27**	
3.1.1 ICT access*	87.6	36	
3.1.2 ICT use*	91.7	17	●
3.1.3 Government's online service*	79.4	35	
3.1.4 E-participation*	73.3	29	
3.2 General infrastructure	**33.9**	**44**	
3.2.1 Electricity output, GWh/mn pop.	3,106.7	64	◇
3.2.2 Logistics performance*	63.6	33	
3.2.3 Gross capital formation, % GDP	25.5	49	
3.3 Ecological sustainability	**46.8**	**25**	
3.3.1 GDP/unit of energy use	12.5	39	
3.3.2 Environmental performance*	71.5	15	●
3.3.3 ISO 14001 environment/bn PPP$ GDP	4.9	21	
Market sophistication	**36.0**	**61**	
4.1 Credit	**34.9**	**53**	
4.1.1 Finance for startups and scaleups†	58.7	34	
4.1.2 Domestic credit to private sector, % GDP	33.5	91	○ ◇
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	
4.2 Investment	**12.4**	**50**	
4.2.1 Market capitalization, % GDP	n/a	n/a	
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.1	35	
4.2.3 VC recipients, deals/bn PPP$ GDP	0.1	35	
4.2.4 VC received, value, % GDP	0.0	54	
4.3 Trade, diversification, and market scale	**60.6**	**52**	
4.3.1 Applied tariff rate, weighted avg., %	1.5	20	
4.3.2 Domestic industry diversification	90.0	48	
4.3.3 Domestic market scale, bn PPP$	72.0	96	○

	Score / Value	Rank	
Business sophistication	**38.1**	**37**	
5.1 Knowledge workers	**52.5**	**26**	
5.1.1 Knowledge-intensive employment, %	44.7	23	
5.1.2 Firms offering formal training, %	52.9	17	
5.1.3 GERD performed by business, % GDP	0.2	51	
5.1.4 GERD financed by business, %	27.0	62	
5.1.5 Females employed w/advanced degrees, %	27.1	12	●
5.2 Innovation linkages	**27.4**	**50**	
5.2.1 University-industry R&D collaboration†	42.8	68	
5.2.2 State of cluster development†	41.4	65	
5.2.3 GERD financed by abroad, % GDP	0.2	17	
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	71	
5.2.5 Patent families/bn PPP$ GDP	0.5	34	
5.3 Knowledge absorption	**34.3**	**61**	
5.3.1 Intellectual property payments, % total trade	0.2	91	○ ◇
5.3.2 High-tech imports, % total trade	13.1	20	●
5.3.3 ICT services imports, % total trade	1.5	58	
5.3.4 FDI net inflows, % GDP	5.1	18	●
5.3.5 Research talent, % in businesses	25.5	51	
Knowledge and technology outputs	**28.0**	**49**	
6.1 Knowledge creation	**21.2**	**52**	
6.1.1 Patents by origin/bn PPP$ GDP	1.9	36	
6.1.2 PCT patents by origin/bn PPP$ GDP	0.6	29	
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	9.8	80	◇
6.2 Knowledge impact	**23.9**	**81**	◇
6.2.1 Labor productivity growth, %	2.3	27	
6.2.2 Unicorn valuation, % GDP	0.0	48	○ ◇
6.2.3 Software spending, % GDP	0.1	91	○ ◇
6.2.4 High-tech manufacturing, %	18.0	66	◇
6.3 Knowledge diffusion	**39.0**	**36**	
6.3.1 Intellectual property receipts, % total trade	0.1	63	
6.3.2 Production and export complexity	67.4	35	
6.3.3 High-tech exports, % total trade	7.7	25	
6.3.4 ICT services exports, % total trade	4.5	22	
6.3.5 ISO 9001 quality/bn PPP$ GDP	13.1	20	
Creative outputs	**39.4**	**31**	
7.1 Intangible assets	**28.1**	**72**	
7.1.1 Intangible asset intensity, top 15, %	-18.7	73	○ ◇
7.1.2 Trademarks by origin/bn PPP$ GDP	47.4	49	
7.1.3 Global brand value, top 5,000	0.0	74	○ ◇
7.1.4 Industrial designs by origin/bn PPP$ GDP	2.6	38	
7.2 Creative goods and services	**62.2**	**1**	
7.2.1 Cultural and creative services exports, % total trade	2.3	10	●
7.2.2 National feature films/mn pop. 15-69	15.5	1	●
7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a	
7.2.4 Creative goods exports, % total trade	3.4	17	●
7.3 Online creativity	**39.2**	**31**	
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	12.0	41	
7.3.2 Country-code TLDs/th pop. 15-69	32.9	22	
7.3.3 GitHub commits/mn pop. 15-69	35.9	29	
7.3.4 Mobile app creation/bn PPP$ GDP	76.0	19	

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 Latvia.

> Latvia has missing data for four indicators and outdated data for two indicators.

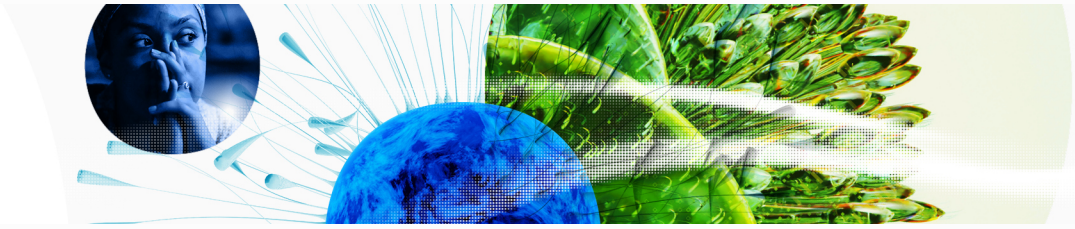
> Missing data for Latvia

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 Latvia

Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	2019	2021	UNESCO Institute for Statistics
7.1.1	Intangible asset intensity, top 15, %	2021	2022	Brand Finance

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.

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.