Global Innovation Index 2022

LATVIA

41st Latvia ranks 41st among the 132 economies featured in the GII 2022.

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

The following table shows the rankings of Latvia over the past three years, noting that data availability and changes to the GII model framework influence year-on-year comparisons of the GII rankings. The statistical confidence interval for the ranking of Latvia in the GII 2022 is between ranks 40 and 41.

Rankings for Latvia (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	36	35	35
2021	38	38	39
2022	41	39	42

- Latvia performs better in innovation inputs than innovation outputs in 2022.
- This year Latvia ranks 39th in innovation inputs, lower than both 2021 and 2020.
- As for innovation outputs, Latvia ranks 42nd. This position is lower than both 2021 and 2020.

36th Latvia ranks 36th among the 48 high-income group economies.

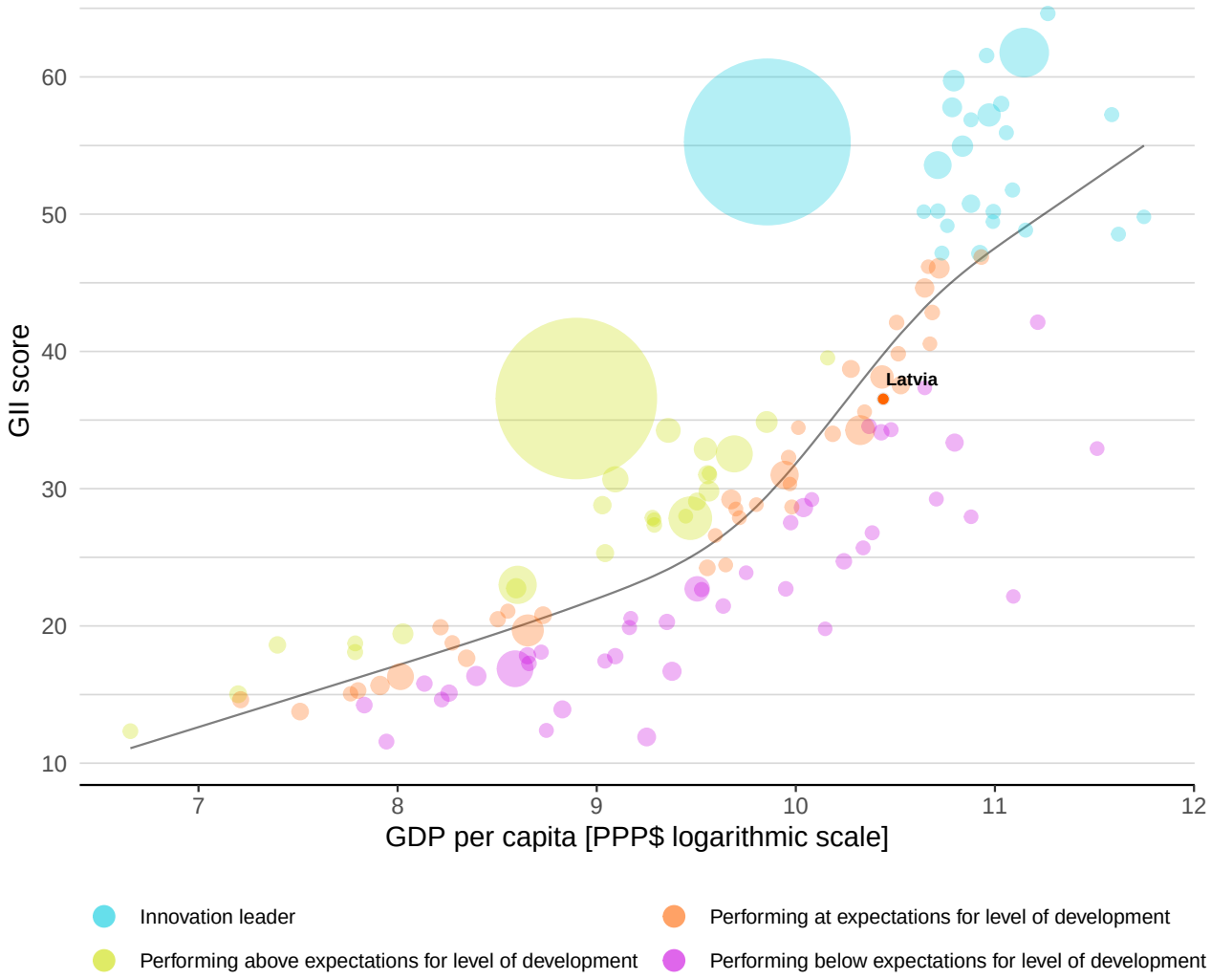
26th Latvia ranks 26th among the 39 economies in Europe.

EXPECTED VS. OBSERVED INNOVATION PERFORMANCE

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

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

The positive relationship between innovation and development

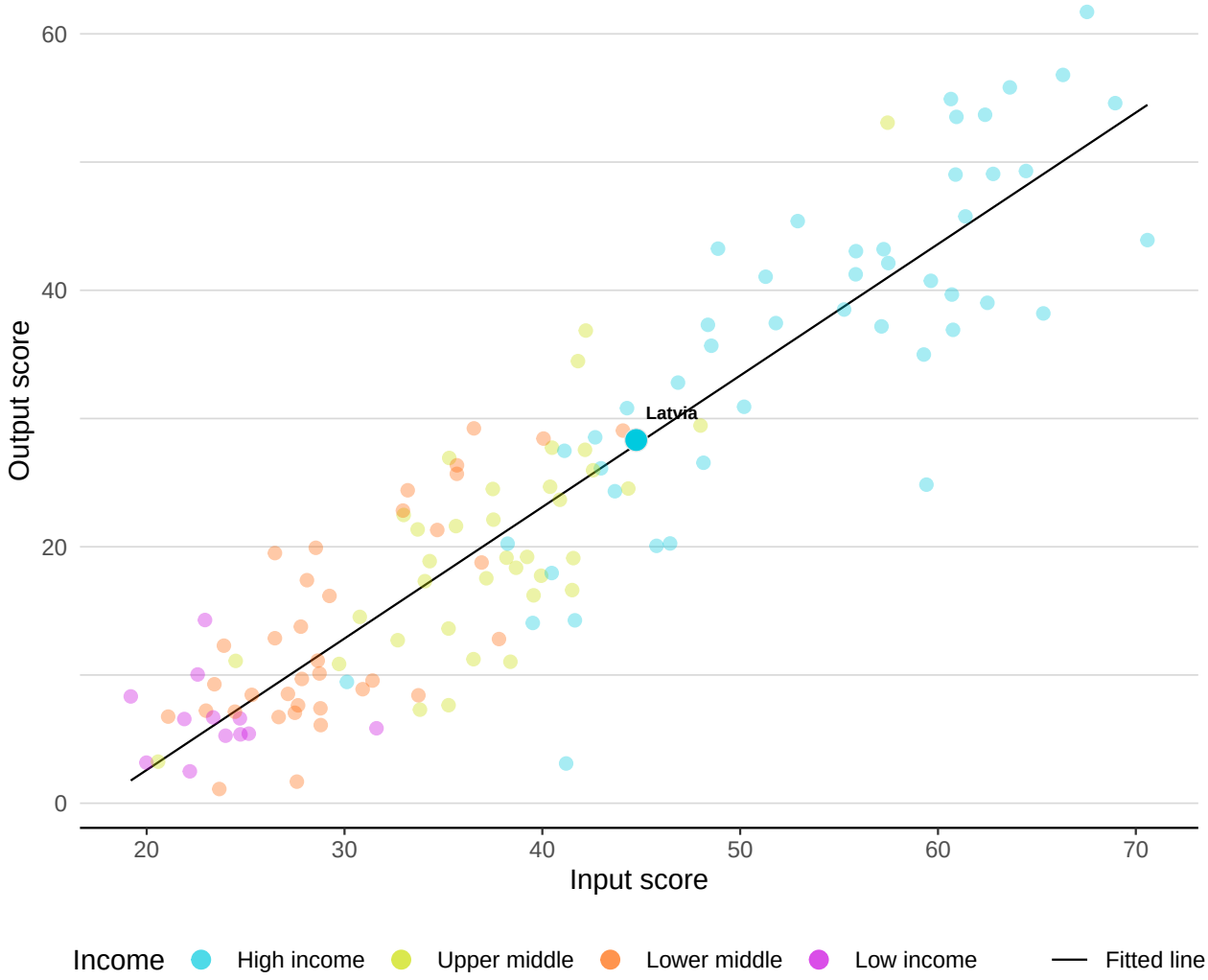


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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

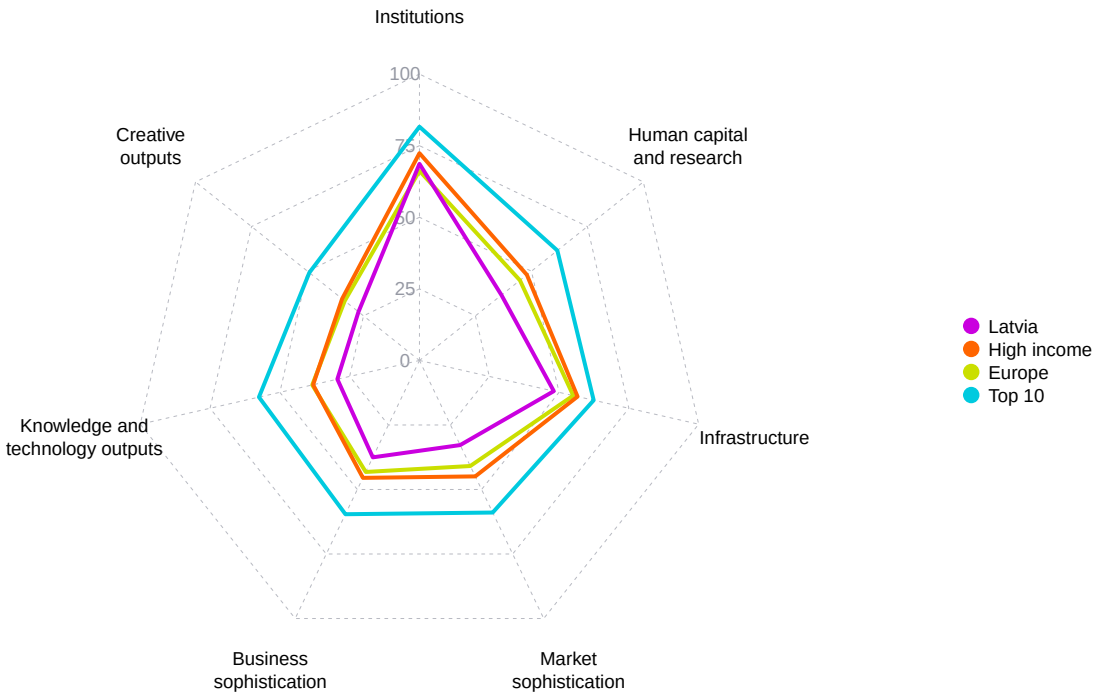
Latvia produces more innovation outputs relative to its level of innovation investments.

Innovation input to output performance



BENCHMARKING AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND EUROPE

The seven GII pillar scores for Latvia



High-income group economies

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

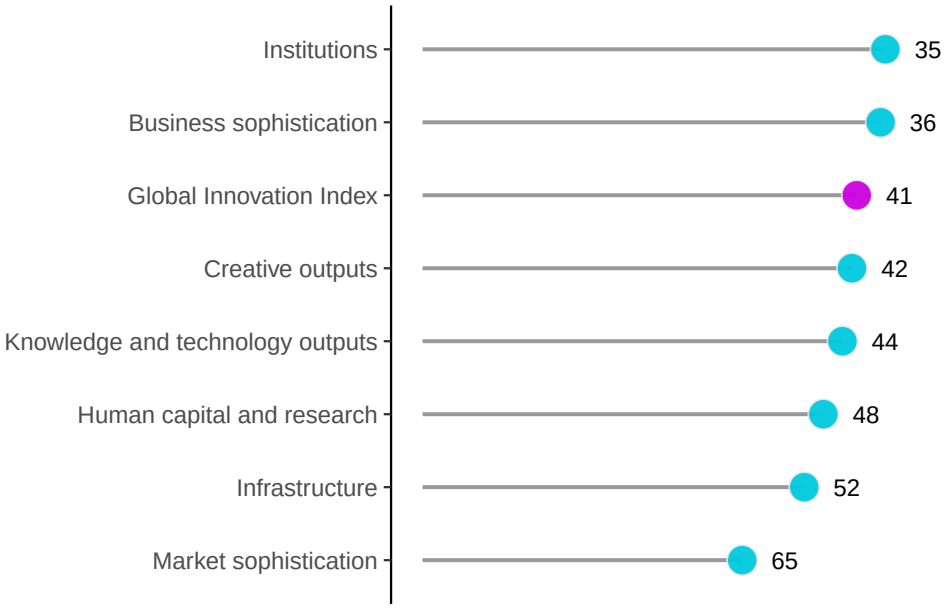
Europe

Latvia performs above the regional average in Institutions.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Latvia performs best in Institutions and its weakest performance is in Market sophistication.

The seven GII pillar ranks for Latvia



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

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

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

INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths and weaknesses for Latvia

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
2.1.5	Pupil-teacher ratio, secondary	17	2.3.3	Global corporate R&D investors, top 3, mn USD	38
2.2.1	Tertiary enrolment, % gross	6	3.1.3	Government's online service	90
3.1.2	ICT use	19	3.1.4	E-participation	88
3.3.2	Environmental performance	15	4.1.2	Domestic credit to private sector, % GDP	88
5.1.5	Females employed w/advanced degrees, %	12	4.3.3	Domestic market scale, bn PPP$	94
5.2.3	GERD financed by abroad, % GDP	14	5.3.1	Intellectual property payments, % total trade	88
6.3.3	High-tech exports, % total trade	19	6.2.3	Software spending, % GDP	85
7.2.1	Cultural and creative services exports, % total trade	10	6.2.5	High-tech manufacturing, %	76
7.2.2	National feature films/mn pop. 15–69	3	7.1.1	Intangible asset intensity, top 15, %	75
7.2.4	Printing and other media, % manufacturing	6	7.1.3	Global brand value, top 5,000, % GDP	77
7.2.5	Creative goods exports, % total trade	14			

GII 2022 rank

Latvia

41

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
42	39	High	EUR	1.9	65.1	34,169

		Score/ Value	Rank	
Institutions		**68.7**	**35**	
1.1	**Political environment**	75.3	34	
1.1.1	Political and operational stability*	81.8	24	
1.1.2	Government effectiveness*	68.7	37	
1.2	**Regulatory environment**	81.4	27	
1.2.1	Regulatory quality*	74.6	26	
1.2.2	Rule of law*	70.9	31	
1.2.3	Cost of redundancy dismissal	13.0	41	
1.3	**Business environment**	49.3	61	
1.3.1	Policies for doing business†	51.4	60	
1.3.2	Entrepreneurship policies and culture*	47.1	34	
Human capital and research		**36.6**	**48**	◇
2.1	**Education**	59.3	42	
2.1.1	Expenditure on education, % GDP	4.2	70	
2.1.2	Government funding/pupil, secondary, % GDP/cap	22.2	37	
2.1.3	School life expectancy, years	16.2	33	
2.1.4	PISA scales in reading, maths and science	487.4	28	
2.1.5	Pupil-teacher ratio, secondary	8.7	17 ●	
2.2	**Tertiary education**	41.3	34	
2.2.1	Tertiary enrolment, % gross	94.9	6 ●	
2.2.2	Graduates in science and engineering, %	19.3	74	
2.2.3	Tertiary inbound mobility, %	10.4	24	
2.3	**Research and development (R&D)**	9.3	61	◇
2.3.1	Researchers, FTE/mn pop.	2,158.8	40	
2.3.2	Gross expenditure on R&D, % GDP	0.7	50	
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○	◇
2.3.4	QS university ranking, top 3*	9.2	63	◇
Infrastructure		**48.1**	**52**	◇
3.1	**Information and communication technologies (ICTs)**	72.1	69	◇
3.1.1	ICT access*	90.1	44	
3.1.2	ICT use*	81.6	19 ●	
3.1.3	Government's online service*	58.2	90 ○	◇
3.1.4	E-participation*	58.3	88 ○	◇
3.2	**General infrastructure**	29.3	65	◇
3.2.1	Electricity output, GWh/mn pop.	3,010.5	62	◇
3.2.2	Logistics performance*	35.3	67	◇
3.2.3	Gross capital formation, % GDP	26.8	39	
3.3	**Ecological sustainability**	42.9	28	
3.3.1	GDP/unit of energy use	12.4	44	
3.3.2	Environmental performance*	61.1	15 ●	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	5.5	20	
Market sophistication		**32.8**	**65**	
4.1	**Credit**	28.2	61	
4.1.1	Finance for startups and scaleups*	45.0	27	
4.1.2	Domestic credit to private sector, % GDP	34.4	88 ○	◇
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	
4.2	**Investment**	10.7	53	
4.2.1	Market capitalization, % GDP	n/a	n/a	
4.2.2	Venture capital investors, deals/bn PPP$ GDP	0.1	38	
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	0.1	35	
4.2.4	Venture capital received, value, % GDP	0.0	50	
4.3	**Trade, diversification, and market scale**	59.5	54	
4.3.1	Applied tariff rate, weighted avg., %	1.5	20	
4.3.2	Domestic industry diversification	86.9	54	
4.3.3	Domestic market scale, bn PPP$	65.1	94 ○	

		Score/ Value	Rank	
Business sophistication		**37.5**	**36**	
5.1	**Knowledge workers**	51.4	26	
5.1.1	Knowledge-intensive employment, %	44.5	23	
5.1.2	Firms offering formal training, %	52.9	18	
5.1.3	GERD performed by business, % GDP	0.2	52	
5.1.4	GERD financed by business, %	24.3	63	◇
5.1.5	Females employed w/advanced degrees, %	27.1	12 ●	
5.2	**Innovation linkages**	31.9	36	
5.2.1	University-industry R&D collaboration†	46.9	53	
5.2.2	State of cluster development and depth†	48.4	62	
5.2.3	GERD financed by abroad, % GDP	0.2	14 ●	
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	47	
5.2.5	Patent families/bn PPP$ GDP	0.3	35	
5.3	**Knowledge absorption**	29.4	66	◇
5.3.1	Intellectual property payments, % total trade	0.2	88 ○	◇
5.3.2	High-tech imports, % total trade	12.5	20	
5.3.3	ICT services imports, % total trade	1.6	55	
5.3.4	FDI net inflows, % GDP	2.4	62	
5.3.5	Research talent, % in businesses	20.8	52	◇
Knowledge and technology outputs		**29.4**	**44**	
6.1	**Knowledge creation**	16.8	56	
6.1.1	Patents by origin/bn PPP$ GDP	2.0	35	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.6	33	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific and technical articles/bn PPP$ GDP	21.6	41	
6.1.5	Citable documents H-index	9.2	79	◇
6.2	**Knowledge impact**	33.0	46	
6.2.1	Labor productivity growth, %	2.9	21	◆
6.2.2	New businesses/th pop. 15–64	6.9	21	
6.2.3	Software spending, % GDP	0.1	85 ○	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	14.5	20	
6.2.5	High-tech manufacturing, %	15.0	76 ○	◇
6.3	**Knowledge diffusion**	38.5	32	
6.3.1	Intellectual property receipts, % total trade	0.1	69	◇
6.3.2	Production and export complexity	57.3	37	
6.3.3	High-tech exports, % total trade	9.2	19 ●	
6.3.4	ICT services exports, % total trade	4.8	20	
Creative outputs		**27.2**	**42**	
7.1	**Intangible assets**	18.5	82	◇
7.1.1	Intangible asset intensity, top 15, %	−18.7	75 ○	◇
7.1.2	Trademarks by origin/bn PPP$ GDP	40.6	63	
7.1.3	Global brand value, top 5,000, % GDP	0.0	77 ○	◇
7.1.4	Industrial designs by origin/bn PPP$ GDP	4.6	27	
7.2	**Creative goods and services**	52.7	1 ●	◆
7.2.1	Cultural and creative services exports, % total trade	2.1	10 ●	
7.2.2	National feature films/mn pop. 15–69	10.6	3 ●	◆
7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing and other media, % manufacturing	2.6	6 ●	◆
7.2.5	Creative goods exports, % total trade	3.9	14 ●	
7.3	**Online creativity**	19.2	32	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	9.9	41	
7.3.2	Country-code TLDs/th pop. 15–69	29.2	23	
7.3.3	GitHub commit pushes received/mn pop. 15–69	21.7	30	
7.3.4	Mobile app creation/bn PPP$ GDP	16.0	21	

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

DATA AVAILABILITY

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

Missing data for Latvia

Code	Indicator name	Economy year	Model year	Source
4.1.3	Loans from microfinance institutions, % GDP	n/a	2020	International Monetary Fund, Financial Access Survey (FAS)
4.2.1	Market capitalization, % GDP	n/a	2020	World Federation of Exchanges
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2020	World Intellectual Property Organization
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2021	PwC, GEMO

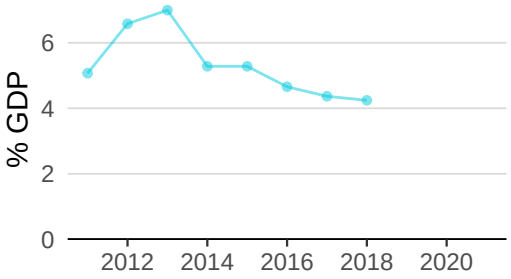
Outdated data for Latvia

Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	2018	2020	UNESCO Institute for Statistics

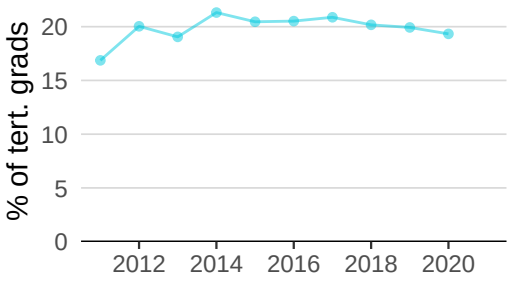
LATVIA'S INNOVATION SYSTEM

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

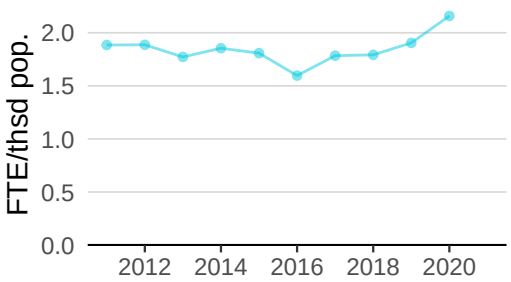
Innovation inputs



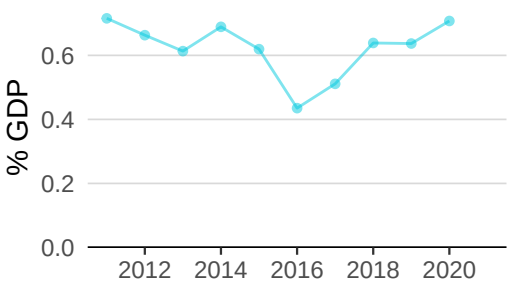
2.1.1 Expenditure on education was equal to 4.2% GDP in 2018–down by 3 percentage points from the year prior–and equivalent to an indicator rank of 70.



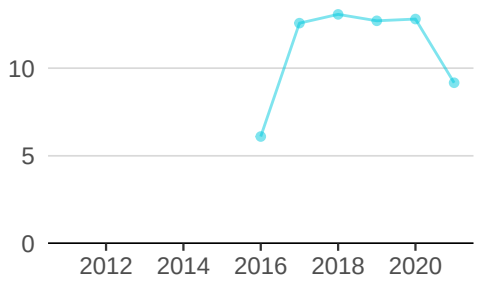
2.2.2 Graduates in science and engineering was equal to 19.3% of tert. grads in 2020–down by 3 percentage points from the year prior–and equivalent to an indicator rank of 74.



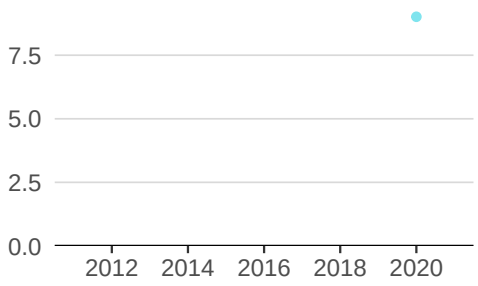
2.3.1 Researchers was equal to 2.2 FTE/thsd pop. in 2020–up by 13 percentage points from the year prior–and equivalent to an indicator rank of 40.



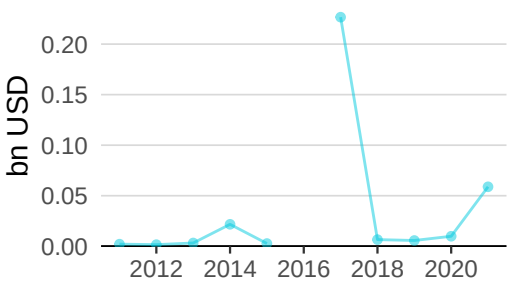
2.3.2 Gross expenditure on R&D was equal to 0.7% GDP in 2020–up by 11 percentage points from the year prior–and equivalent to an indicator rank of 50.



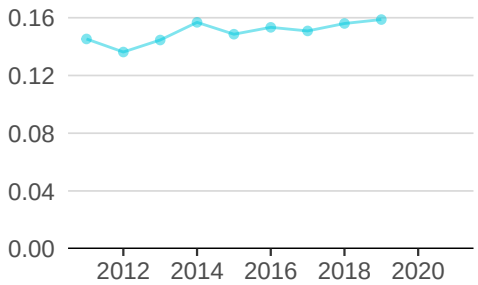
2.3.4 QS university ranking was equal to 9.2 in 2021–down by 28 percentage points from the year prior–and equivalent to an indicator rank of 63.



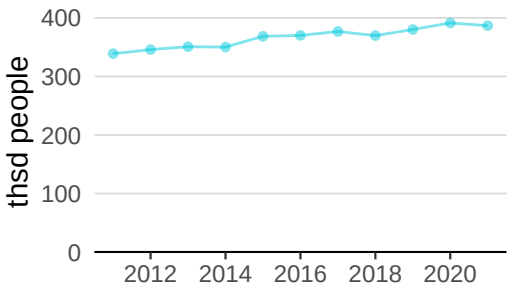
3.1.1 ICT access was equal to 9.0 in 2020 and equivalent to an indicator rank of 44.



4.2.4 Venture capital received was equal to 0.1 bn USD in 2021–up by 494 percentage points from the year prior–and equivalent to an indicator rank of 50.

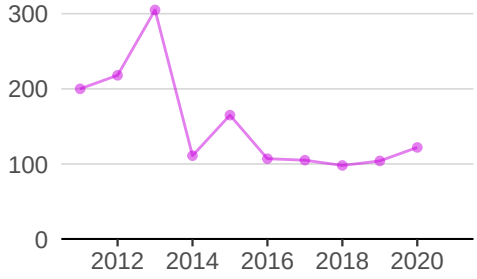


4.3.2 Domestic industry diversification was equal to 0.2 in 2019–up by 2 percentage points from the year prior–and equivalent to an indicator rank of 54.

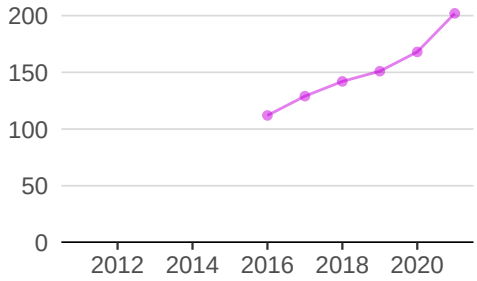


5.1.1 Knowledge-intensive employment was equal to 386.6 thsd people in 2021–down by 1 percentage point from the year prior–and equivalent to an indicator rank of 23.

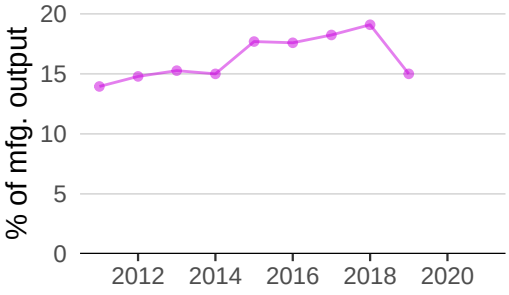
Innovation outputs



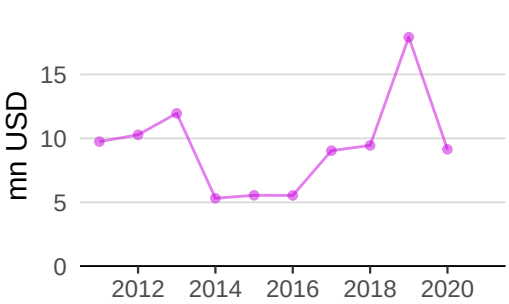
6.1.1 Patents by origin was equal to 122.0 in 2020–up by 17 percentage points from the year prior–and equivalent to an indicator rank of 35.



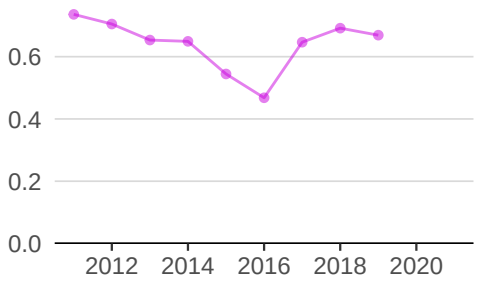
6.1.5 Citable documents H-index was equal to 202.0 in 2021–up by 20 percentage points from the year prior–and equivalent to an indicator rank of 79.



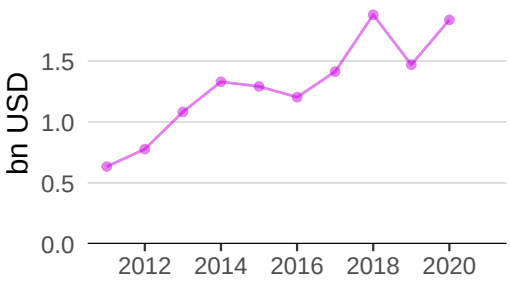
6.2.5 High-tech manufacturing was equal to 15.0% of mfg. output in 2019–down by 21 percentage points from the year prior–and equivalent to an indicator rank of 76.



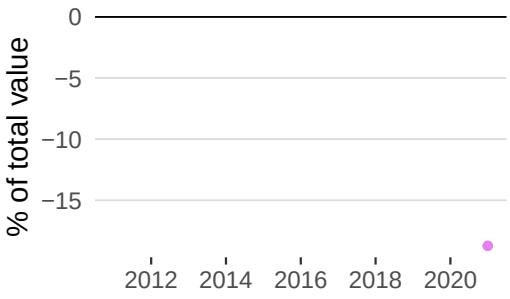
6.3.1 Intellectual property receipts was equal to 9.1 mn USD in 2020–down by 49 percentage points from the year prior–and equivalent to an indicator rank of 69.



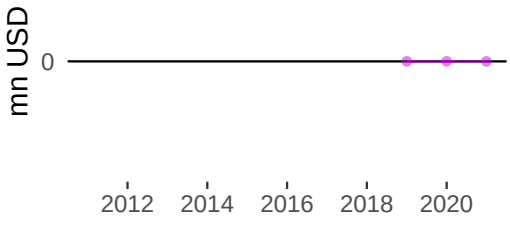
6.3.2 Production and export complexity was equal to 0.7 in 2019–down by 3 percentage points from the year prior–and equivalent to an indicator rank of 37.



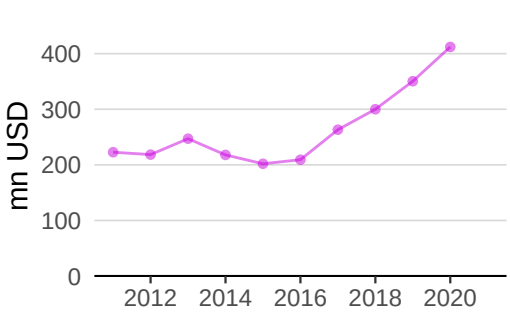
6.3.3 High-tech exports was equal to 1.8 bn USD in 2020–up by 25 percentage points from the year prior–and equivalent to an indicator rank of 19.



7.1.1 Intangible asset intensity was equal to -18.7% of total value in 2021 and equivalent to an indicator rank of 75.



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



7.2.1 Cultural and creative services exports was equal to 412.0 mn USD in 2020–up by 18 percentage points from the year prior–and equivalent to an indicator rank of 10.

LATVIA'S INNOVATION TOP PERFORMERS

2.3.3 Global corporate R&D investors

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

No observations

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

2.3.4 QS university ranking

University	Score	Rank
RIGA TECHNICAL UNIVERSITY	15.3	751-800
RIGA STRADINS UNIVERSITY	12.2	801-1000

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

7.1.1 Intangible asset intensity, top 15

Firm	Rank
MADARA COSMETICS	1
GRINDEKS	2
HANSAMATRIX	3

Source: Brand Finance (https://brandirectory.com/reports/gift-2021).
Note: Brand Finance only provides within economy ranks.

7.1.3 Global brand value, top 5,000

Brand	Industry	Rank

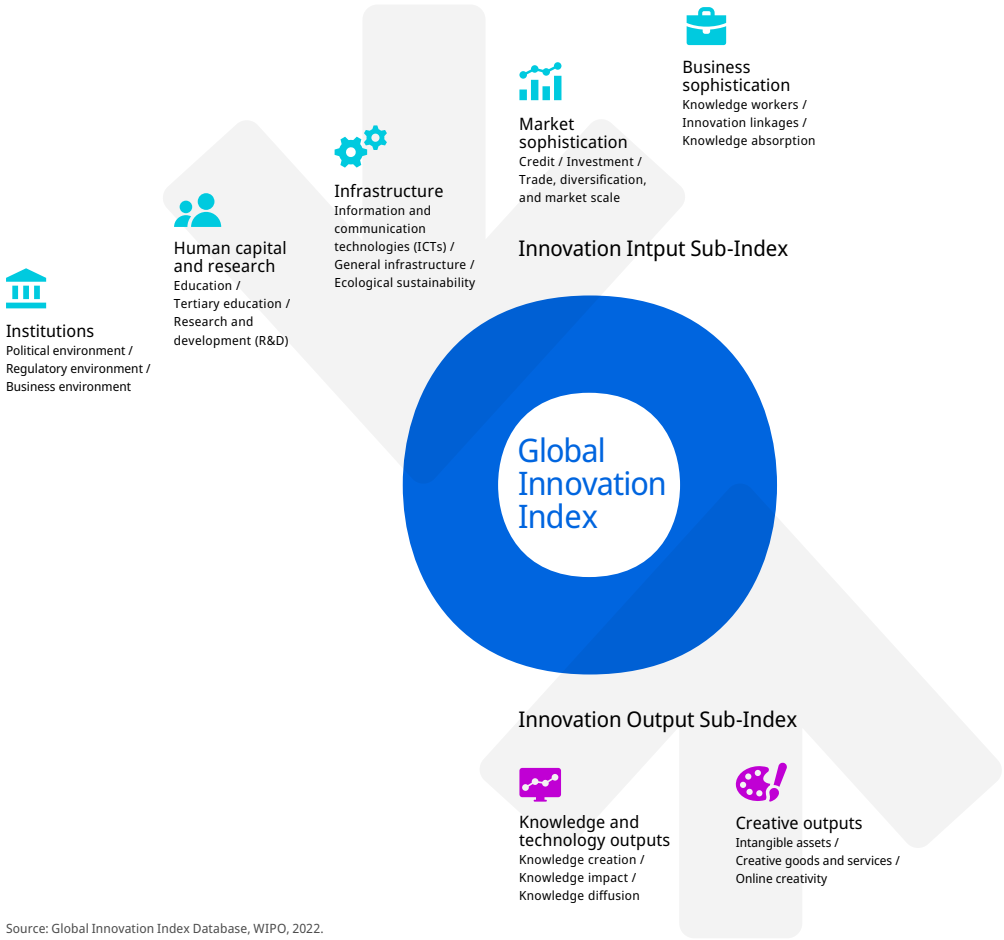
No observations

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

ABOUT THE GLOBAL INNOVATION INDEX

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

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



Source: Global Innovation Index Database, WIPO, 2022.

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

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