Global Innovation Index 2022

SLOVENIA

33rd Slovenia ranks 33rd 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 Slovenia 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 Slovenia in the GII 2022 is between ranks 33 and 35.

Rankings for Slovenia (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	32	29	39
2021	32	27	36
2022	33	30	35

- Slovenia performs better in innovation inputs than innovation outputs in 2022.
- This year Slovenia ranks 30th in innovation inputs, lower than both 2021 and 2020.
- As for innovation outputs, Slovenia ranks 35th. This position is higher than both 2021 and 2020.

32nd Slovenia ranks 32nd among the 48 high-income group economies.

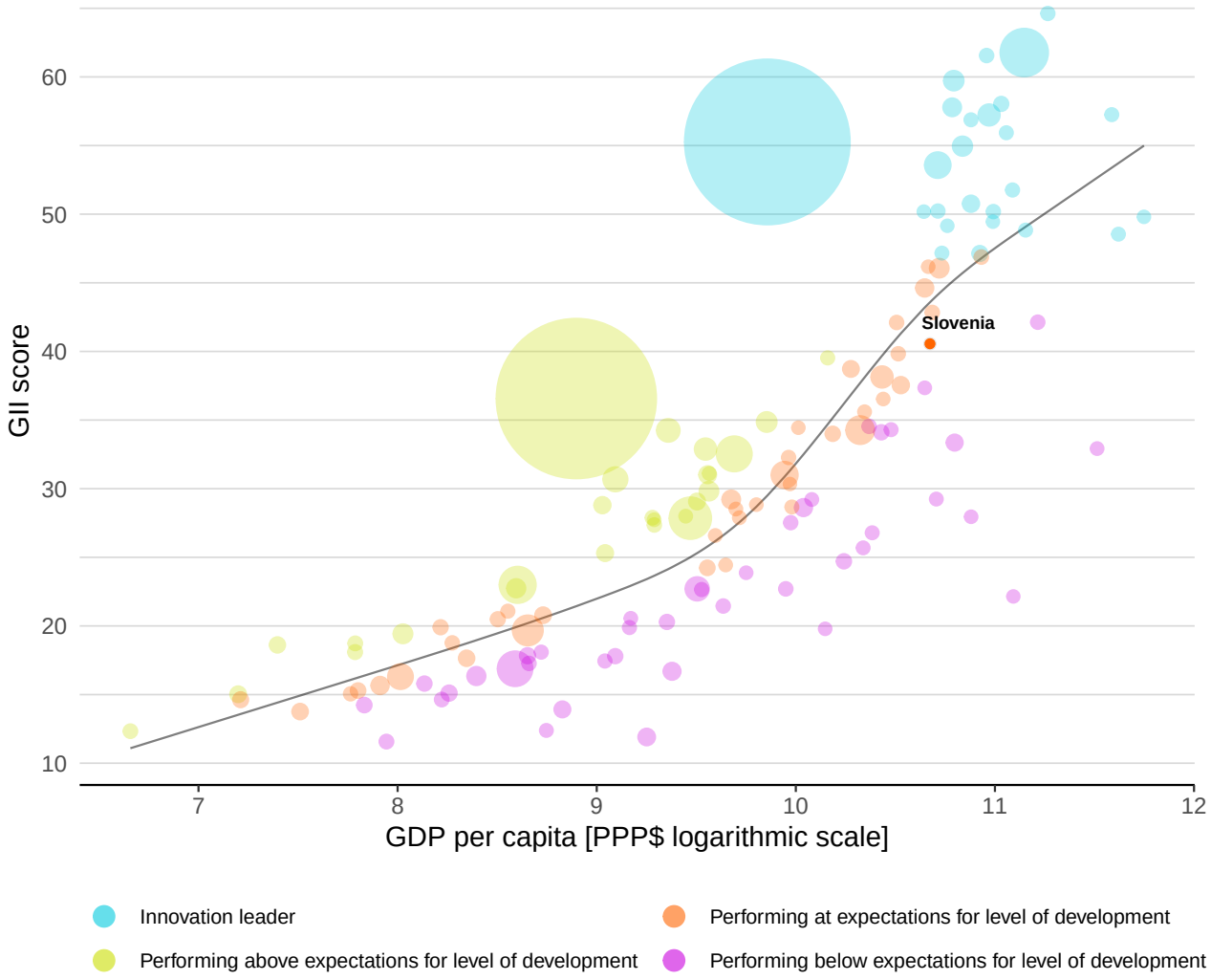
21st Slovenia ranks 21st among the 39 economies in Europe.

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, Slovenia's performance is at expectations for its level of development.

The positive relationship between innovation and development

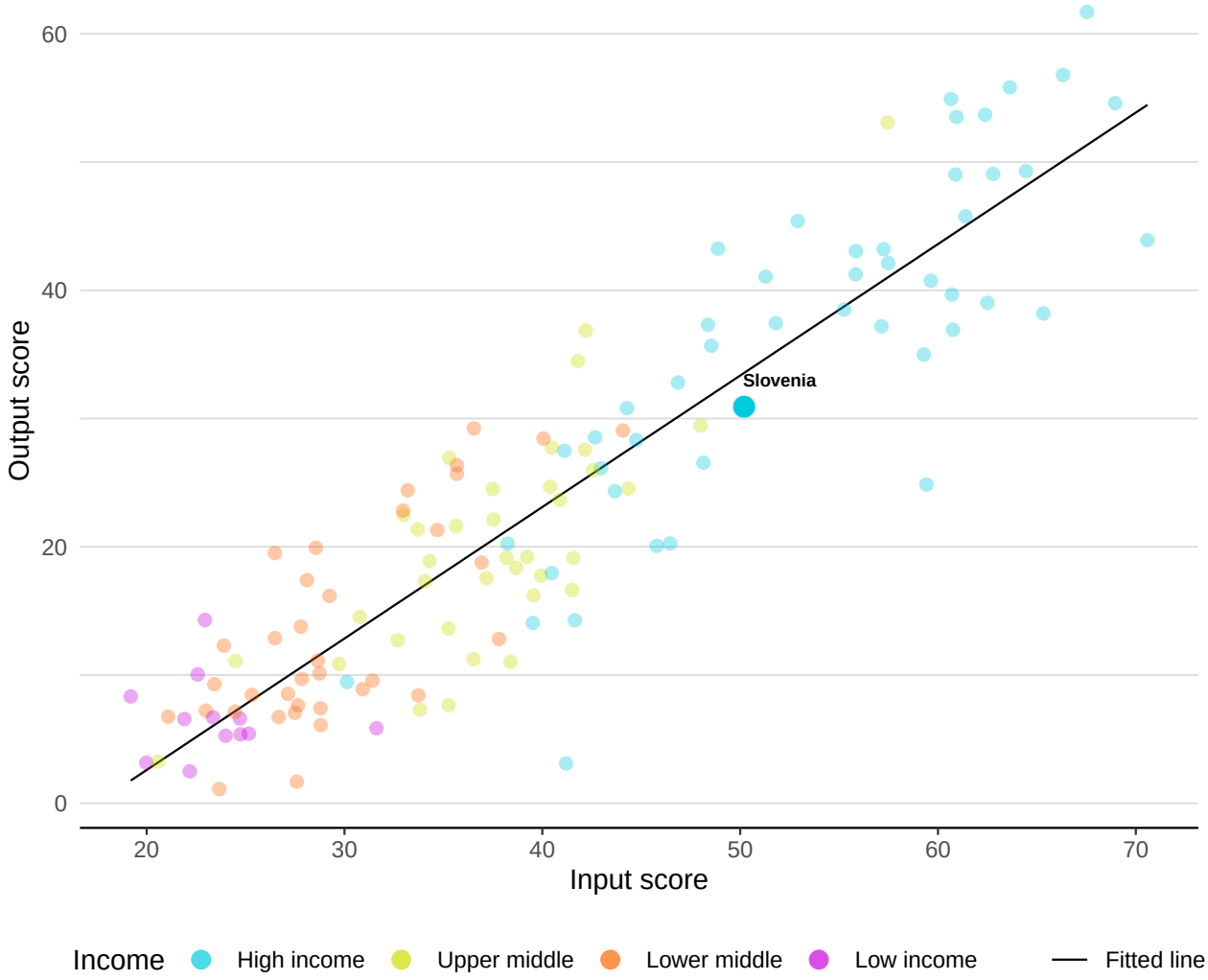


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

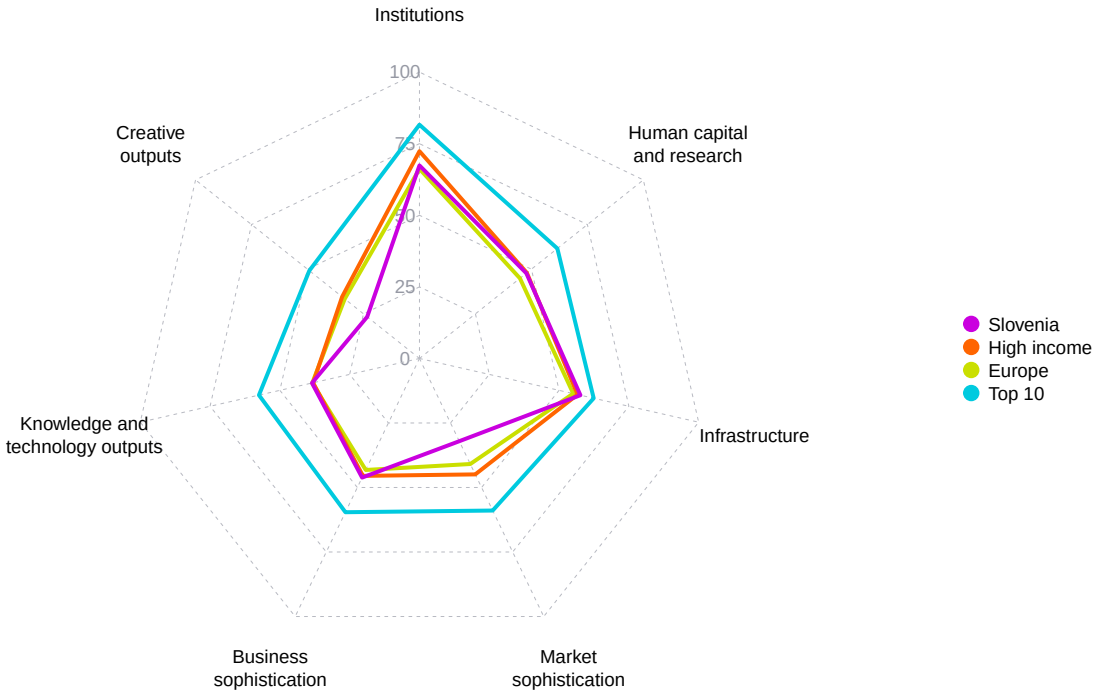
Slovenia produces less innovation outputs relative to its level of innovation investments.

Innovation input to output performance



BENCHMARKING AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND EUROPE

The seven GII pillar scores for Slovenia



High-income group economies

Slovenia performs above the high-income group average in three pillars, namely: Infrastructure; Business sophistication; and, Knowledge and technology outputs.

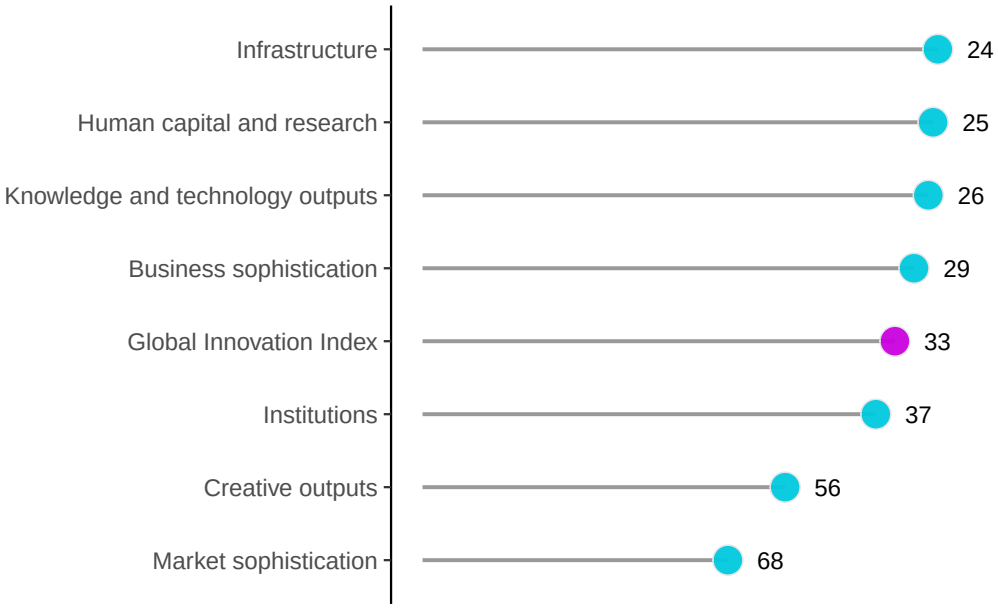
Europe

Slovenia performs above the regional average in five pillars, namely: Institutions; Human capital and research; Infrastructure; Business sophistication; and, Knowledge and technology outputs.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Slovenia performs best in Infrastructure and its weakest performance is in Market sophistication.

The seven GII pillar ranks for Slovenia



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

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

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

INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths and weaknesses for Slovenia

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
3.1.1	ICT access	13	1.3.1	Policies for doing business	80
3.3.2	Environmental performance	7	3.2.3	Gross capital formation, % GDP	75
4.3.2	Domestic industry diversification	8	4.1.2	Domestic credit to private sector, % GDP	78
5.1.1	Knowledge-intensive employment, %	14	4.2.1	Market capitalization, % GDP	66
5.2.3	GERD financed by abroad, % GDP	10	4.2.2	Venture capital investors, deals/bn PPP$ GDP	82
6.1.4	Scientific and technical articles/bn PPP$ GDP	3	4.2.4	Venture capital received, value, % GDP	80
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7	4.3.3	Domestic market scale, bn PPP$	88
6.3.2	Production and export complexity	9	5.3.2	High-tech imports, % total trade	93
7.2.2	National feature films/mn pop. 15–69	10	6.2.3	Software spending, % GDP	89
7.3.4	Mobile app creation/bn PPP$ GDP	11	7.1.1	Intangible asset intensity, top 15, %	77

GII 2022 rank

Slovenia

33

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
35	30	High	EUR	2.1	90.9	43,206

		Score/ Value	Rank
Institutions		**67.4**	**37**
1.1	**Political environment**	77.4	26
1.1.1	Political and operational stability*	80.0	30
1.1.2	Government effectiveness*	74.8	25
1.2	**Regulatory environment**	82.8	25
1.2.1	Regulatory quality*	68.0	34
1.2.2	Rule of law*	73.7	26
1.2.3	Cost of redundancy dismissal	10.7	35
1.3	**Business environment**	42.0	83 ○
1.3.1	Policies for doing business†	46.0	80 ○ ◇
1.3.2	Entrepreneurship policies and culture*	38.0	42
Human capital and research		**47.7**	**25**
2.1	**Education**	61.6	29
2.1.1	Expenditure on education, % GDP	4.9	43
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.5	32
2.1.3	School life expectancy, years	17.7	15
2.1.4	PISA scales in reading, maths and science	503.7	11
2.1.5	Pupil-teacher ratio, secondary	14.8	73 ◇
2.2	**Tertiary education**	44.5	26
2.2.1	Tertiary enrolment, % gross	77.9	23
2.2.2	Graduates in science and engineering, %	28.6	23
2.2.3	Tertiary inbound mobility, %	6.7	38
2.3	**Research and development (R&D)**	37.1	31
2.3.1	Researchers, FTE/mn pop.	4,932.3	16
2.3.2	Gross expenditure on R&D, % GDP	2.1	17
2.3.3	Global corporate R&D investors, top 3, mn USD	52.0	26
2.3.4	QS university ranking, top 3*	11.3	61 ◇
Infrastructure		**57.6**	**24**
3.1	**Information and communication technologies (ICTs)**	85.4	27
3.1.1	ICT access*	94.6	13 ●
3.1.2	ICT use*	76.1	35
3.1.3	Government's online service*	85.3	24
3.1.4	E-participation*	85.7	29
3.2	**General infrastructure**	42.6	32
3.2.1	Electricity output, GWh/mn pop.	8,047.6	18
3.2.2	Logistics performance*	58.6	34
3.2.3	Gross capital formation, % GDP	22.5	75 ○
3.3	**Ecological sustainability**	44.9	23
3.3.1	GDP/unit of energy use	11.2	59
3.3.2	Environmental performance*	67.3	7 ●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.1	17
Market sophistication		**32.1**	**68**
4.1	**Credit**	28.7	58
4.1.1	Finance for startups and scaleups*	42.5	33
4.1.2	Domestic credit to private sector, % GDP	43.4	78 ○ ◇
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a
4.2	**Investment**	3.8	89 ○ ◇
4.2.1	Market capitalization, % GDP	14.6	66 ○ ◇
4.2.2	Venture capital investors, deals/bn PPP$ GDP	0.0	82 ○
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	0.0	60
4.2.4	Venture capital received, value, % GDP	0.0	80 ○
4.3	**Trade, diversification, and market scale**	63.6	36
4.3.1	Applied tariff rate, weighted avg., %	1.5	20
4.3.2	Domestic industry diversification	98.6	8 ●
4.3.3	Domestic market scale, bn PPP$	90.9	88 ○

		Score/ Value	Rank
Business sophistication		**46.2**	**29**
5.1	**Knowledge workers**	63.7	15 ●
5.1.1	Knowledge-intensive employment, %	47.5	14 ●
5.1.2	Firms offering formal training, %	44.0	25
5.1.3	GERD performed by business, % GDP	1.6	14
5.1.4	GERD financed by business, %	61.5	13
5.1.5	Females employed w/advanced degrees, %	25.7	17
5.2	**Innovation linkages**	36.8	31
5.2.1	University-industry R&D collaboration†	50.3	46
5.2.2	State of cluster development and depth†	47.7	68
5.2.3	GERD financed by abroad, % GDP	0.3	10 ●
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	40
5.2.5	Patent families/bn PPP$ GDP	1.1	25
5.3	**Knowledge absorption**	38.0	43
5.3.1	Intellectual property payments, % total trade	0.6	64
5.3.2	High-tech imports, % total trade	7.0	93 ○
5.3.3	ICT services imports, % total trade	1.8	45
5.3.4	FDI net inflows, % GDP	2.6	57
5.3.5	Research talent, % in businesses	60.7	11
Knowledge and technology outputs		**38.5**	**26**
6.1	**Knowledge creation**	39.6	23
6.1.1	Patents by origin/bn PPP$ GDP	4.4	19
6.1.2	PCT patents by origin/bn PPP$ GDP	1.1	27
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a
6.1.4	Scientific and technical articles/bn PPP$ GDP	59.7	3 ● ◆
6.1.5	Citable documents H-index	18.8	44
6.2	**Knowledge impact**	37.6	32
6.2.1	Labor productivity growth, %	1.4	53
6.2.2	New businesses/th pop. 15–64	2.4	52
6.2.3	Software spending, % GDP	0.1	89 ○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	22.4	7 ● ◆
6.2.5	High-tech manufacturing, %	41.4	26
6.3	**Knowledge diffusion**	38.2	33
6.3.1	Intellectual property receipts, % total trade	0.2	44
6.3.2	Production and export complexity	80.0	9 ●
6.3.3	High-tech exports, % total trade	6.5	30
6.3.4	ICT services exports, % total trade	1.9	67
Creative outputs		**23.3**	**56**
7.1	**Intangible assets**	20.2	80 ○ ◇
7.1.1	Intangible asset intensity, top 15, %	–27.0	77 ○ ◇
7.1.2	Trademarks by origin/bn PPP$ GDP	68.1	29
7.1.3	Global brand value, top 5,000, % GDP	7.7	62 ◇
7.1.4	Industrial designs by origin/bn PPP$ GDP	2.7	38
7.2	**Creative goods and services**	27.5	38
7.2.1	Cultural and creative services exports, % total trade	1.1	28
7.2.2	National feature films/mn pop. 15–69	8.1	10 ●
7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a
7.2.4	Printing and other media, % manufacturing	1.5	23
7.2.5	Creative goods exports, % total trade	0.9	45
7.3	**Online creativity**	25.5	29
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	21.1	28
7.3.2	Country-code TLDs/th pop. 15–69	28.7	24
7.3.3	GitHub commit pushes received/mn pop. 15–69	28.6	24
7.3.4	Mobile app creation/bn PPP$ GDP	23.6	11 ●

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 Slovenia.

Missing data for Slovenia

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)
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

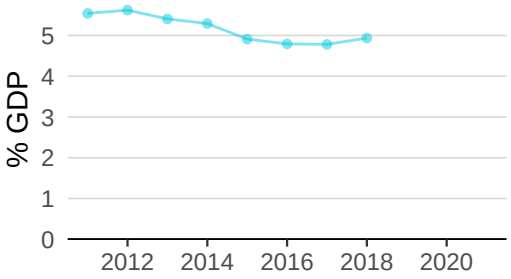
Outdated data for Slovenia

Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	2018	2020	UNESCO Institute for Statistics
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	2020	2021	Refinitiv
4.2.4	Venture capital received, value, % GDP	2020	2021	Refinitiv
6.1.1	Patents by origin/bn PPP$ GDP	2018	2020	World Intellectual Property Organization
7.1.2	Trademarks by origin/bn PPP$ GDP	2018	2020	World Intellectual Property Organization
7.1.4	Industrial designs by origin/bn PPP$ GDP	2018	2020	World Intellectual Property Organization

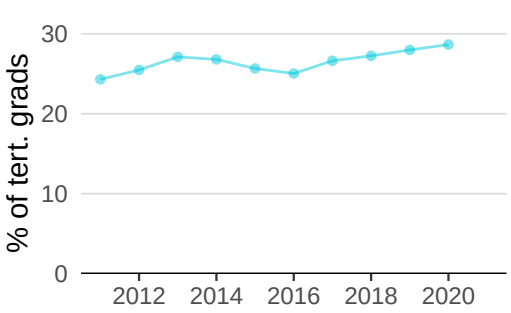
SLOVENIA'S INNOVATION SYSTEM

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

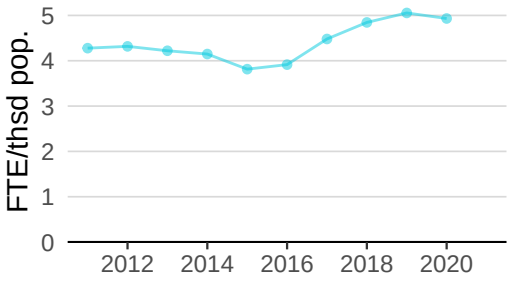
Innovation inputs



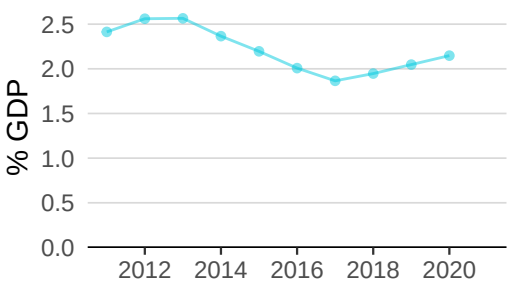
2.1.1 Expenditure on education was equal to 4.9% GDP in 2018–up by 3 percentage points from the year prior–and equivalent to an indicator rank of 43.



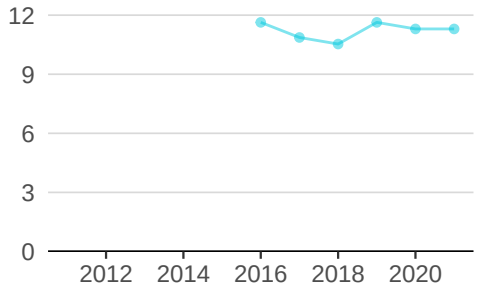
2.2.2 Graduates in science and engineering was equal to 28.6% of tert. grads in 2020–up by 2 percentage points from the year prior–and equivalent to an indicator rank of 23.



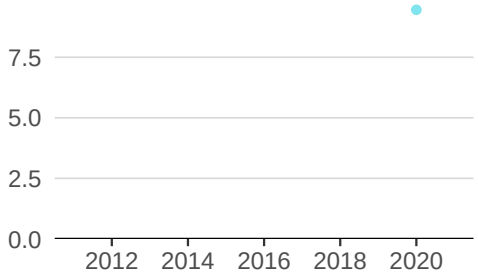
2.3.1 Researchers was equal to 4.9 FTE/thsd pop. in 2020–down by 2 percentage points from the year prior–and equivalent to an indicator rank of 16.



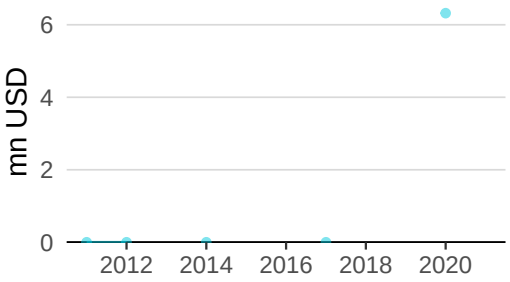
2.3.2 Gross expenditure on R&D was equal to 2.1% GDP in 2020–up by 5 percentage points from the year prior–and equivalent to an indicator rank of 17.



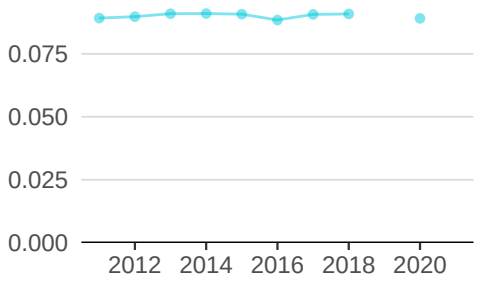
2.3.4 QS university ranking was equal to 11.3 in 2021–effectively unchanged from the year prior–and equivalent to an indicator rank of 61.



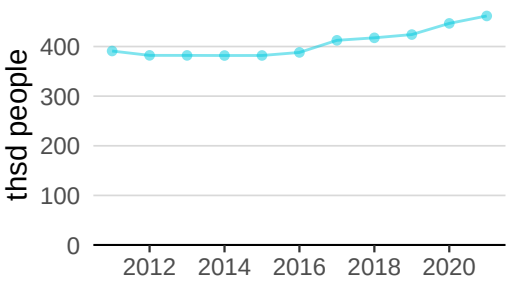
3.1.1 ICT access was equal to 9.5 in 2020 and equivalent to an indicator rank of 13.



4.2.4 Venture capital received was equal to 6.3 mn USD in 2020 and equivalent to an indicator rank of 80.

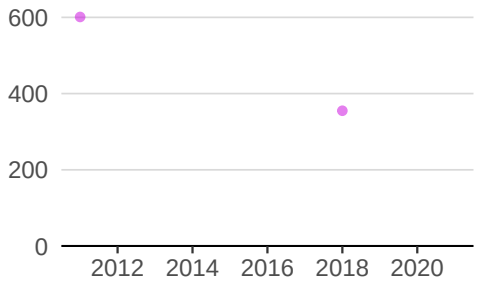


4.3.2 Domestic industry diversification was equal to 0.1 in 2020 and equivalent to an indicator rank of 8.

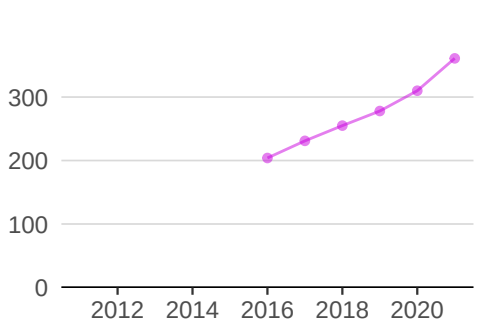


5.1.1 Knowledge-intensive employment was equal to 461.6 thsd people in 2021–up by 3 percentage points from the year prior–and equivalent to an indicator rank of 14.

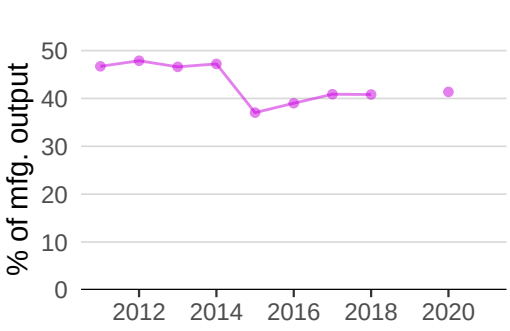
Innovation outputs



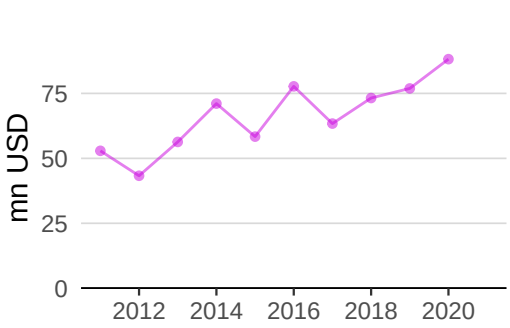
6.1.1 Patents by origin was equal to 355.0 in 2018 and equivalent to an indicator rank of 19.



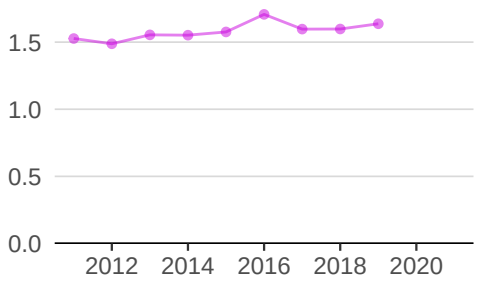
6.1.5 Citable documents H-index was equal to 361.0 in 2021–up by 16 percentage points from the year prior–and equivalent to an indicator rank of 44.



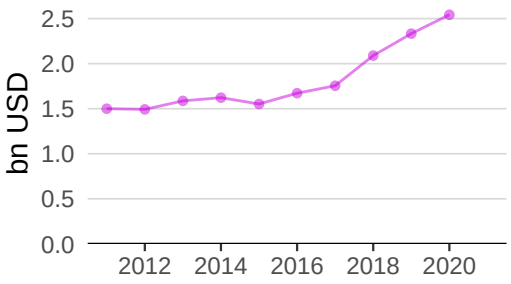
6.2.5 High-tech manufacturing was equal to 41.4% of mfg. output in 2020 and equivalent to an indicator rank of 26.



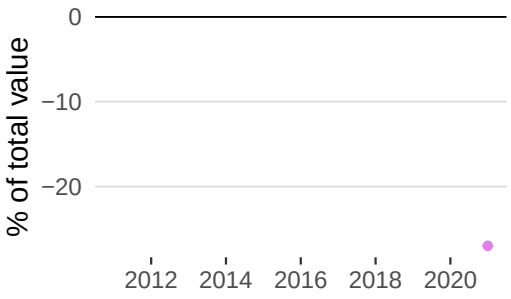
6.3.1 Intellectual property receipts was equal to 88.2 mn USD in 2020–up by 15 percentage points from the year prior–and equivalent to an indicator rank of 44.



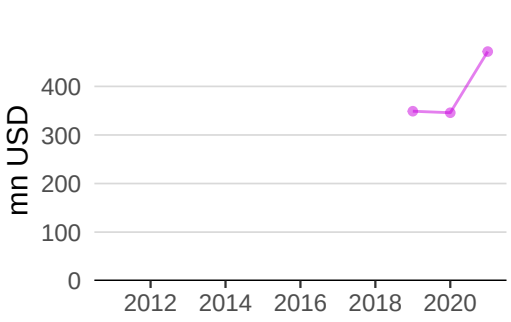
6.3.2 Production and export complexity was equal to 1.6 in 2019–up by 2 percentage points from the year prior–and equivalent to an indicator rank of 9.



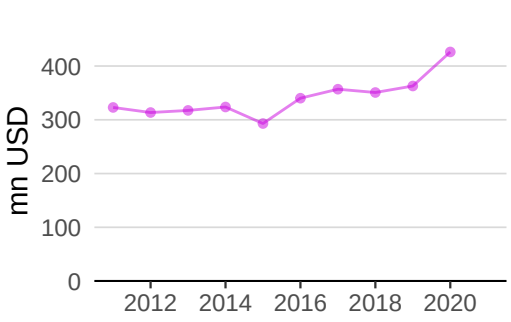
6.3.3 High-tech exports was equal to 2.5 bn USD in 2020–up by 9 percentage points from the year prior–and equivalent to an indicator rank of 30.



7.1.1 Intangible asset intensity was equal to -27.0% of total value in 2021 and equivalent to an indicator rank of 77.



7.1.3 Global brand value was equal to 471.7 mn USD in 2021–up by 36 percentage points from the year prior–and equivalent to an indicator rank of 62.



7.2.1 Cultural and creative services exports was equal to 426.2 mn USD in 2020–up by 17 percentage points from the year prior–and equivalent to an indicator rank of 28.

SLOVENIA'S INNOVATION TOP PERFORMERS

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank
		[mn EUR]	[%]	[%]	
KRKA	Pharmaceuticals & Biotechnology	153	0.7	10.0	838

Source: European Commission's Joint Research Centre (https://iri.jrc.ec.europa.eu/scoreboard/2021-eu-industrial-rd-investment-scoreboard).
Note: European Commission's Joint Research Centre ranks the top 2,500 firms by R&D investment annually.

2.3.4 QS university ranking

University	Score	Rank
UNIVERSITY OF LJUBLJANA	20.1	591-600
UNIVERSITY OF MARIBOR	13.8	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
KRKA	1
PETROL	2
TELEKOM SLOVENIJE	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

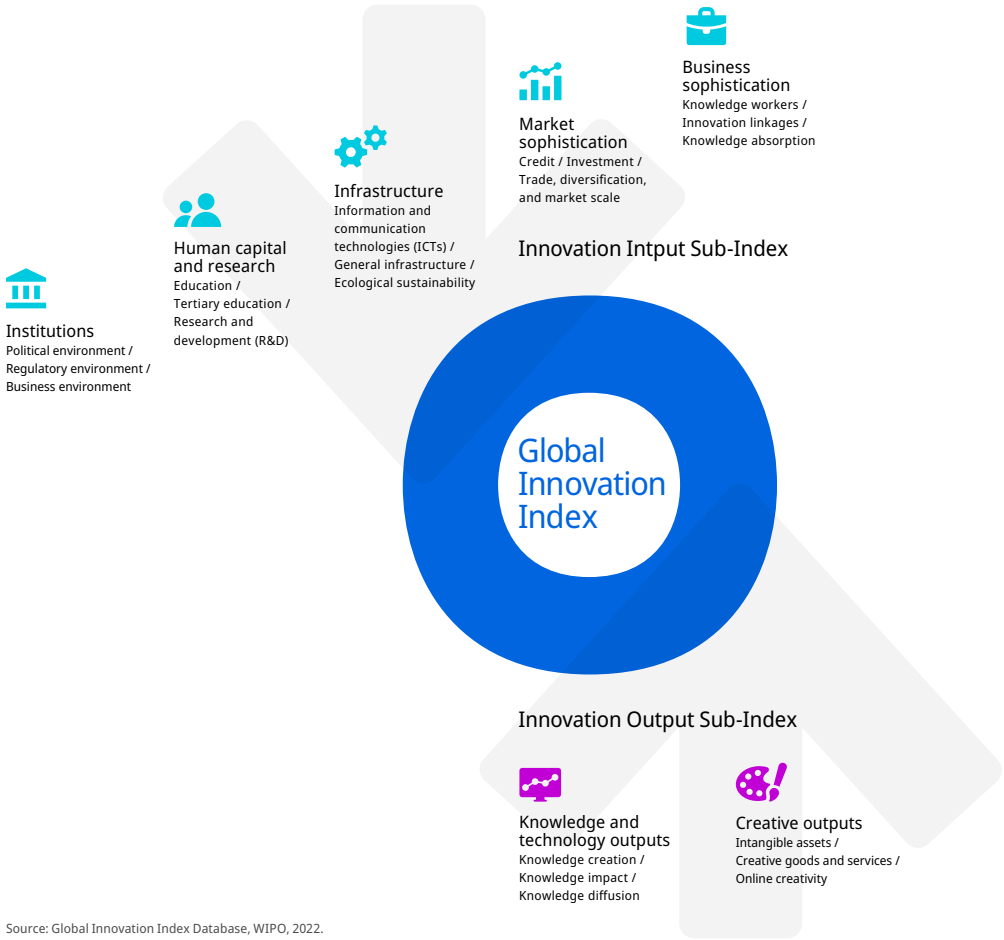
Brand	Industry	Rank
NLB	Banking	1
TELEKOM SLOVENIA	Telecoms	2

Source: Brand Finance (https://brandirectory.com).
Note: Rank corresponds to within economy ranks.

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.