Global Innovation Index 2021

SLOVAKIA

37th Slovakia ranks 37th among the 132 economies featured in the GII 2021.

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 Slovakia 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 Slovakia in the GII 2021 is between ranks 37 and 40.

Rankings for Slovakia (2019–2021)

	GII	Innovation inputs	Innovation outputs
2021	37	42	35
2020	39	43	34
2019	37	42	33

- Slovakia performs better in innovation outputs than innovation inputs in 2021.
- This year Slovakia ranks 42nd in innovation inputs, higher than last year but the same as 2019.
- As for innovation outputs, Slovakia ranks 35th. This position is lower than both 2020 and 2019.

34th Slovakia ranks 34th among the 51 high-income group economies.

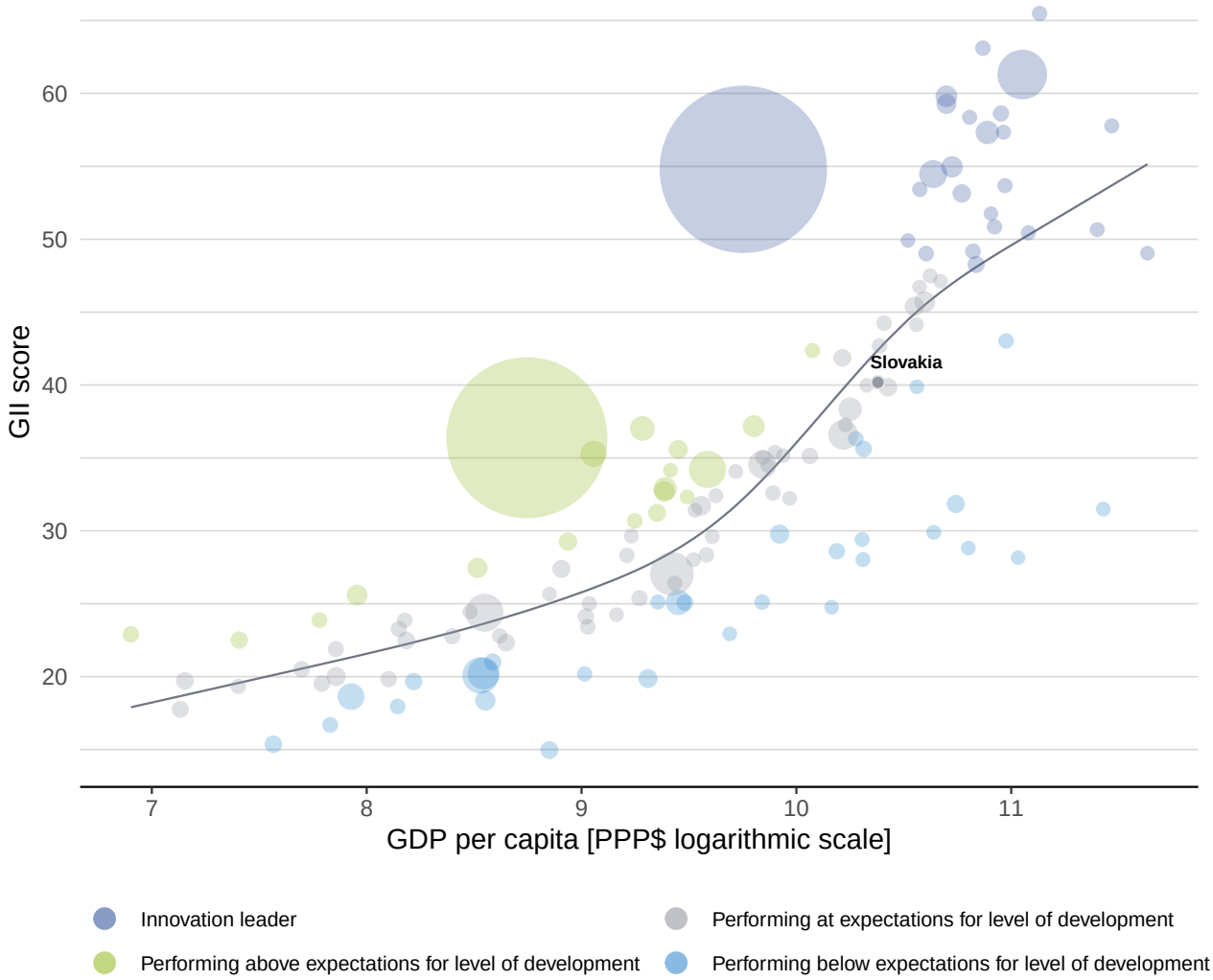
24th Slovakia ranks 24th among the 39 economies in Europe.

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

The positive relationship between innovation and development

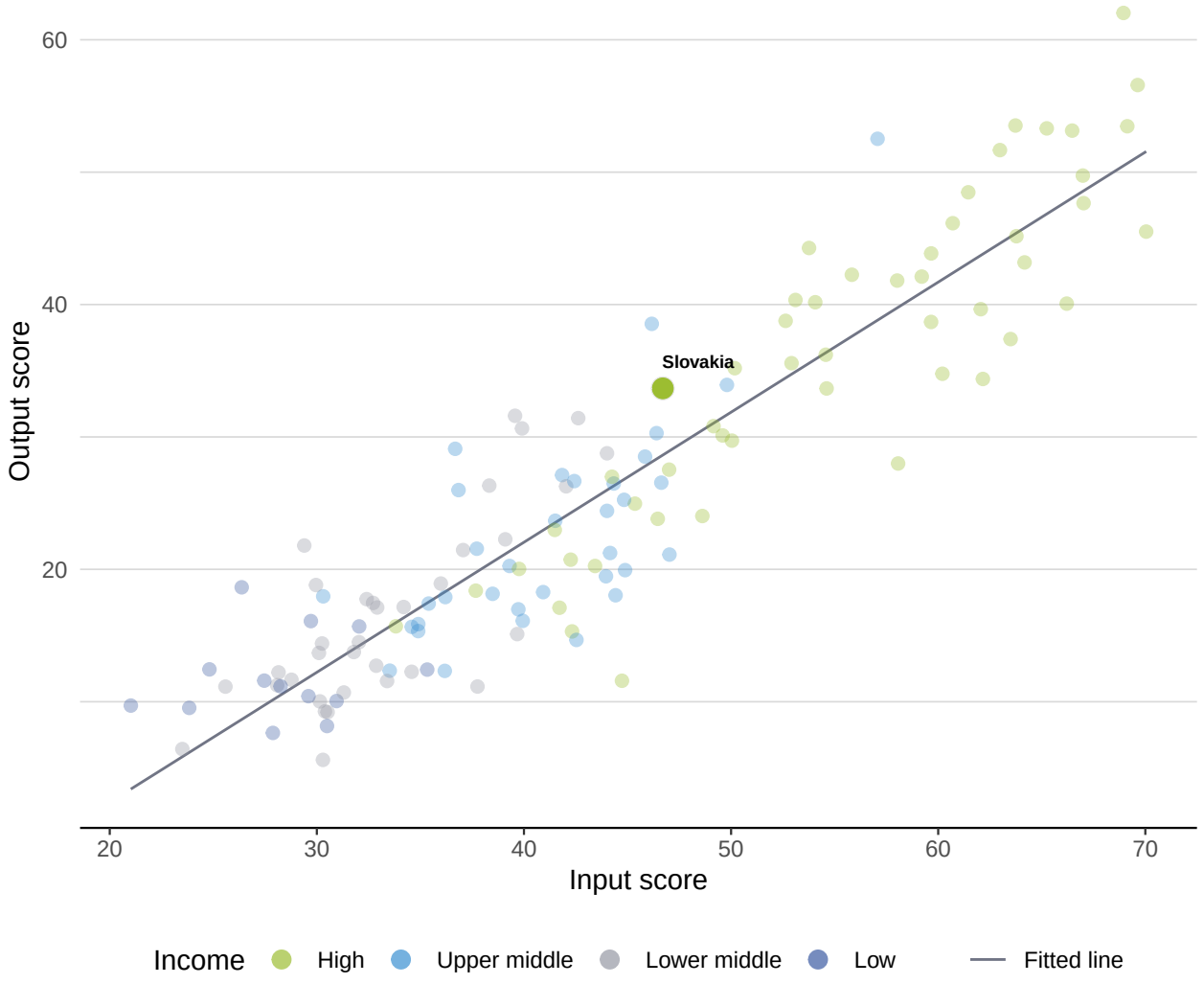


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

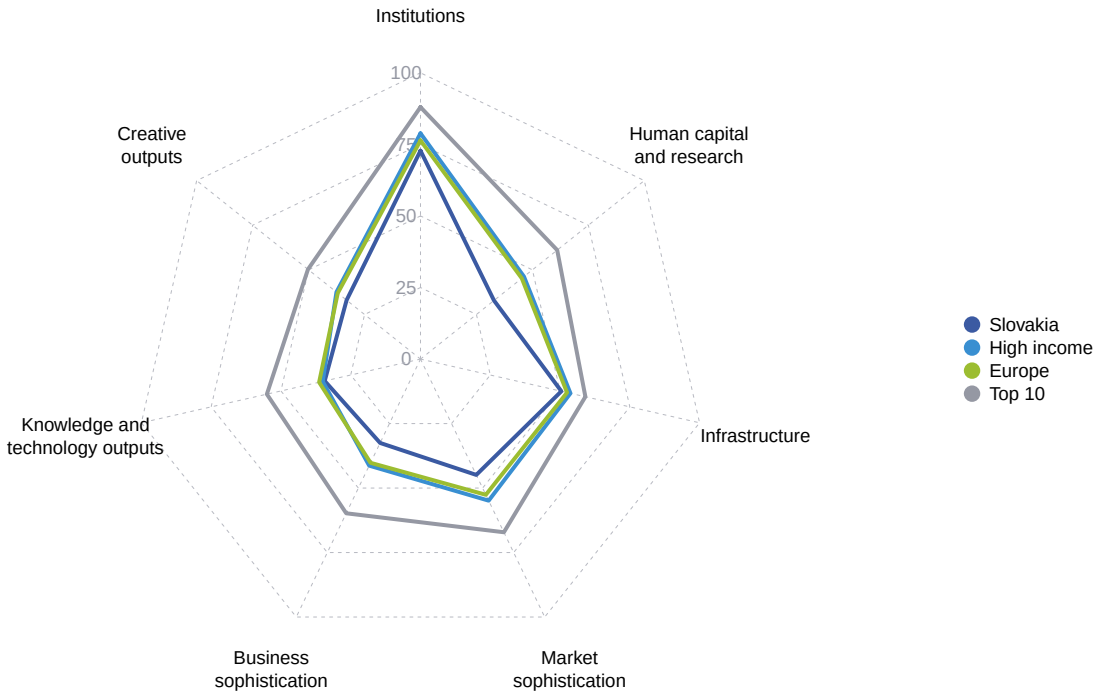
Slovakia produces more innovation outputs relative to its level of innovation investments.

Innovation input to output performance



BENCHMARKING AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND EUROPE

The seven GII pillar scores for Slovakia



High-income group economies

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

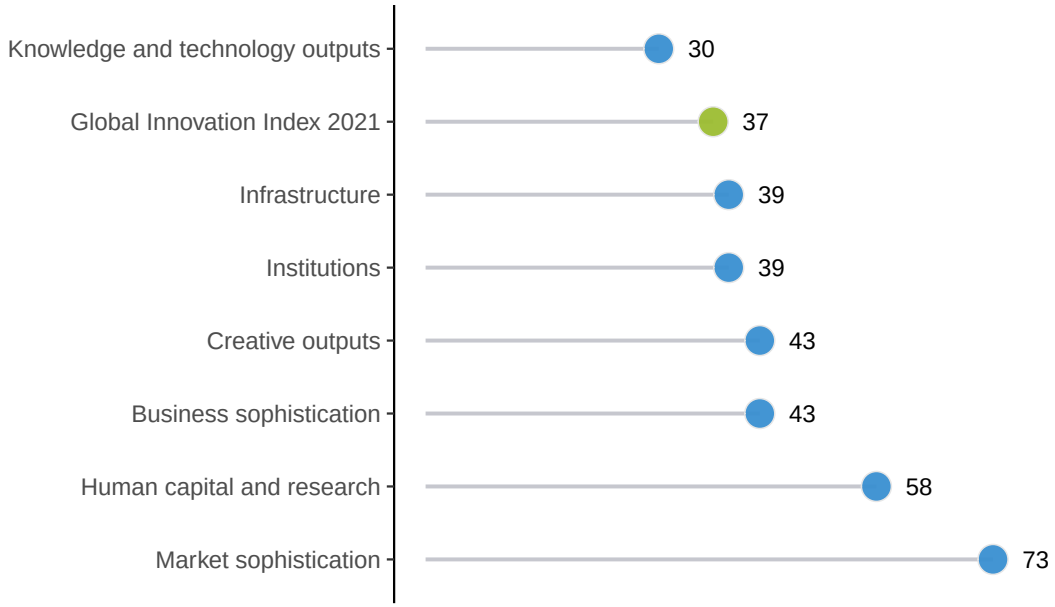
Europe

Slovakia performs below the regional average in all GII pillars.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2021 AREAS

Slovakia performs best in Knowledge and technology outputs and its weakest performance is in Market sophistication.

The seven GII pillar ranks for Slovakia



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

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Slovakia in the GII 2021.

Strengths and weaknesses for Slovakia

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
3.3	Ecological sustainability	12	1.3.1	Ease of starting a business	91
3.3.2	Environmental performance	26	2.3.3	Global corporate R&D investors, top 3, mn US$	41
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	9	3.2.3	Gross capital formation, % GDP	91
5.3.2	High-tech imports, % total trade	19	4.2	Investment	129
6.1.3	Utility models by origin/bn PPP$ GDP	15	4.2.1	Ease of protecting minority investors	82
6.2	Knowledge impact	8	4.2.2	Market capitalization, % GDP	71
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	11	4.2.3	Venture capital investors, deals/bn PPP$ GDP	69
6.2.5	High-tech manufacturing, %	4	4.2.4	Venture capital recipients, deals/bn PPP$ GDP	88
6.3.2	Production and export complexity	15	5.2.1	University-industry R&D collaboration	90
6.3.3	High-tech exports, % total trade	22	7.1.2	Global brand value, top 5,000, % GDP	77
7.2	Creative goods and services	14	7.2.4	Printing and other media, % manufacturing	81
7.2.5	Creative goods exports, % total trade	9			
7.3.2	Country-code TLDs/th pop. 15–69	22			

Slovakia

GII 2021 rank **37**

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$	GII 2020 rank
35	42	High	EUR	5.5	175.7	32,184	39

		Score/ Value	Rank	
Institutions		**72.8**	**39**	
1.1	**Political environment**	**71.1**	**39**	
1.1.1	Political and operational stability*	82.1	24	
1.1.2	Government effectiveness*	65.6	41	
1.2	**Regulatory environment**	**72.1**	**44**	
1.2.1	Regulatory quality*	69.8	34	
1.2.2	Rule of law*	61.4	40	
1.2.3	Cost of redundancy dismissal	18.8	78	
1.3	**Business environment**	**75.1**	**51**	
1.3.1	Ease of starting a business*	84.8	91	○ ◇
1.3.2	Ease of resolving insolvency*	65.5	42	
Human capital and research		**32.8**	**58**	◇
2.1	**Education**	**49.5**	**67**	
2.1.1	Expenditure on education, % GDP	3.9	70	
2.1.2	Government funding/pupil, secondary, % GDP/cap	20.7	45	
2.1.3	School life expectancy, years	14.5	63	◇
2.1.4	PISA scales in reading, maths and science	469.4	38	
2.1.5	Pupil-teacher ratio, secondary	11.2	41	
2.2	**Tertiary education**	**31.5**	**69**	◇
2.2.1	Tertiary enrolment, % gross	45.4	67	◇
2.2.2	Graduates in science and engineering, %	22.1	59	
2.2.3	Tertiary inbound mobility, %	8.0	31	
2.3	**Research and development (R&D)**	**17.5**	**46**	
2.3.1	Researchers, FTE/mn pop.	3,111.0	31	
2.3.2	Gross expenditure on R&D, % GDP	0.8	46	
2.3.3	Global corporate R&D investors, top 3, mn US$	0.0	41	○ ◇
2.3.4	QS university ranking, top 3*	16.5	57	
Infrastructure		**50.5**	**39**	
3.1	**Information and communication technologies (ICTs)**	**73.1**	**54**	◇
3.1.1	ICT access*	73.3	52	◇
3.1.2	ICT use*	77.1	30	
3.1.3	Government's online service*	71.8	63	
3.1.4	E-participation*	70.2	70	◇
3.2	**General infrastructure**	**26.9**	**72**	◇
3.2.1	Electricity output, GWh/mn pop.	4,899.4	46	
3.2.2	Logistics performance*	45.5	52	
3.2.3	Gross capital formation, % GDP	19.6	91	○
3.3	**Ecological sustainability**	**51.4**	**12**	●
3.3.1	GDP/unit of energy use	11.0	59	
3.3.2	Environmental performance*	68.3	26	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	9.3	9	● ◆
Market sophistication		**44.9**	**73**	
4.1	**Credit**	**47.4**	**41**	
4.1.1	Ease of getting credit*	70.0	44	
4.1.2	Domestic credit to private sector, % GDP	62.9	54	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**15.2**	**129**	○ ◇
4.2.1	Ease of protecting minority investors*	56.0	82	○
4.2.2	Market capitalization, % GDP	5.1	71	○ ◇
4.2.3	Venture capital investors, deals/bn PPP$ GDP	0.0	69	○ ◇
4.2.4	Venture capital recipients, deals/bn PPP$ GDP	0.0	88	○
4.3	**Trade, diversification, and market scale**	**72.0**	**55**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	25	
4.3.2	Domestic industry diversification	84.2	69	
4.3.3	Domestic market scale, bn PPP$	175.6	68	

		Score/ Value	Rank	
Business sophistication		**32.5**	**43**	
5.1	**Knowledge workers**	**43.6**	**38**	
5.1.1	Knowledge-intensive employment, %	34.2	41	
5.1.2	Firms offering formal training, %	43.3	25	
5.1.3	GERD performed by business, % GDP	0.5	40	
5.1.4	GERD financed by business, %	46.8	32	
5.1.5	Females employed w/advanced degrees, %	15.3	47	
5.2	**Innovation linkages**	**23.2**	**54**	
5.2.1	University-industry R&D collaboration†	37.7	90	○ ◇
5.2.2	State of cluster development and depth†	46.2	68	
5.2.3	GERD financed by abroad, % GDP	0.1	41	
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	n/a	n/a	
5.2.5	Patent families/bn PPP$ GDP	0.2	42	
5.3	**Knowledge absorption**	**30.7**	**55**	
5.3.1	Intellectual property payments, % total trade	0.8	59	
5.3.2	High-tech imports, % total trade	12.1	19	●
5.3.3	ICT services imports, % total trade	1.1	69	
5.3.4	FDI net inflows, % GDP	2.9	53	
5.3.5	Research talent, % in businesses	24.8	50	
Knowledge and technology outputs		**34.3**	**30**	
6.1	**Knowledge creation**	**24.2**	**39**	
6.1.1	Patents by origin/bn PPP$ GDP	1.3	55	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.3	41	
6.1.3	Utility models by origin/bn PPP$ GDP	1.5	15	● ◆
6.1.4	Scientific and technical articles/bn PPP$ GDP	25.8	37	
6.1.5	Citable documents H-index	17.4	47	
6.2	**Knowledge impact**	**49.7**	**8**	● ◆
6.2.1	Labor productivity growth, %	–0.1	68	
6.2.2	New businesses/th pop. 15–64	5.3	30	
6.2.3	Software spending, % GDP	0.3	41	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	21.0	11	● ◆
6.2.5	High-tech manufacturing, %	60.1	4	● ◆
6.3	**Knowledge diffusion**	**29.0**	**40**	
6.3.1	Intellectual property receipts, % total trade	0.0	75	
6.3.2	Production and export complexity	76.5	15	●
6.3.3	High-tech exports, % total trade	8.1	22	●
6.3.4	ICT services exports, % total trade	1.7	63	
Creative outputs		**33.0**	**43**	
7.1	**Intangible assets**	**32.7**	**57**	
7.1.1	Trademarks by origin/bn PPP$ GDP	54.2	39	
7.1.2	Global brand value, top 5,000, % GDP	1.7	77	○ ◇
7.1.3	Industrial designs by origin/bn PPP$ GDP	1.9	49	
7.1.4	ICTs and organizational model creation†	65.0	28	
7.2	**Creative goods and services**	**38.9**	**14**	●
7.2.1	Cultural and creative services exports, % total trade	0.3	60	
7.2.2	National feature films/mn pop. 15–69	6.6	35	
7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing and other media, % manufacturing	0.6	81	○
7.2.5	Creative goods exports, % total trade	6.8	9	● ◆
7.3	**Online creativity**	**27.7**	**39**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.0	64	◇
7.3.2	Country-code TLDs/th pop. 15–69	31.4	22	●
7.3.3	Wikipedia edits/mn pop. 15–69	63.2	47	
7.3.4	Mobile app creation/bn PPP$ GDP	11.5	45	

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 Appendix IV for details, including the year of the data, at http://globalinnovationindex.org. 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 data that are either missing or outdated for Slovakia.

Missing data for Slovakia

Code	Indicator name	Economy year	Model year	Source
4.1.3	Microfinance gross loans, % GDP	n/a	2018	Microfinance Information Exchange
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	n/a	2020	Refinitiv
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2020	PwC

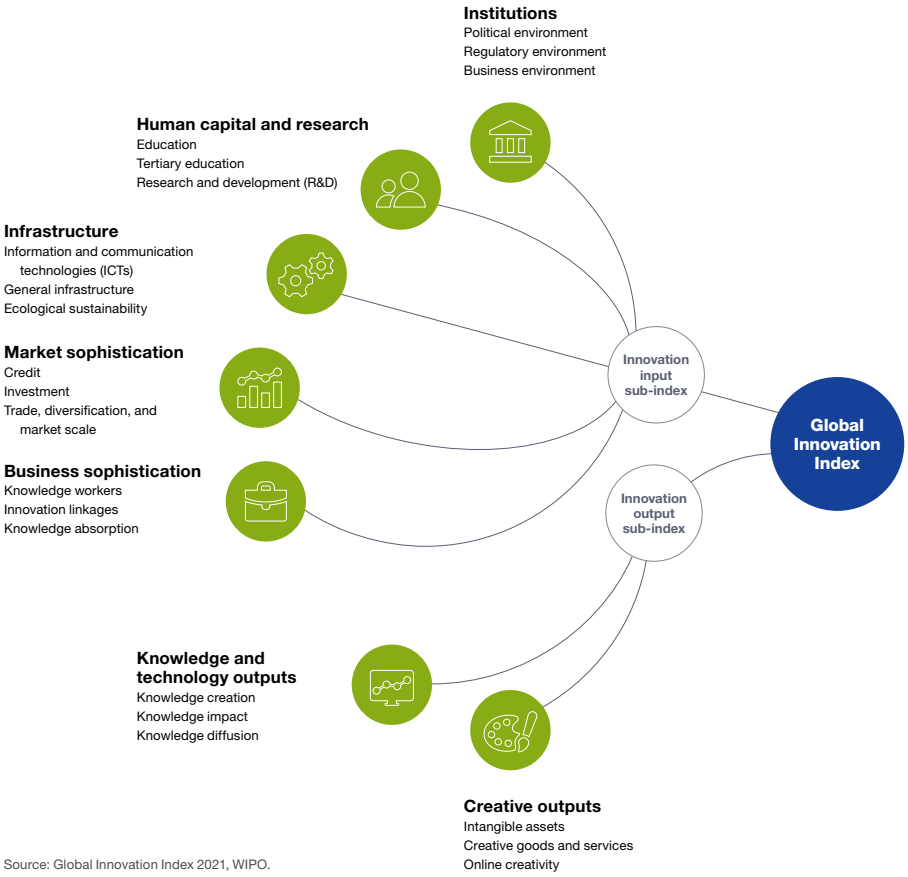
Outdated data for Slovakia

Code	Indicator name	Economy year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	2018	2019	UNESCO Institute for Statistics
4.2.2	Market capitalization, % GDP	2013	2019	World Federation of Exchanges

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 2021, WIPO.

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.