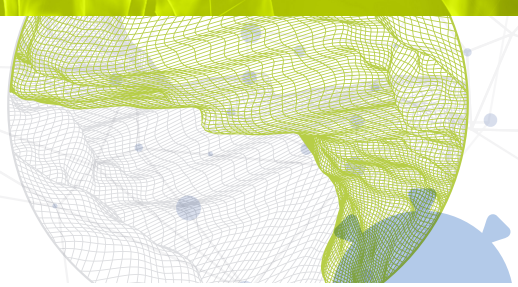
Global Innovation Index 2021



CZECH REPUBLIC

24th Czech Republic ranks 24th 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 Czech Republic 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 Czech Republic in the GII 2021 is between ranks 20 and 25.

Rankings for Czech Republic (2019–2021)

	GII	Innovation inputs	Innovation outputs
2021	24	30	15
2020	24	28	17
2019	26	29	21

- Czech Republic performs better in innovation outputs than innovation inputs in 2021.
- This year Czech Republic ranks 30th in innovation inputs, lower than both 2020 and 2019.
- As for innovation outputs, Czech Republic ranks 15th. This position is higher than both 2020 and 2019.

23rd Czech Republic ranks 23rd among the 51 high-income group economies.

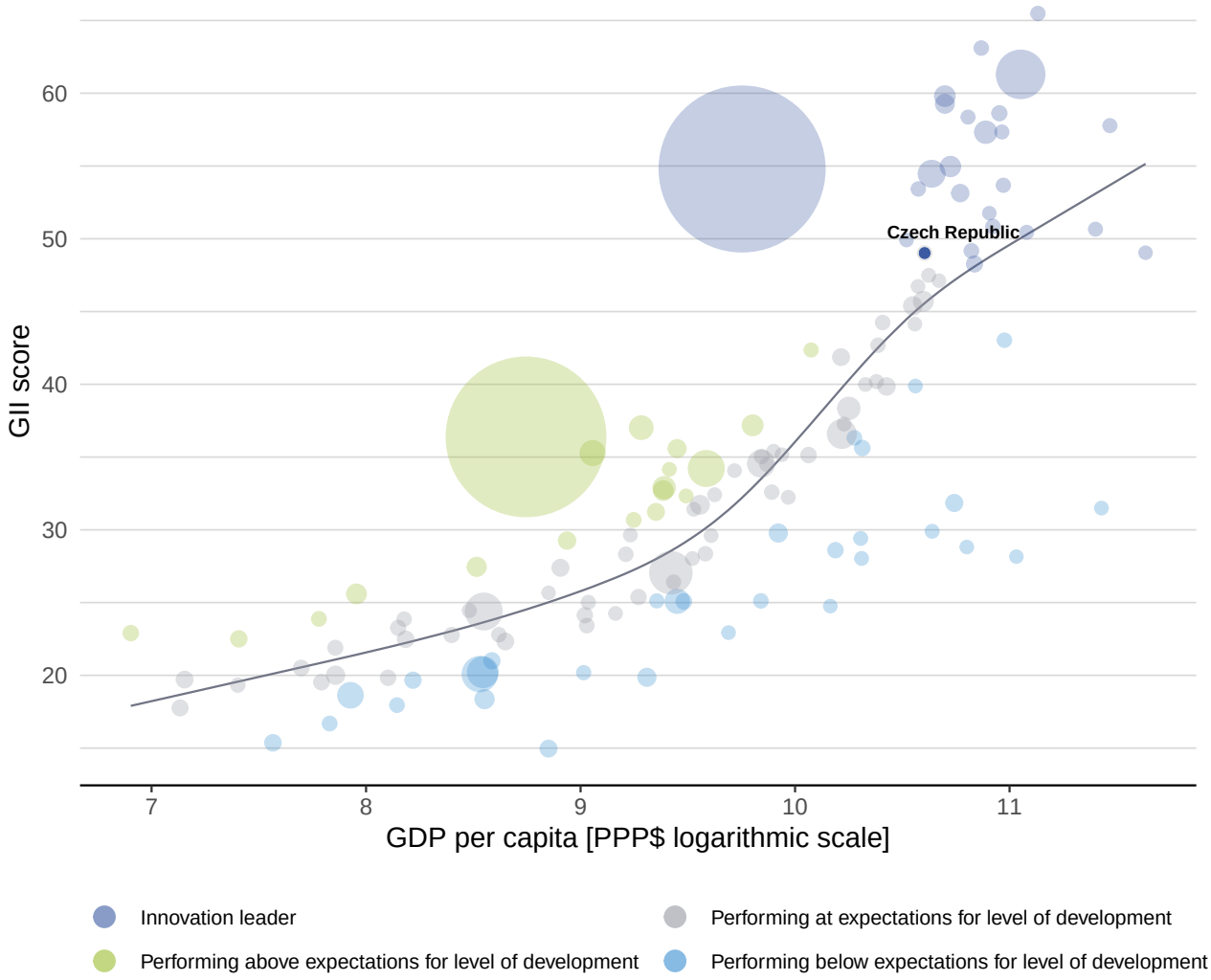
16th Czech Republic ranks 16th among the 39 economies in Europe.

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, Czech Republic's performance is above expectations for its level of development.

The positive relationship between innovation and development

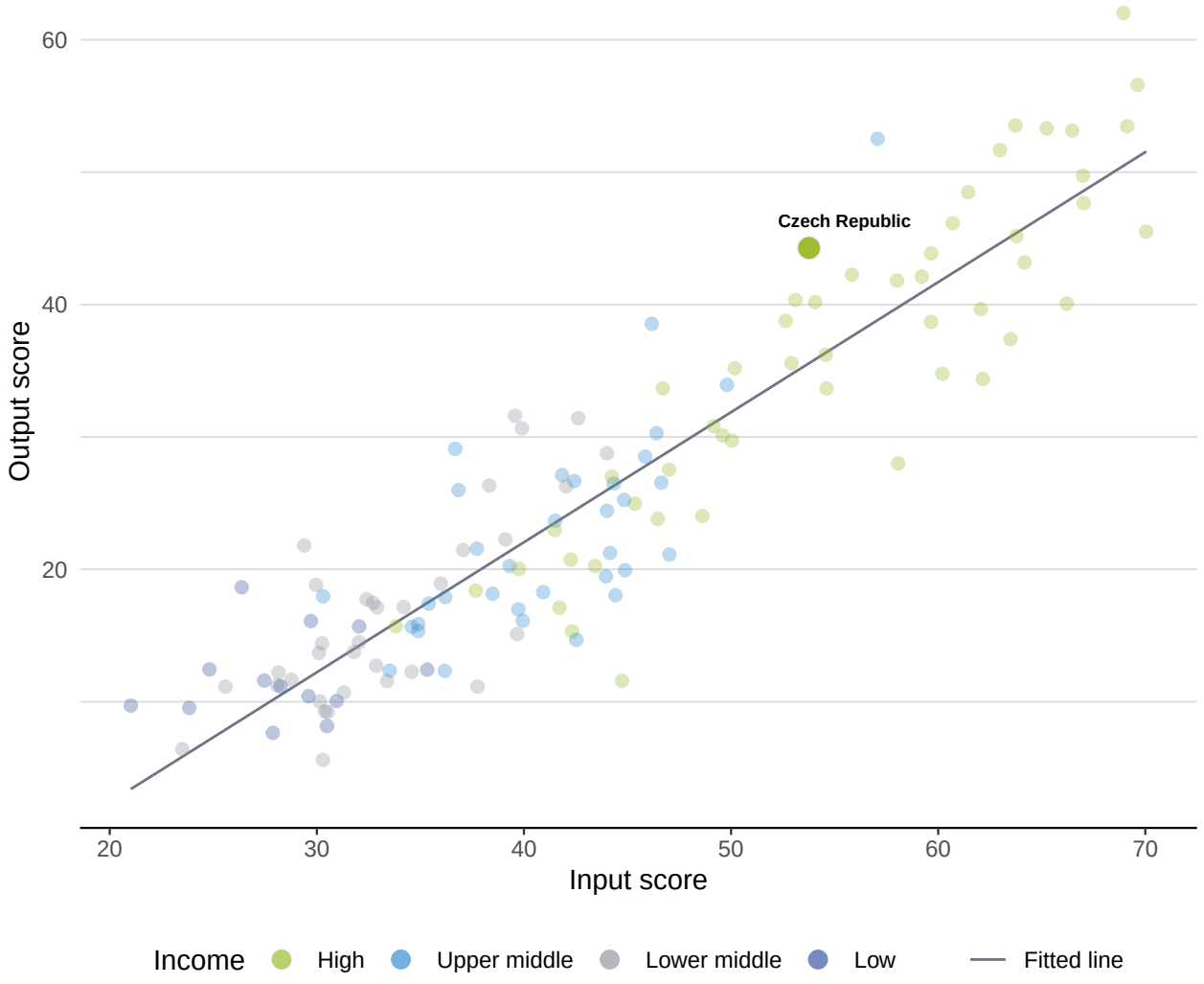


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

Czech Republic 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 Czech Republic

High-income group economies

Czech Republic performs above the high-income group average in four pillars, namely: Infrastructure; Business sophistication; Knowledge and technology outputs; and, Creative outputs.

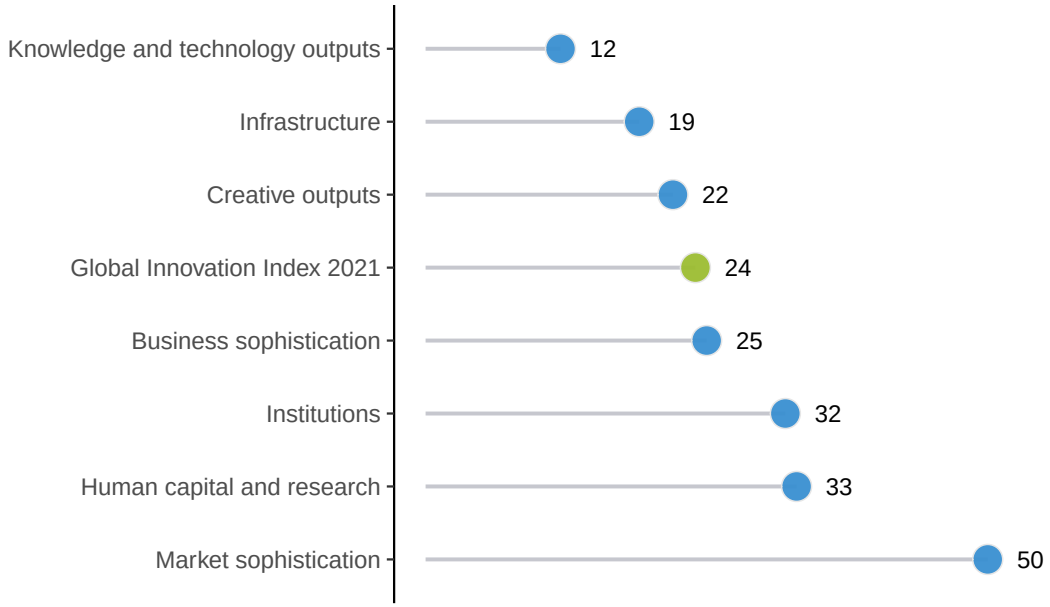
Europe

Czech Republic performs above the regional average in five pillars, namely: Institutions; Infrastructure; Business sophistication; Knowledge and technology outputs; and, Creative outputs.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2021 AREAS

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

The seven GII pillar ranks for Czech Republic



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 Czech Republic in the GII 2021.

Strengths and weaknesses for Czech Republic

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
1.3.2	Ease of resolving insolvency	15	1.2.3	Cost of redudancy dismissal	85
3.3	Ecological sustainability	13	1.3.1	Ease of starting a business	103
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	7	2.1.1	Expenditure on education, % GDP	72
5.2.3	GERD financed by abroad, % GDP	3	2.3.3	Global corporate R&D investors, top 3, mn US$	41
5.3	Knowledge absorption	15	3.3.1	GDP/unit of energy use	74
5.3.2	High-tech imports, % total trade	8	4.2	Investment	89
6.1.3	Utility models by origin/bn PPP$ GDP	6	4.2.1	Ease of protecting minority investors	60
6.2	Knowledge impact	4	4.2.4	Venture capital recipients, deals/bn PPP$ GDP	82
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4	5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	77
6.2.5	High-tech manufacturing, %	3	6.2.1	Labor productivity growth, %	65
6.3	Knowledge diffusion	10	7.2.4	Printing and other media, % manufacturing	63
6.3.2	Production and export complexity	7			
6.3.3	High-tech exports, % total trade	7			
7.2	Creative goods and services	4			
7.2.5	Creative goods exports, % total trade	1			

Czech Republic

GII 2021 rank
24

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$	GII 2020 rank
15	30	High	EUR	10.7	430.9	40,293	24

		Score/ Value	Rank	
Institutions		**76.9**	**32**	◇
1.1	**Political environment**	**74.3**	**34**	◇
1.1.1	Political and operational stability*	82.1	24	
1.1.2	Government effectiveness*	70.3	35	◇
1.2	**Regulatory environment**	**75.5**	**37**	
1.2.1	Regulatory quality*	76.0	24	
1.2.2	Rule of law*	74.3	28	◇
1.2.3	Cost of redundancy dismissal	20.2	85	○
1.3	**Business environment**	**81.1**	**29**	
1.3.1	Ease of starting a business*	82.1	103	○ ◇
1.3.2	Ease of resolving insolvency*	80.1	15	●
Human capital and research		**43.0**	**33**	◇
2.1	**Education**	**55.1**	**49**	
2.1.1	Expenditure on education, % GDP	3.9	72	○
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.5	23	
2.1.3	School life expectancy, years	16.3	30	
2.1.4	PISA scales in reading, maths and science	495.5	23	
2.1.5	Pupil-teacher ratio, secondary	11.5	45	
2.2	**Tertiary education**	**44.5**	**22**	
2.2.1	Tertiary enrolment, % gross	63.8	44	
2.2.2	Graduates in science and engineering, %	26.1	33	
2.2.3	Tertiary inbound mobility, %	13.6	15	
2.3	**Research and development (R&D)**	**29.5**	**37**	◇
2.3.1	Researchers, FTE/mn pop.	3,976.0	26	
2.3.2	Gross expenditure on R&D, % GDP	1.9	18	
2.3.3	Global corporate R&D investors, top 3, mn US$	0.0	41	○ ◇
2.3.4	QS university ranking, top 3*	31.5	38	◇
Infrastructure		**56.0**	**19**	
3.1	**Information and communication technologies (ICTs)**	**73.9**	**53**	◇
3.1.1	ICT access*	73.2	53	◇
3.1.2	ICT use*	77.2	29	◇
3.1.3	Government's online service*	72.4	61	◇
3.1.4	E-participation*	72.6	65	◇
3.2	**General infrastructure**	**42.6**	**21**	
3.2.1	Electricity output, GWh/mn pop.	8,047.2	22	
3.2.2	Logistics performance*	75.8	22	
3.2.3	Gross capital formation, % GDP	25.9	40	
3.3	**Ecological sustainability**	**51.4**	**13**	●
3.3.1	GDP/unit of energy use	9.4	74	○
3.3.2	Environmental performance*	71.0	20	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	9.7	7	● ◆
Market sophistication		**49.5**	**50**	◇
4.1	**Credit**	**44.8**	**51**	
4.1.1	Ease of getting credit*	70.0	44	
4.1.2	Domestic credit to private sector, % GDP	50.6	68	◇
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**24.2**	**89**	○ ◇
4.2.1	Ease of protecting minority investors*	62.0	60	○
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital investors, deals/bn PPP$ GDP	0.0	44	◇
4.2.4	Venture capital recipients, deals/bn PPP$ GDP	0.0	82	○ ◇
4.3	**Trade, diversification, and market scale**	**79.4**	**30**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	25	
4.3.2	Domestic industry diversification	93.6	37	
4.3.3	Domestic market scale, bn PPP$	430.9	46	

		Score/ Value	Rank	
Business sophistication		**43.5**	**25**	◇
5.1	**Knowledge workers**	**45.4**	**31**	◇
5.1.1	Knowledge-intensive employment, %	37.7	31	◇
5.1.2	Firms offering formal training, %	43.6	24	
5.1.3	GERD performed by business, % GDP	1.2	17	
5.1.4	GERD financed by business, %	38.2	47	◇
5.1.5	Females employed w/advanced degrees, %	12.3	61	◇
5.2	**Innovation linkages**	**36.4**	**26**	◇
5.2.1	University-industry R&D collaboration†	53.7	32	◇
5.2.2	State of cluster development and depth†	47.3	62	◇
5.2.3	GERD financed by abroad, % GDP	0.5	3	● ◆
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	77	○ ◇
5.2.5	Patent families/bn PPP$ GDP	0.6	30	◇
5.3	**Knowledge absorption**	**48.5**	**15**	●
5.3.1	Intellectual property payments, % total trade	0.8	53	
5.3.2	High-tech imports, % total trade	20.7	8	● ◆
5.3.3	ICT services imports, % total trade	1.3	57	
5.3.4	FDI net inflows, % GDP	4.1	28	
5.3.5	Research talent, % in businesses	51.1	22	
Knowledge and technology outputs		**48.2**	**12**	●
6.1	**Knowledge creation**	**39.4**	**22**	
6.1.1	Patents by origin/bn PPP$ GDP	2.1	34	◇
6.1.2	PCT patents by origin/bn PPP$ GDP	0.5	35	◇
6.1.3	Utility models by origin/bn PPP$ GDP	2.8	6	● ◆
6.1.4	Scientific and technical articles/bn PPP$ GDP	35.1	25	
6.1.5	Citable documents H-index	30.3	31	
6.2	**Knowledge impact**	**53.1**	**4**	● ◆
6.2.1	Labor productivity growth, %	−0.1	65	○
6.2.2	New businesses/th pop. 15–64	4.4	34	
6.2.3	Software spending, % GDP	0.2	54	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	27.4	4	● ◆
6.2.5	High-tech manufacturing, %	61.1	3	● ◆
6.3	**Knowledge diffusion**	**52.2**	**10**	●
6.3.1	Intellectual property receipts, % total trade	0.3	30	◇
6.3.2	Production and export complexity	85.6	7	●
6.3.3	High-tech exports, % total trade	21.0	7	● ◆
6.3.4	ICT services exports, % total trade	2.6	44	
Creative outputs		**40.3**	**22**	
7.1	**Intangible assets**	**36.2**	**49**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	53.7	42	
7.1.2	Global brand value, top 5,000, % GDP	26.0	47	◇
7.1.3	Industrial designs by origin/bn PPP$ GDP	3.3	33	
7.1.4	ICTs and organizational model creation†	66.3	26	◇
7.2	**Creative goods and services**	**46.7**	**4**	● ◆
7.2.1	Cultural and creative services exports, % total trade	0.6	44	
7.2.2	National feature films/mn pop. 15–69	7.0	29	
7.2.3	Entertainment and media market/th pop. 15–69	25.6	26	◇
7.2.4	Printing and other media, % manufacturing	0.9	63	○
7.2.5	Creative goods exports, % total trade	11.0	1	● ◆
7.3	**Online creativity**	**42.1**	**28**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	16.8	30	◇
7.3.2	Country-code TLDs/th pop. 15–69	54.2	16	
7.3.3	Wikipedia edits/mn pop. 15–69	76.4	18	
7.3.4	Mobile app creation/bn PPP$ GDP	17.3	29	

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 Czech Republic.

Missing data for Czech Republic

Code	Indicator name	Economy year	Model year	Source
4.1.3	Microfinance gross loans, % GDP	n/a	2018	Microfinance Information Exchange
4.2.2	Market capitalization, % GDP	n/a	2019	World Federation of Exchanges

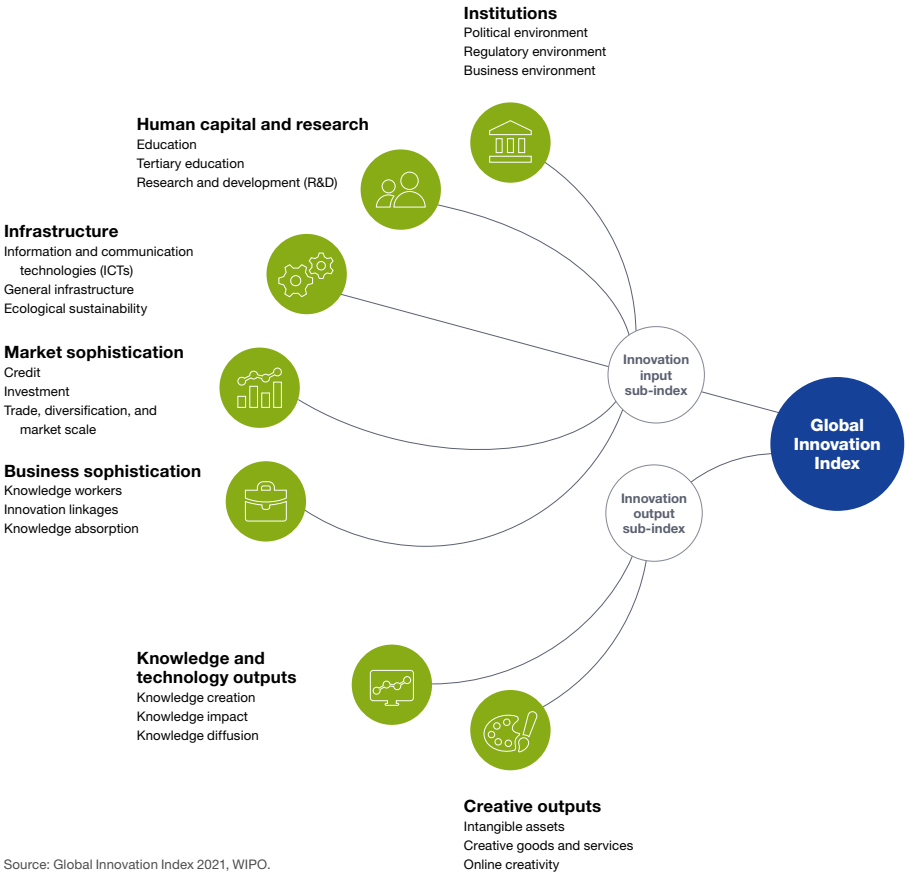
Outdated data for Czech Republic

Code	Indicator name	Economy year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	2013	2019	UNESCO Institute for Statistics

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.