GLOBAL INNOVATION INDEX 2020

HUNGARY

35th Hungary ranks 35th among the 131 economies featured in the GII 2020.

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 Hungary 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 Hungary in the GII 2020 is between ranks 33 and 35.

Rankings of Hungary (2018–2020)

	GII	Innovation inputs	Innovation outputs
2020	35	37	32
2019	33	39	26
2018	33	41	25

- Hungary performs better in innovation outputs than innovation inputs in 2020.
- This year Hungary ranks 37th in innovation inputs, higher than last year and higher compared to 2018.
- As for innovation outputs, Hungary ranks 32nd. This position is lower than last year and lower compared to 2018.

33rd Hungary ranks 33rd among the 49 high-income group economies.

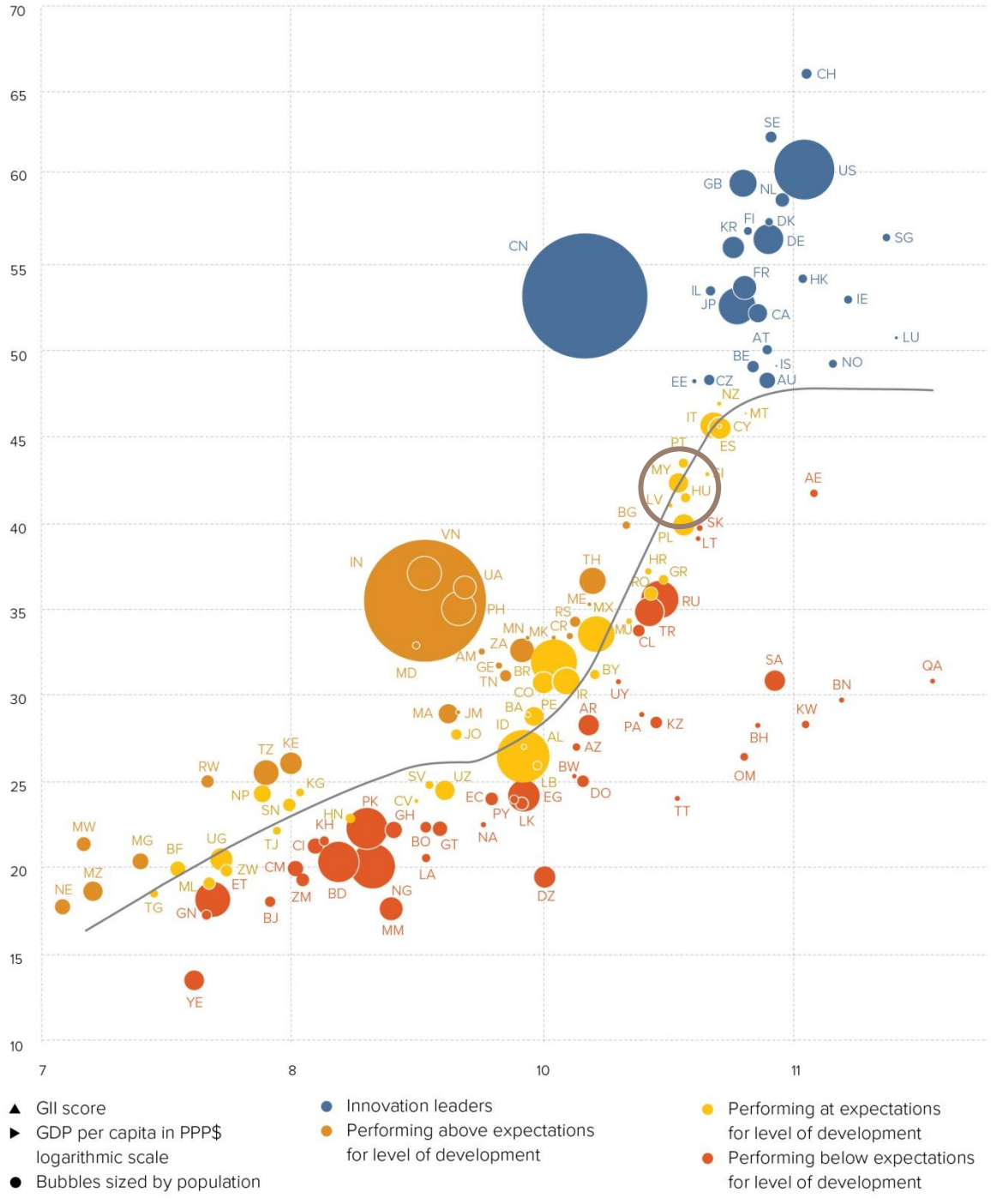
22nd Hungary ranks 22nd among the 39 economies in Europe.

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, Hungary's performance matches expectations for its level of development.

The positive relationship between innovation and development

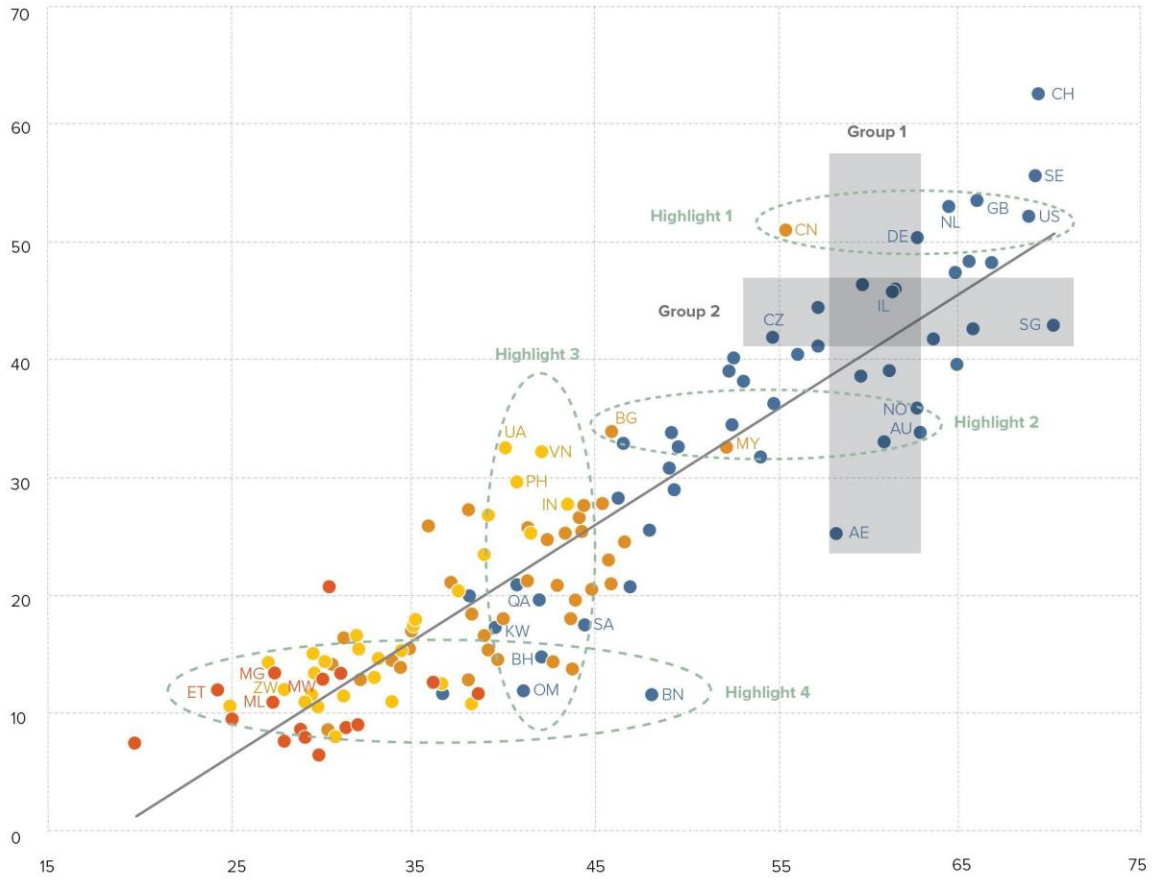


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

Innovation input to output performance, 2020



▲ Output score
► Input score

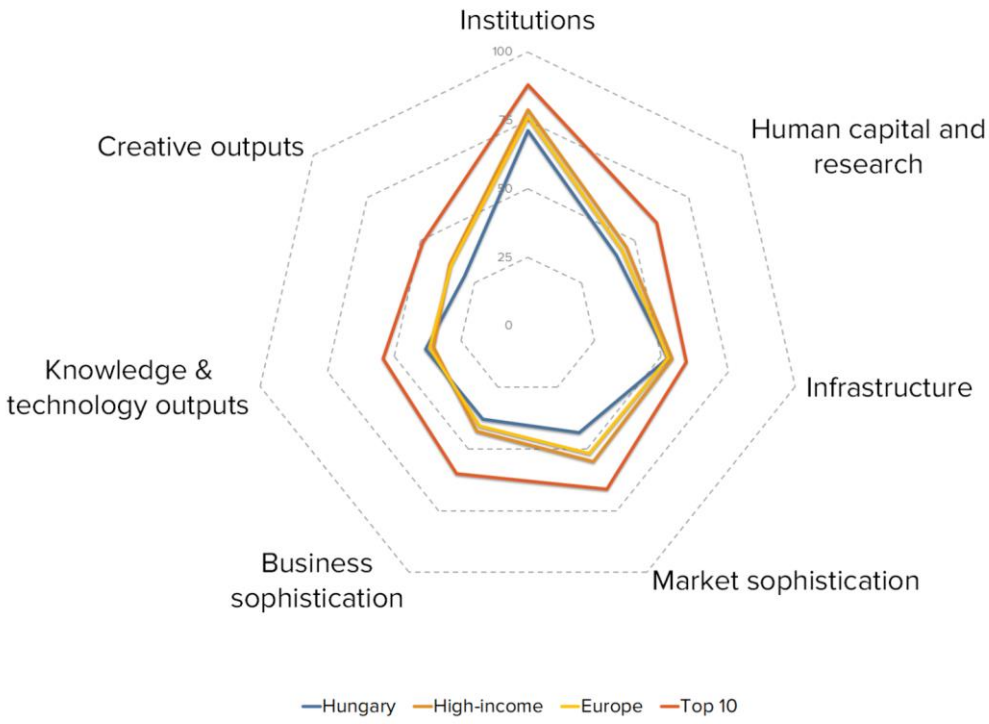
● High income group
● Upper middle-income group
● Lower middle-income group
● Low income group

— Fitted values

AU	Australia	IN	India	NL	Netherlands	CH	Switzerland
BH	Bahrain	IL	Israel	NO	Norway	UA	Ukraine
BN	Brunei Darussalam	KW	Kuwait	OM	Oman	AE	United Arab Emirates
BG	Bulgaria	MG	Madagascar	PH	Philippines	GB	United Kingdom
CN	China	MW	Malawi	QA	Qatar	US	United States of America
CZ	Czech Republic	ML	Mali	SA	Saudi Arabia	VN	Viet Nam
ET	Ethiopia	MY	Malaysia	SG	Singapore	ZW	Zimbabwe
DE	Germany			SE	Sweden		

BENCHMARKING HUNGARY AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND EUROPE

Hungary's scores in the seven GII pillars



High-income group economies

Hungary has high scores in one of the seven GII pillars: Knowledge & technology outputs, which are above average for the high-income group.

Conversely, Hungary scores below average for its income group in six of the seven GII pillars: Institutions, Human capital & research, Infrastructure, Market sophistication, Business sophistication and Creative outputs.

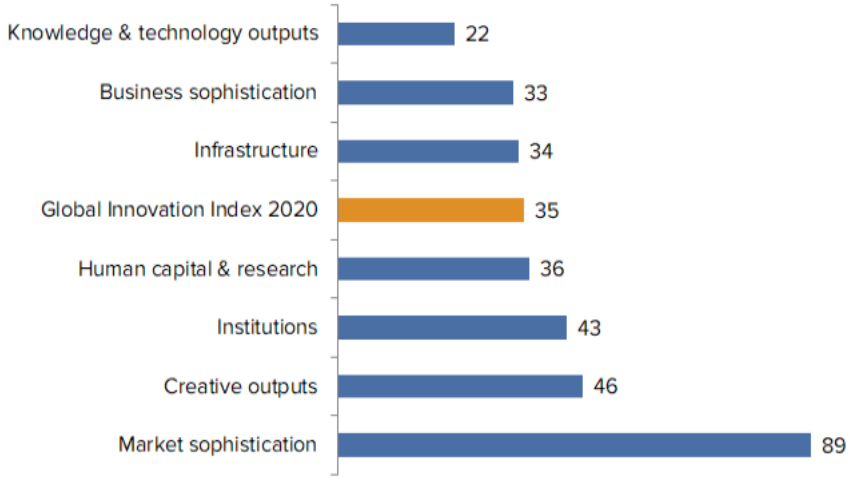
Europe

Compared to other economies in Europe, Hungary performs:

- above average in one of the seven GII pillars: Knowledge & technology outputs; and
- below average in six out of the seven GII pillars: Institutions, Human capital & research, Infrastructure, Market sophistication, Business sophistication and Creative outputs.

OVERVIEW OF HUNGARY RANKINGS IN THE SEVEN GII AREAS

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



*The highest possible ranking in each pillar is 1.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Hungary in the GII 2020.

Strengths

Code	Indicator name	Rank
3.3	Ecological sustainability	19
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	10
5.3.2	High-tech imports, % total trade	15
5.3.5	Research talent, % in business enterprise	8
6.2	Knowledge impact	8
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	11
6.2.5	High- & medium-high-tech manufacturing, %	9
6.3.1	Intellectual property receipts, % total trade	15
6.3.2	High-tech net exports, % total trade	10
7.2	Creative goods and services	15
7.2.5	Creative goods exports, % total trade	9
7.3.2	Country-code TLDs/th pop. 15–69	19
7.3.3	Wikipedia edits/mn pop. 15–69	18

Weaknesses

Code	Indicator name	Rank
4.1.2	Domestic credit to private sector, % GDP	89
4.2	Investment	125
4.2.1	Ease of protecting minority investors*	88
4.2.2	Market capitalization, % GDP	60
4.2.3	Venture capital deals/bn PPP$ GDP	58
4.3.2	Intensity of local competition†	110
5.1.2	Firms offering formal training, %	86
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	86
5.3.4	FDI net inflows, % GDP	96
6.3.4	FDI net outflows, % GDP	124
7.2.4	Printing & other media, % manufacturing	71

STRENGTHS

GII strengths for Hungary are found in four of the seven GII pillars.

- Infrastructure (34): demonstrates strengths in the sub-pillar Ecological sustainability (19) and in the indicator ISO 14001 environmental certificates (10).
- Business sophistication (33): displays strengths in the indicators High-tech imports (15) and Research talent (8).
- Knowledge & technology outputs (22): reveals strengths in the sub-pillar Knowledge impact (8) and in the indicators ISO 9001 quality certificates (11), High- & medium-high-tech manufacturing (9), Intellectual property receipts (15) and High-tech net exports (10).
- Creative outputs (46): shows strengths in the sub-pillar Creative goods and services (15) and in the indicators Creative goods exports (9), Country-code TLDs (19) and Wikipedia edits (18).

WEAKNESSES

GII weaknesses for Hungary are found in four of the seven GII pillars.

- Market sophistication (89): shows weaknesses in the sub-pillar Investment (125) and in the indicators Domestic credit to private sector (89), Ease of protecting minority investors (88), Market capitalization (60), Venture capital deals (58) and Intensity of local competition (110).
- Business sophistication (33): demonstrates weaknesses in the indicators Firms offering formal training (86), JV–strategic alliance deals (86) and FDI net inflows (96).
- Knowledge & technology outputs (22): the indicator FDI net outflows (124) reveals a weakness.
- Creative outputs (46): displays weakness in the indicator Printing & other media (71).

HUNGARY

GII 2020 rank

35

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2019 rank
32	37	High	EUR	9.7	332.2	29,723.4	33

		Score/Value	Rank	
INSTITUTIONS		**71.3**	**43**	
1.1	**Political environment**	**68.1**	**41**	
1.1.1	Political and operational stability*	82.1	29	
1.1.2	Government effectiveness*	61.0	44	◇
1.2	**Regulatory environment**	**74.3**	**38**	
1.2.1	Regulatory quality*	57.7	42	
1.2.2	Rule of law*	61.1	40	
1.2.3	Cost of redundancy dismissal, salary weeks	13.4	48	
1.3	**Business environment**	**71.6**	**63**	
1.3.1	Ease of starting a business*	88.2	70	
1.3.2	Ease of resolving insolvency*	55.0	61	
HUMAN CAPITAL & RESEARCH		**41.4**	**36**	
2.1	**Education**	**51.2**	**47**	
2.1.1	Expenditure on education, % GDP ⊙	4.7	55	
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.1	27	
2.1.3	School life expectancy, years	15.2	46	
2.1.4	PISA scales in reading, maths, & science	479.3	33	
2.1.5	Pupil-teacher ratio, secondary ⊙	10.0	35	
2.2	**Tertiary education**	**37.7**	**52**	
2.2.1	Tertiary enrolment, % gross	48.5	62	◇
2.2.2	Graduates in science & engineering, %	23.3	50	
2.2.3	Tertiary inbound mobility, %	10.0	20	
2.3	**Research & development (R&D)**	**35.3**	**32**	
2.3.1	Researchers, FTE/mn pop	3,237.7	29	
2.3.2	Gross expenditure on R&D, % GDP	1.6	22	
2.3.3	Global R&D companies, avg. exp. top 3, mn $US	50.9	29	
2.3.4	QS university ranking, average score top 3*	20.4	52	
INFRASTRUCTURE		**52.4**	**34**	
3.1	**Information & communication technologies (ICTs)**	**71.5**	**54**	◇
3.1.1	ICT access*	75.8	40	
3.1.2	ICT use*	65.6	51	◇
3.1.3	Government's online service*	73.6	58	◇
3.1.4	E-participation*	70.8	68	◇
3.2	**General infrastructure**	**34.3**	**33**	
3.2.1	Electricity output, kWh/mn pop	3,265.6	61	
3.2.2	Logistics performance*	63.3	30	
3.2.3	Gross capital formation, % GDP	29.4	28	
3.3	**Ecological sustainability**	**51.5**	**19**	●
3.3.1	GDP/unit of energy use	10.1	53	
3.3.2	Environmental performance*	63.7	33	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	7.7	10	● ◆
MARKET SOPHISTICATION		**43.3**	**89**	◇
4.1	**Credit**	**44.0**	**55**	
4.1.1	Ease of getting credit*	75.0	34	
4.1.2	Domestic credit to private sector, % GDP	33.4	89	○ ◇
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**21.6**	**125**	○ ◇
4.2.1	Ease of protecting minority investors*	54.0	88	○ ◇
4.2.2	Market capitalization, % GDP	19.4	60	○
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	58	○
4.3	**Trade, competition, and market scale**	**64.2**	**57**	
4.3.1	Applied tariff rate, weighted avg., %	1.7	22	
4.3.2	Intensity of local competition+	59.3	110	○ ◇
4.3.3	Domestic market scale, bn PPP$	332.2	53	

		Score/Value	Rank	
BUSINESS SOPHISTICATION		**37.8**	**33**	
5.1	**Knowledge workers**	**40.9**	**44**	
5.1.1	Knowledge-intensive employment, %	34.4	38	
5.1.2	Firms offering formal training, % ⊙	15.8	86	○ ◇
5.1.3	GERD performed by business, % GDP	1.2	20	
5.1.4	GERD financed by business, %	52.7	21	
5.1.5	Females employed w/advanced degrees, %	15.1	44	
5.2	**Innovation linkages**	**24.5**	**51**	
5.2.1	University/industry research collaboration+	44.2	57	
5.2.2	State of cluster development+	47.2	65	
5.2.3	GERD financed by abroad, % GDP	0.2	18	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	86	○ ◇
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.3	36	
5.3	**Knowledge absorption**	**48.1**	**20**	
5.3.1	Intellectual property payments, % total trade	1.3	26	
5.3.2	High-tech imports, % total trade	13.7	15	●
5.3.3	ICT services imports, % total trade	1.3	56	
5.3.4	FDI net inflows, % GDP	1.6	96	○
5.3.5	Research talent, % in business enterprise	63.7	8	●
KNOWLEDGE & TECHNOLOGY OUTPUTS		**38.2**	**22**	
6.1	**Knowledge creation**	**23.2**	**44**	
6.1.1	Patents by origin/bn PPP$ GDP	1.7	46	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.5	33	
6.1.3	Utility models by origin/bn PPP$ GDP	0.7	32	
6.1.4	Scientific & technical articles/bn PPP$ GDP	16.4	35	
6.1.5	Citable documents H-index	29.2	33	
6.2	**Knowledge impact**	**46.8**	**8**	● ◆
6.2.1	Growth rate of PPP$ GDP/worker, %	2.7	32	◆
6.2.2	New businesses/th pop. 15-64	3.7	38	
6.2.3	Computer software spending, % GDP	0.0	38	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	21.3	11	● ◆
6.2.5	High- and medium-high-tech manufacturing, %	54.7	9	● ◆
6.3	**Knowledge diffusion**	**44.6**	**20**	
6.3.1	Intellectual property receipts, % total trade	1.5	15	●
6.3.2	High-tech net exports, % total trade	13.8	10	● ◆
6.3.3	ICT services exports, % total trade	1.9	59	
6.3.4	FDI net outflows, % GDP	-0.5	124	○
CREATIVE OUTPUTS		**29.4**	**46**	
7.1	**Intangible assets**	**23.6**	**80**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	28.1	81	
7.1.2	Global brand value, top 5,000, % GDP	10.5	59	
7.1.3	Industrial designs by origin/bn PPP$ GDP	2.7	42	
7.1.4	ICTs & organizational model creation+	60.3	42	
7.2	**Creative goods and services**	**37.6**	**15**	●
7.2.1	Cultural & creative services exports, % total trade	0.6	40	
7.2.2	National feature films/mn pop. 15-69	5.2	43	
7.2.3	Entertainment & Media market/th pop. 15-69	14.5	33	◇
7.2.4	Printing and other media, % manufacturing	0.8	71	○
7.2.5	Creative goods exports, % total trade	6.4	9	● ◆
7.3	**Online creativity**	**32.7**	**33**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	10.2	39	
7.3.2	Country-code TLDs/th pop. 15-69	33.2	19	●
7.3.3	Wikipedia edits/mn pop. 15-69	82.9	18	●
7.3.4	Mobile app creation/bn PPP$ GDP	5.3	54	

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 II 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 Hungary.

Missing data

Code	Indicator name	Country year	Model year	Source
4.1.3	Microfinance gross loans, % GDP	n/a	2018	Microfinance Information Exchange

Outdated data

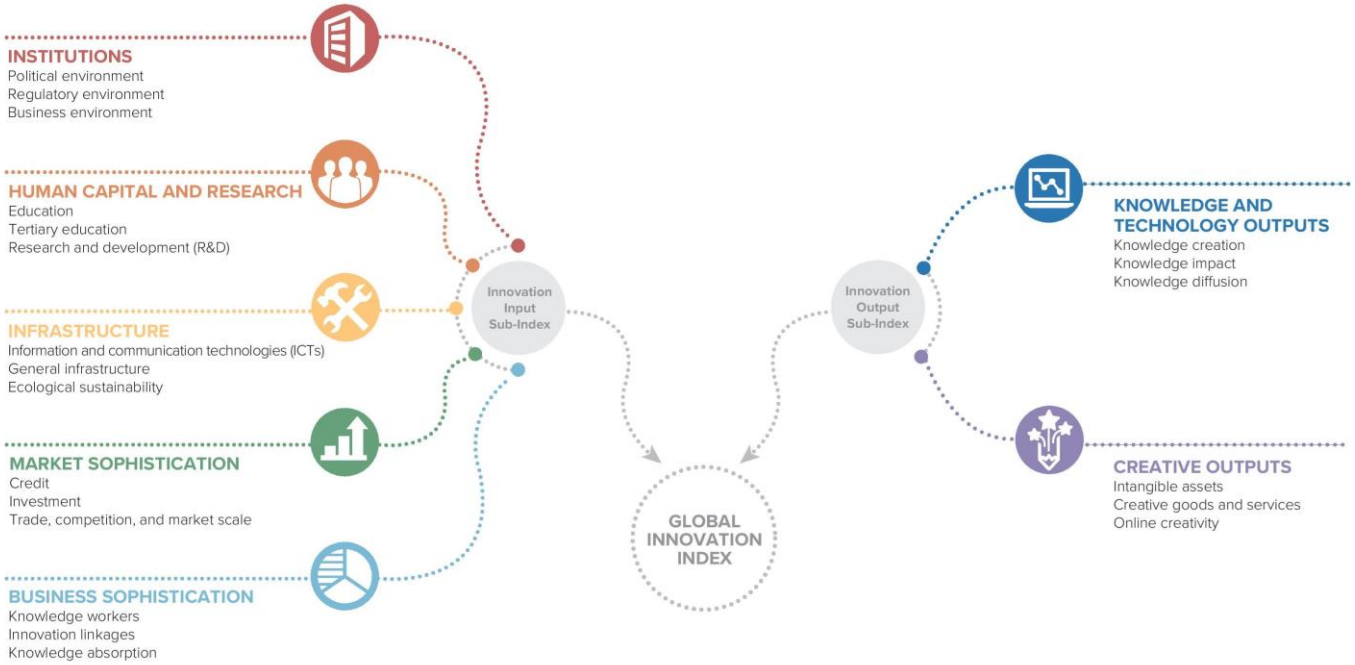
Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	2016	2018	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2016	2018	UNESCO Institute for Statistics
5.1.2	Firms offering formal training, %	2012	2018	World Bank

ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. In 2020, the GII presents its 13th edition devoted to the theme *Who Will Finance Innovation?*

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.

Framework of the Global Innovation Index 2020



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.