

# Global Innovation Index 2023

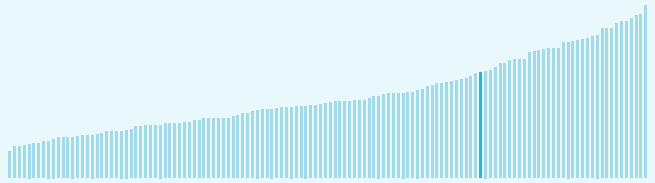


The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities.**

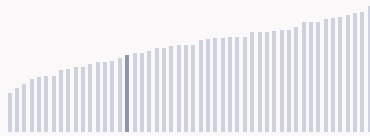
Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation.**

## Hungary ranking in the Global Innovation Index 2023

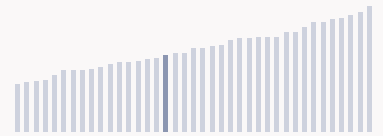
> Hungary ranks **35th** among the 132 economies featured in the GII 2023.



> Hungary ranks **34th** among the 50 high-income group economies.



> Hungary ranks **23rd** among the 39 economies in Europe.



### > Hungary GII Ranking (2020-2023)

The table shows the rankings of Hungary over the past four years. 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 2023 is between ranks 32 and 36.

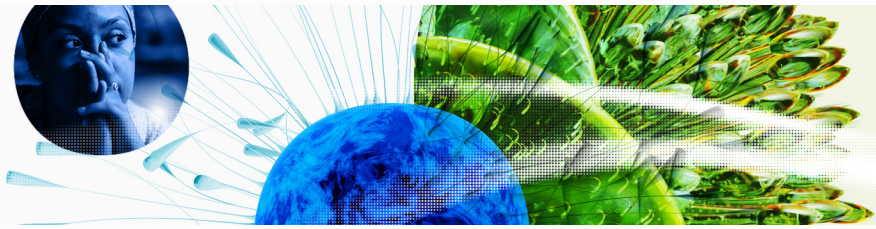
	GII Position	Innovation Inputs	Innovation Outputs
2020	35th	37th	32nd
2021	34th	34th	31st
2022	34th	36th	34th
2023	35th	36th	33rd

Hungary performs better in innovation outputs than innovation inputs in 2023.

This year Hungary ranks **36th** in innovation inputs. This position is the same as last year.

Hungary ranks **33rd** in innovation outputs. This position is higher than last year.

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## → Expected vs. observed innovation performance

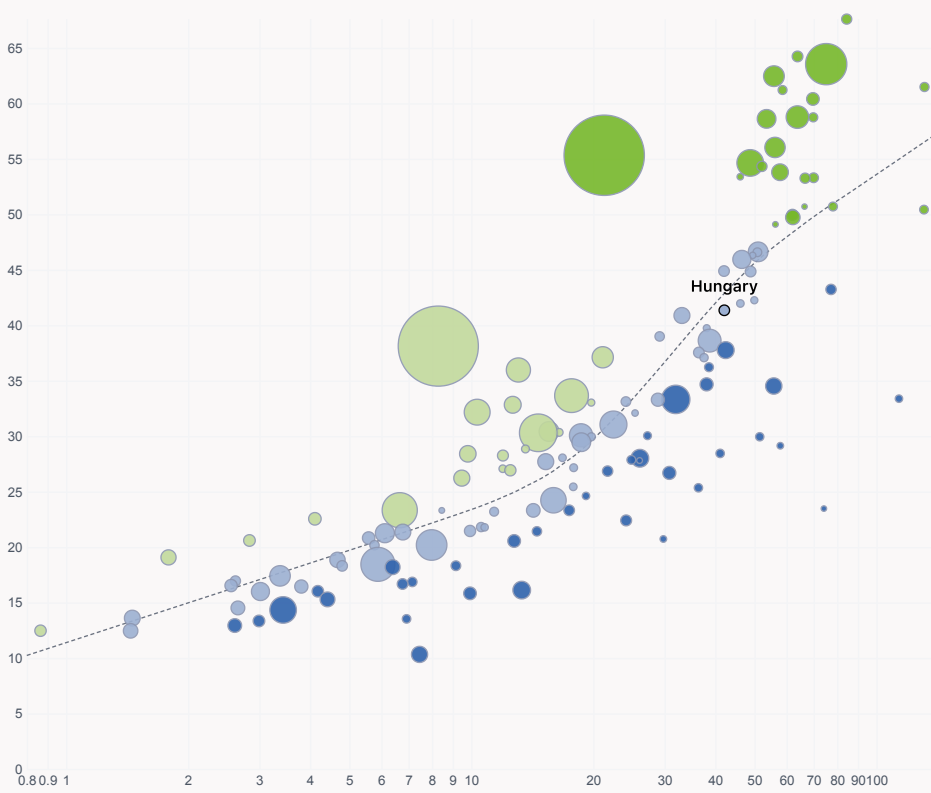
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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



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

## > Innovation overperformers relative to their economic development

↑ **GII Score**



- Innovation leader
- Performing above expectations for level of development
- Performing at expectations for level of development
- Performing below expectations for level of development

Size legend (Population)



→ GDP per capita, PPP logarithmic scale (thousands of \$)

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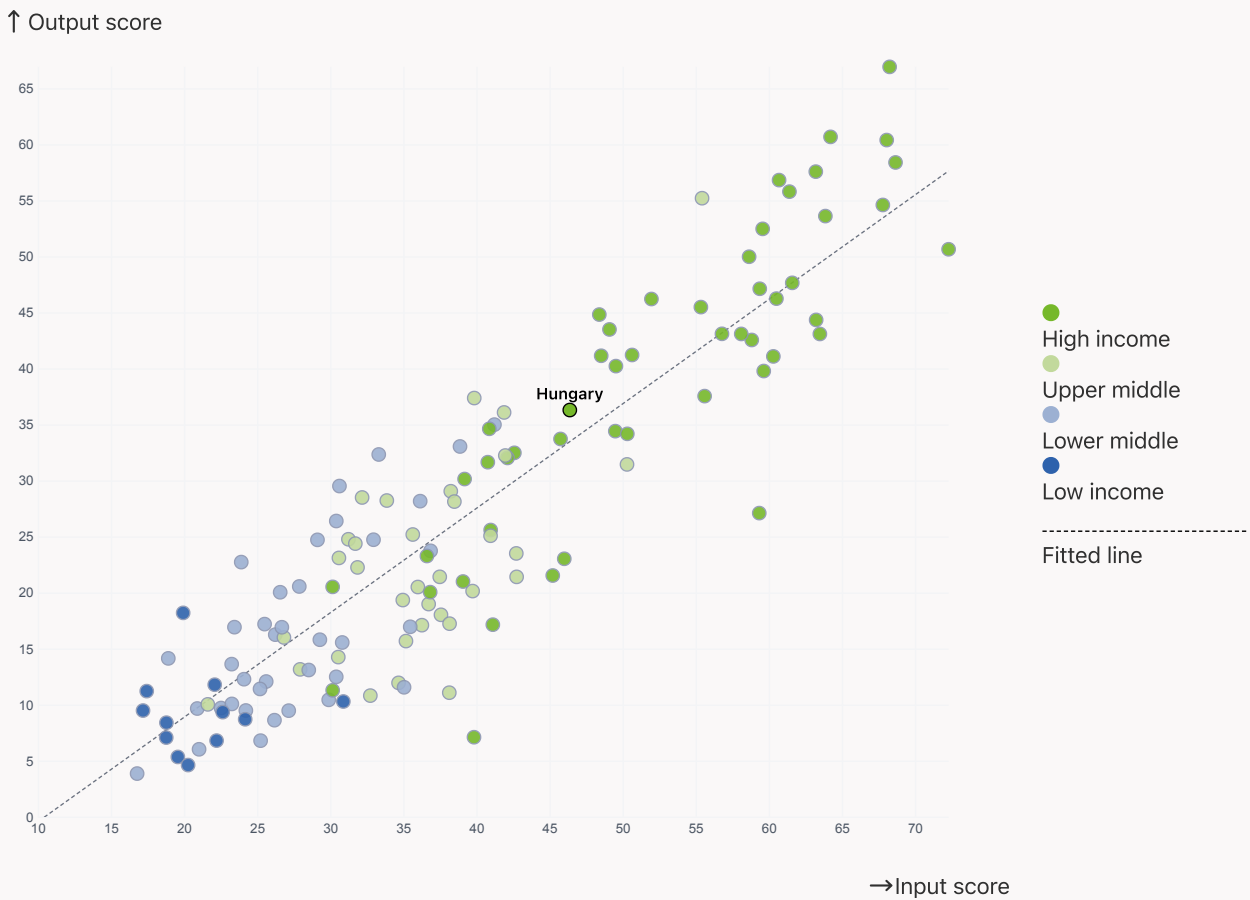
## → Effectively translating innovation investments into innovation outputs

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.

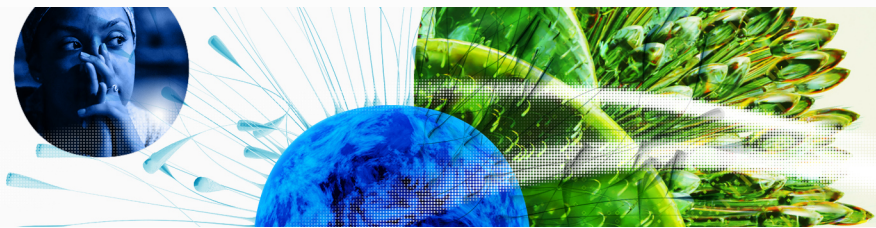


> Hungary produces more innovation outputs relative to its level of innovation investments.

### > Relationship between innovation inputs and outputs

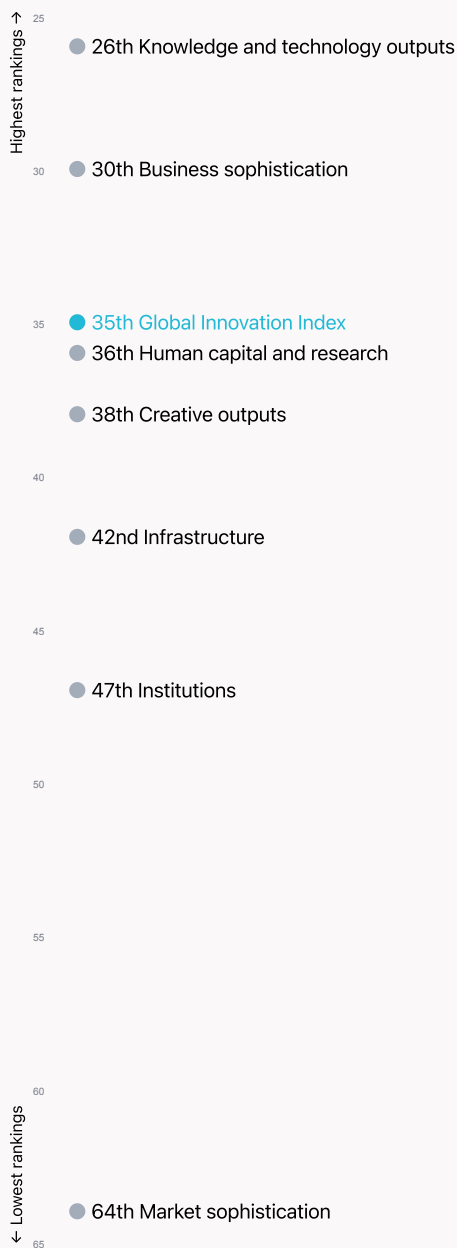


# Global Innovation Index 2023



## → Overview of Hungary's rankings in the seven areas of the GII in 2023

The chart shows the ranking for each of the seven areas that the GII comprises. The strongest areas for Hungary are those that rank above the GII (shown in blue) and the weakest are those that rank below.



### > Highest rankings



Hungary ranks highest in Knowledge and technology outputs (26th) and Business sophistication (30th).

### > Lowest rankings



Hungary ranks lowest in Market sophistication (64th), Institutions (47th) and Infrastructure (42nd).



The full WIPO Intellectual Property Statistics profile for Hungary can be found on [this link](#).

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## → Benchmark of Hungary against other country groupings for each of the seven areas of the GII Index

The charts show the relative position of Hungary (blue bar) against other country groupings (grey bars), for each of the seven areas of the GII Index.

### > High-Income economies

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

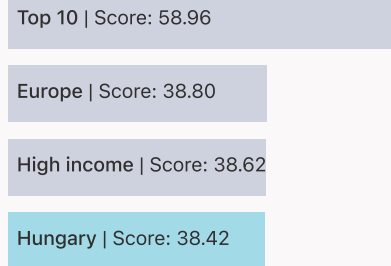


### > Europe

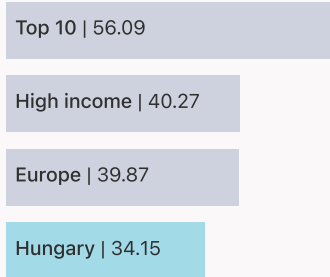
Hungary performs below the regional average in Knowledge and technology outputs, Creative outputs, Market sophistication, Human capital and research, Infrastructure, Institutions.



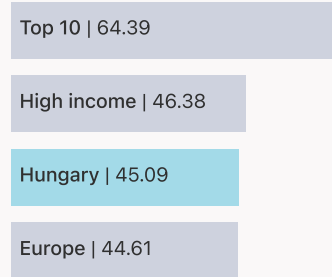
### Knowledge and technology outputs



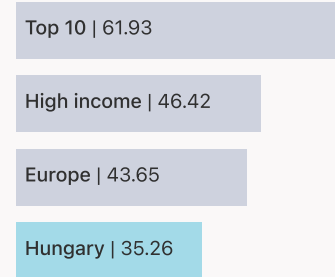
### Creative outputs



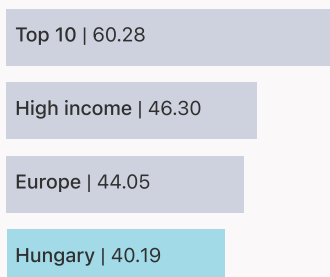
### Business sophistication



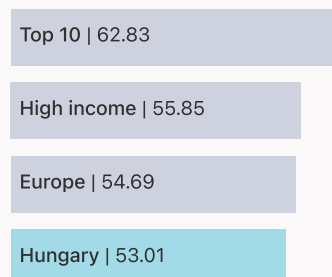
### Market sophistication



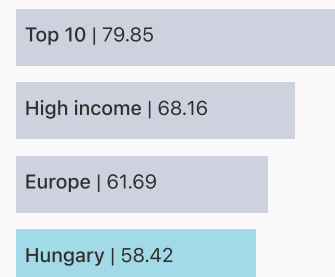
### Human capital and research



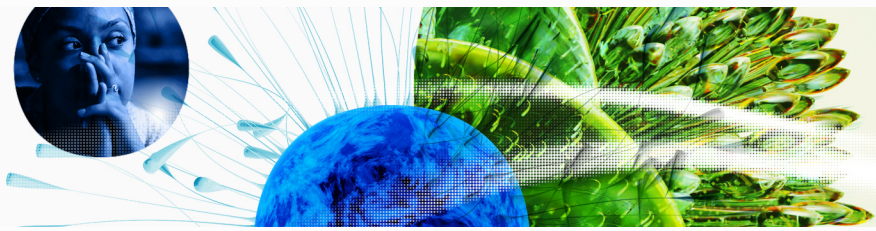
### Infrastructure



### Institutions



# Global Innovation Index 2023



## → Innovation strengths and weaknesses in Hungary

The table below gives an overview of the indicator strengths and weaknesses of Hungary in the GII 2023.



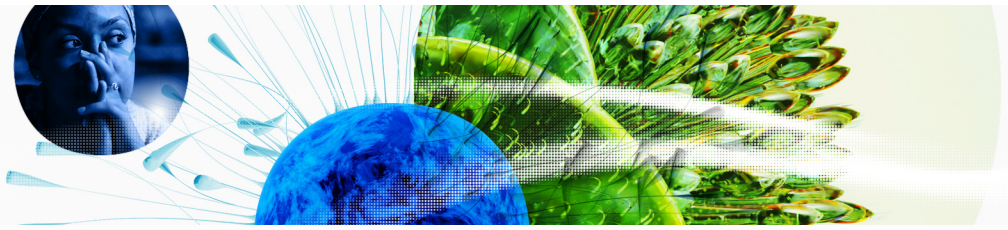
> Hungary's main innovation strengths are **FDI net inflows, % GDP (rank 1)**, **High-tech manufacturing, % (rank 5)** and **ISO 9001 quality/bn PPP\$ GDP (rank 7)**.

### Strengths

### Weaknesses

Rank	Code	Indicator name	Rank	Code	Indicator name
1	5.3.4	FDI net inflows, % GDP	98	2.2.2	Graduates in science and engineering, %
5	6.2.4	High-tech manufacturing, %	87	4.1.2	Domestic credit to private sector, % GDP
7	6.3.5	ISO 9001 quality/bn PPP\$ GDP	81	7.1.2	Trademarks by origin/bn PPP\$ GDP
9	7.2.4	Creative goods exports, % total trade	76	4.2.3	VC recipients, deals/bn PPP\$ GDP
9	6.3.2	Production and export complexity	65	4.2.4	VC received, value, % GDP
9	3.3.3	ISO 14001 environment/bn PPP\$ GDP	61	4.2.1	Market capitalization, % GDP
10	6.3.3	High-tech exports, % total trade	59	4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP
12	5.2.3	GERD financed by abroad, % GDP	57	7.1.1	Intangible asset intensity, top 15, %
15	5.3.2	High-tech imports, % total trade	53	1.3.2	Entrepreneurship policies and culture
15	2.2.3	Tertiary inbound mobility, %	48	6.2.2	Unicorn valuation, % GDP

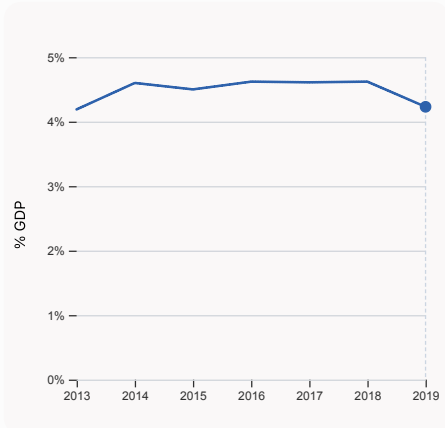
# Global Innovation Index 2023



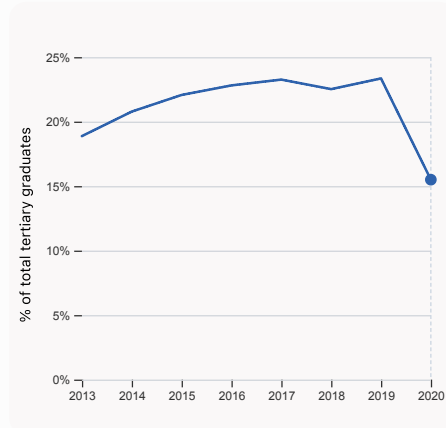
## → Hungary's innovation system

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

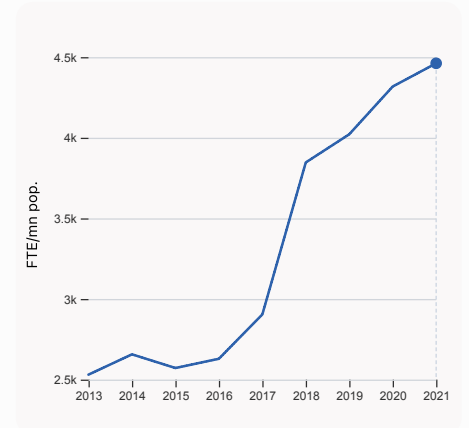
### > Innovation inputs in Hungary



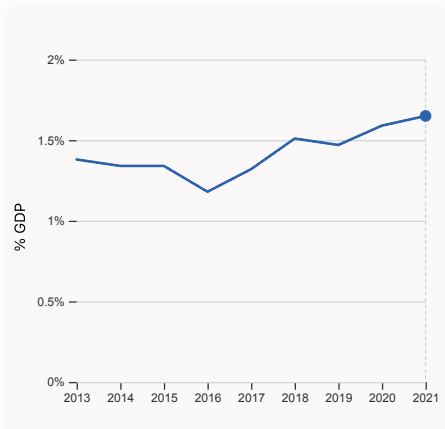
**2.1.1 Expenditure on education, % GDP** was equal to 4.23% GDP in 2019, down by 0.39 percentage points from the year prior – and equivalent to an indicator rank of 64.



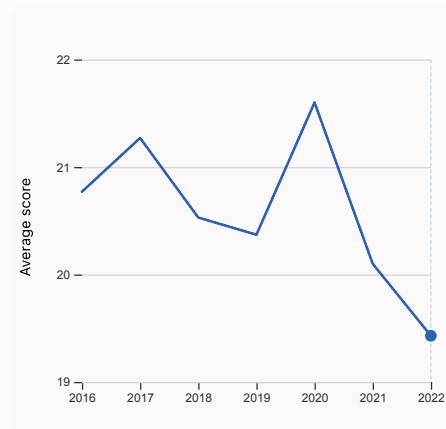
**2.2.2 Graduates in science and engineering, %** was equal to 15.5% of total tertiary graduates in 2020, down by 7.85 percentage points from the year prior – and equivalent to an indicator rank of 98.



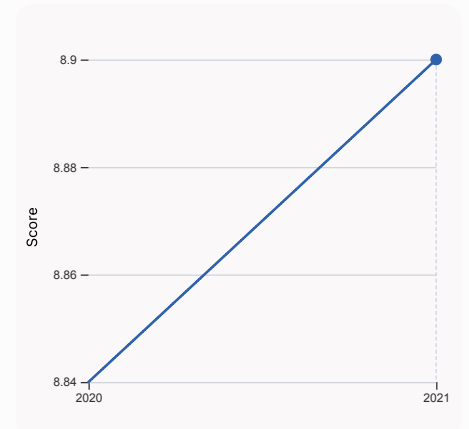
**2.3.1 Researchers, FTE/mn pop.** was equal to 4,461.84 FTE/mn pop. in 2021, up by 3.34% from the year prior – and equivalent to an indicator rank of 25.



**2.3.2 Gross expenditure on R&D, % GDP** was equal to 1.65% GDP in 2021, up by 0.06 percentage points from the year prior – and equivalent to an indicator rank of 24.

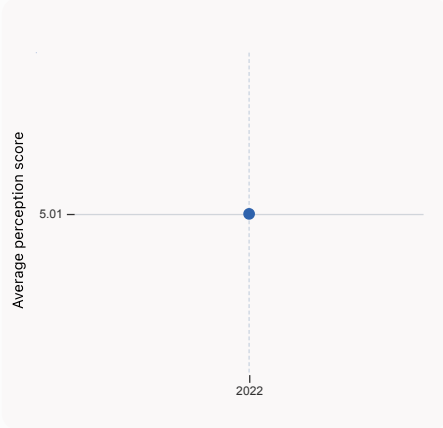
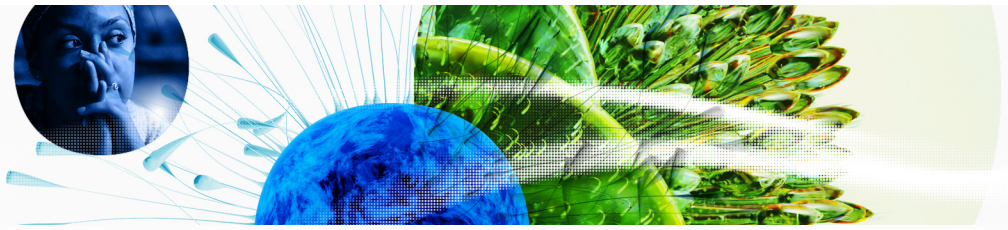


**2.3.4 QS university ranking, top 3** was equal to an average score of 19.43 for the top 3 universities in 2022, down by 3.33% from the year prior – and equivalent to an indicator rank of 54.

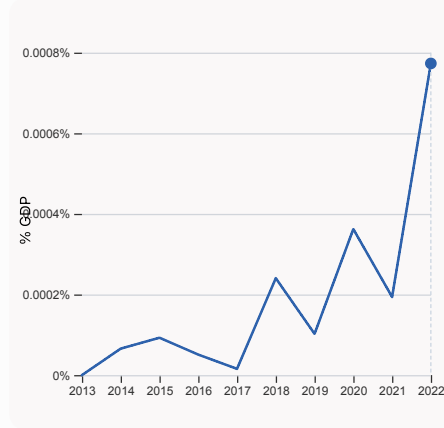


**3.1.1 ICT access** was equal to a score of 8.9 in 2021, up by 0.68% from the year prior – and equivalent to an indicator rank of 61.

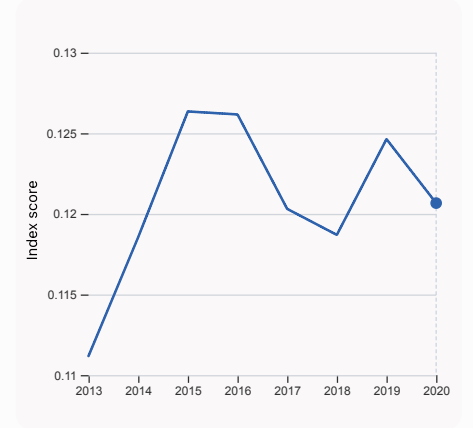
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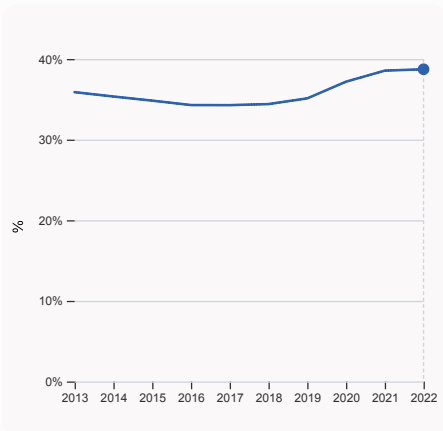
**4.1.1 Finance for startups and scaleups** was equal to an average perception score of 5.01 in 2022, equivalent to an indicator rank of 33.



**4.2.4 VC received, value, % GDP** was equal to 0.00077% GDP in 2022, up by 0.00058 percentage points from the year prior – and equivalent to an indicator rank of 65.

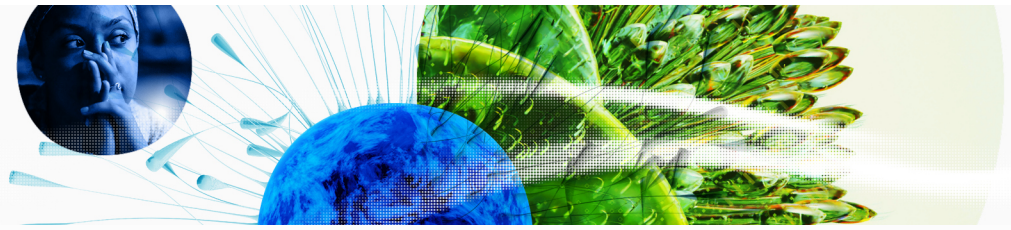


**4.3.2 Domestic industry diversification** was equal to an index score of 0.121 in 2020, down by 3.18% from the year prior – and equivalent to an indicator rank of 32.

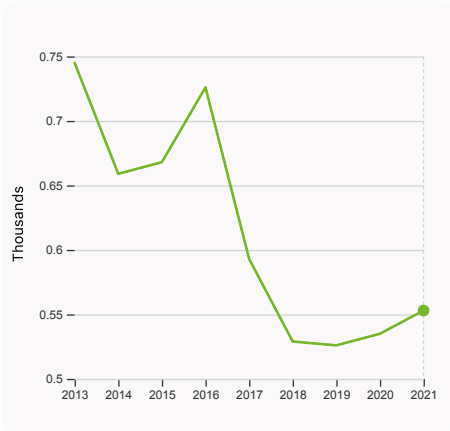


**5.1.1 Knowledge-intensive employment, %** was equal to 38.73% in 2022, up by 0.17 percentage points from the year prior – and equivalent to an indicator rank of 32.

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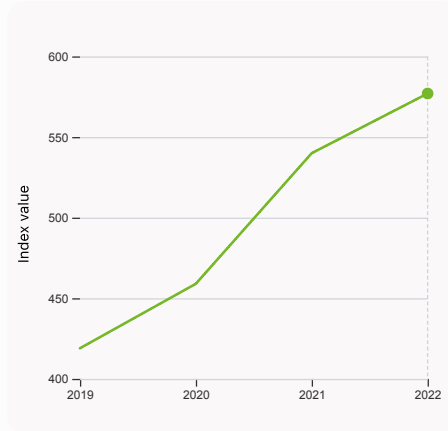


## > Innovation outputs in Hungary



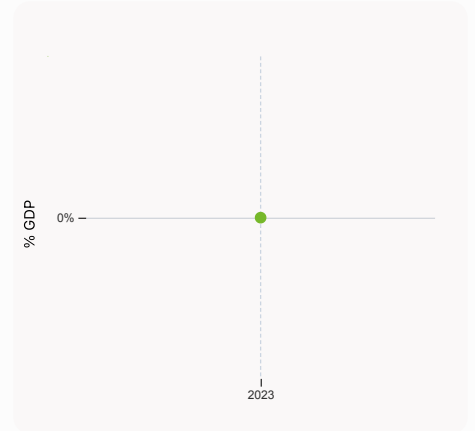
### 6.1.1 Patents by origin

was equal to 0.55 Thousands in 2021, up by 3.36% from the year prior – and equivalent to an indicator rank of 45.



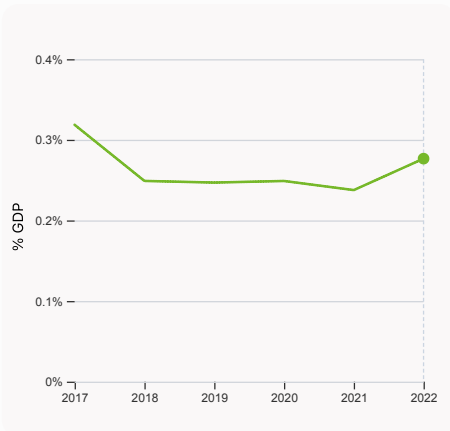
### 6.1.5 Citable documents H-index

was equal to an index value of 577 in 2022, up by 6.85% from the year prior – and equivalent to an indicator rank of 33.



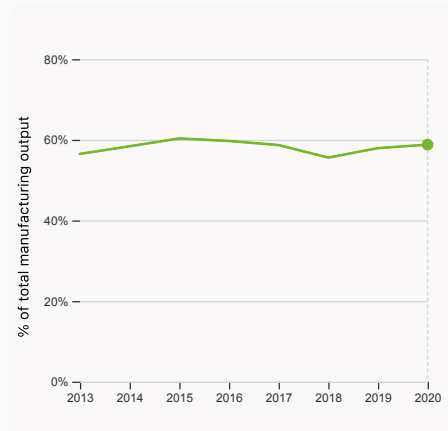
### 6.2.2 Unicorn valuation, % GDP

was equal to 0 % GDP in 2023 – and equivalent to an indicator rank of 48.



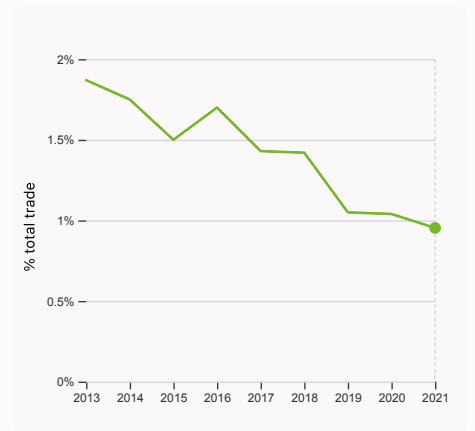
### 6.2.3 Software spending, % GDP

was equal to 0.277% GDP in 2022, up by 0.039 percentage points from the year prior – and equivalent to an indicator rank of 51.



### 6.2.4 High-tech manufacturing, %

was equal to 58.8% of total manufacturing output in 2020, up by 0.86 percentage points from the year prior – and equivalent to an indicator rank of 5.



### 6.3.1 Intellectual property receipts, % total trade

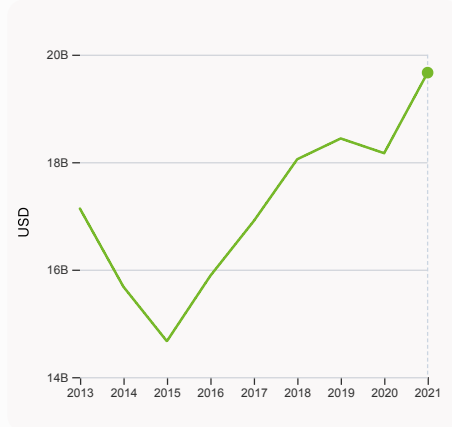
was equal to 0.954% total trade in 2021, down by 0.086 percentage points from the year prior – and equivalent to an indicator rank of 21.

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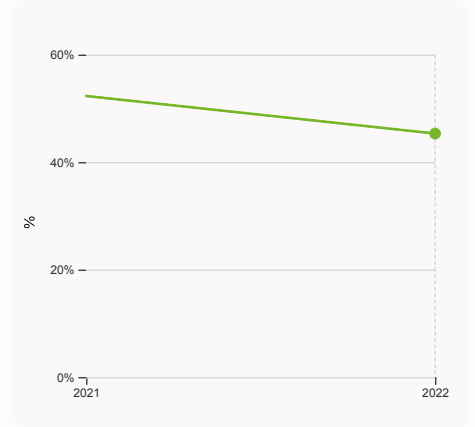
### 6.3.2 Production and export complexity

was equal to a score of 1.54 in 2020, down by 4.94% from the year prior – and equivalent to an indicator rank of 9.



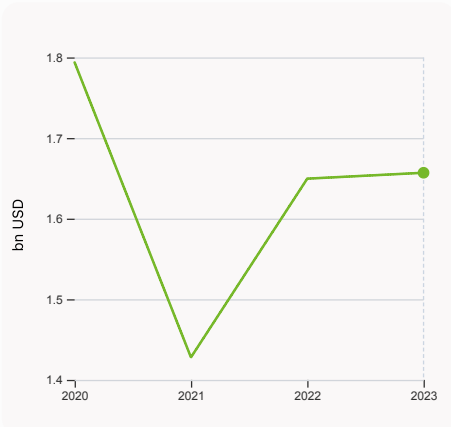
### 6.3.3 High-tech exports

was equal to 19,665,114,994 USD in 2021, up by 8.25% from the year prior – and equivalent to an indicator rank of 10.



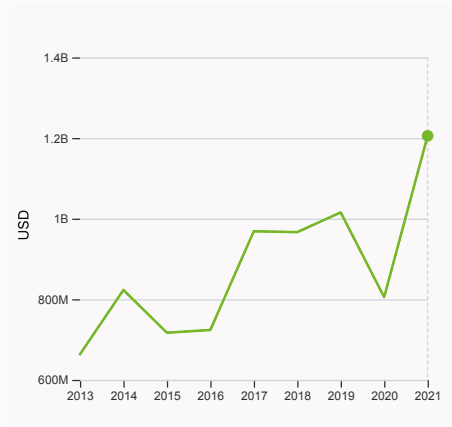
### 7.1.1 Intangible asset intensity, top 15, %

was equal to 45.32% in 2022, down by 6.99 percentage points from the year prior – and equivalent to an indicator rank of 57.



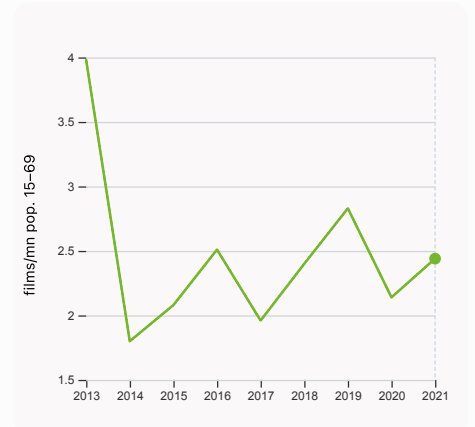
### 7.1.3 Global brand value, top 5,000

was equal to 1.657 bn USD in 2023, up by 0.44% from the year prior – and equivalent to an indicator rank of 56.



### 7.2.1 Cultural and creative services exports

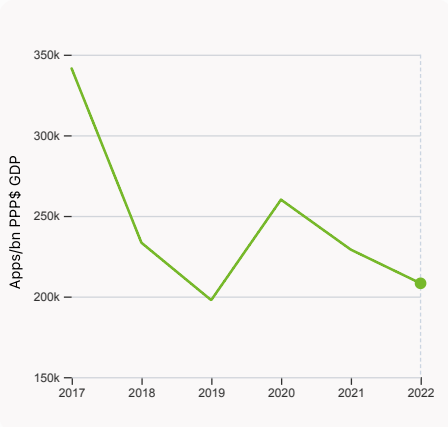
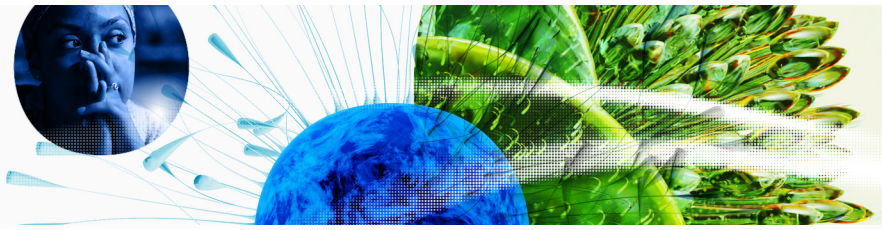
was equal to 1,205,434,000 USD in 2021, up by 49.69% from the year prior – and equivalent to an indicator rank of 39.



### 7.2.2 National feature films/mn pop. 15-69

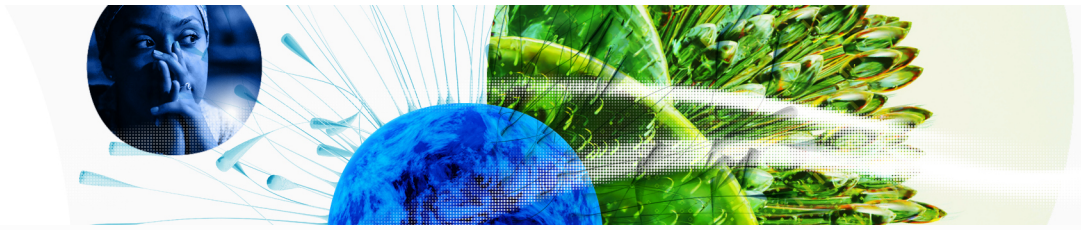
was equal to 2.44 films/mn pop. 15-69 in 2021, up by 14.019% from the year prior – and equivalent to an indicator rank of 43.

# Global Innovation Index 2023



## 7.3.4 Mobile app creation/bn PPP\$ GDP

was equal to 208,171.91 Apps/bn PPP\$ GDP in 2022, down by 9.13% from the year prior – and equivalent to an indicator rank of 58.



## → Hungary's innovation top performers

### > 2.3.4 QS university ranking of Hungary's top universities

Rank	University	Score
551-560	UNIVERSITY OF SZEGED	22.30
651-700	UNIVERSITY OF DEBRECEN	18.70
701-750	UNIVERSITY OF PECS	17.30

Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2023>).

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 Top 15 intangible-asset intensive companies in Hungary

Rank	Firm	Intensity, %
1	RICHTER GEDEON NYRT	42.58
2	4IG NYRT	42.75
3	MASTERPLAST NYRT	50.13

Source: Brand Finance (<https://brandirectory.com/reports/gift-2022>).

Note: Brand Finance only provides within economy ranks.

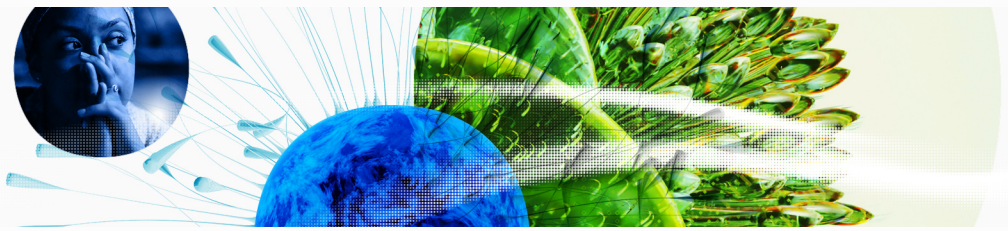
### > 7.1.3 Top 5,000 companies in Hungary with highest global brand value

Rank	Brand	Industry	Brand Value, mn USD
1	OTP BANK	Banking	853.6
2	WIZZ AIR	Airlines	803.3

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

Note: Rank corresponds to within economy ranks.

# Global Innovation Index 2023



GII 2023 rank

# 35

## Hungary

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
33	36	High	EUR	10.0	409.8	42,132.3
Score / Value Rank				Score / Value Rank		
<b>Institutions</b> 58.4 47				<b>Business sophistication</b> 45.1 30		
<b>1.1 Institutional environment</b> 62.9 37				<b>5.1 Knowledge workers</b> 47.5 36		
1.1.1 Operational stability for businesses* 71.5 26				5.1.1 Knowledge-intensive employment, % 38.7 32		
1.1.2 Government effectiveness* 54.3 42				5.1.2 Firms offering formal training, % 29.3 58		
<b>1.2 Regulatory environment</b> 72.2 40				5.1.3 GERD performed by business, % GDP 1.2 20		
1.2.1 Regulatory quality* 55.0 47 ◇				5.1.4 GERD financed by business, % 50.2 28		
1.2.2 Rule of law* 55.3 41				5.1.5 Females employed w/advanced degrees, % 18.3 37		
1.2.3 Cost of redundancy dismissal 13.4 48				<b>5.2 Innovation linkages</b> 32.2 39		
<b>1.3 Business environment</b> 40.2 85 ○				5.2.1 University-industry R&D collaboration+ 49.0 52		
1.3.1 Policies for doing business* 43.3 75				5.2.2 State of cluster development+ 55.7 38		
1.3.2 Entrepreneurship policies and culture* 37.0 53 ○				5.2.3 GERD financed by abroad, % GDP 0.3 12 ◆◆		
<b>Human capital and research</b> 40.2 36				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP 0.0 64		
<b>2.1 Education</b> 54.0 58				5.2.5 Patent families/bn PPP\$ GDP 0.3 37		
2.1.1 Expenditure on education, % GDP ● 4.2 64				<b>5.3 Knowledge absorption</b> 55.6 9 ◆◆		
2.1.2 Government funding/pupil, secondary, % GDP/cap 19.1 59				5.3.1 Intellectual property payments, % total trade 1.1 31		
2.1.3 School life expectancy, years 15.1 51				5.3.2 High-tech imports, % total trade 15.1 15 ◆◆		
2.1.4 PISA scales in reading, maths and science 479.3 33				5.3.3 ICT services imports, % total trade 1.6 57		
2.1.5 Pupil-teacher ratio, secondary 10.4 36				5.3.4 FDI net inflows, % GDP 61.0 1 ◆◆		
<b>2.2 Tertiary education</b> 29.8 67 ◇				5.3.5 Research talent, % in businesses 60.6 13		
2.2.1 Tertiary enrolment, % gross 55.2 62				<b>Knowledge and technology outputs</b> 38.4 26		
2.2.2 Graduates in science and engineering, % 15.5 98 ○◇				<b>6.1 Knowledge creation</b> 22.4 47		
2.2.3 Tertiary inbound mobility, % 13.5 15 ◆◆				6.1.1 Patents by origin/bn PPP\$ GDP 1.5 45		
<b>2.3 Research and development (R&amp;D)</b> 36.7 30				6.1.2 PCT patents by origin/bn PPP\$ GDP 0.4 35		
2.3.1 Researchers, FTE/mn pop. 4,461.8 25				6.1.3 Utility models by origin/bn PPP\$ GDP 0.5 32		
2.3.2 Gross expenditure on R&D, % GDP 1.6 24				6.1.4 Scientific and technical articles/bn PPP\$ GDP n/a n/a		
2.3.3 Global corporate R&D investors, top 3, mn US\$ 51.6 30				6.1.5 Citable documents H-index 29.7 33		
2.3.4 QS university ranking, top 3* 19.7 54				<b>6.2 Knowledge impact</b> 41.8 26		
<b>Infrastructure</b> 53.0 42				6.2.1 Labor productivity growth, % 2.4 24 ◆		
<b>3.1 Information and communication technologies (ICTs)</b> 72.1 60 ◇				6.2.2 Unicorn valuation, % GDP 0.0 48 ○◇		
3.1.1 ICT access* 83.5 61				6.2.3 Software spending, % GDP 0.3 51		
3.1.2 ICT use* 83.0 50				6.2.4 High-tech manufacturing, % 58.8 5 ◆◆		
3.1.3 Government's online service* 72.0 56				<b>6.3 Knowledge diffusion</b> 51.1 16 ◆◆		
3.1.4 E-participation* 50.0 75 ◇				6.3.1 Intellectual property receipts, % total trade 1.0 21		
<b>3.2 General infrastructure</b> 33.6 45				6.3.2 Production and export complexity 84.8 9 ◆◆		
3.2.1 Electricity output, GWh/mn pop. 3,720.9 59				6.3.3 High-tech exports, % total trade 13.3 10 ◆◆		
3.2.2 Logistics performance* 50.0 50 ◇				6.3.4 ICT services exports, % total trade 2.0 60		
3.2.3 Gross capital formation, % GDP 31.4 22 ◆				6.3.5 ISO 9001 quality/bn PPP\$ GDP 21.8 7 ◆◆		
<b>3.3 Ecological sustainability</b> 53.3 15 ◆◆				<b>Creative outputs</b> 34.1 38		
3.3.1 GDP/unit of energy use 11.5 53				<b>7.1 Intangible assets</b> 33.8 57		
3.3.2 Environmental performance* 61.4 31				7.1.1 Intangible asset intensity, top 15, % 45.3 57 ○		
3.3.3 ISO 14001 environment/bn PPP\$ GDP 9.1 9 ◆◆				7.1.2 Trademarks by origin/bn PPP\$ GDP 27.9 81 ○		
<b>Market sophistication</b> 35.3 64				7.1.3 Global brand value, top 5,000 0.8 56		
<b>4.1 Credit</b> 36.2 47				7.1.4 Industrial designs by origin/bn PPP\$ GDP 2.8 35		
4.1.1 Finance for startups and scaleups+ 59.5 33				<b>7.2 Creative goods and services</b> 31.4 27		
4.1.2 Domestic credit to private sector, % GDP 37.9 87 ○◇				7.2.1 Cultural and creative services exports, % total trade 0.8 39		
4.1.3 Loans from microfinance institutions, % GDP n/a n/a				7.2.2 National feature films/mn pop. 15-69 2.4 43		
<b>4.2 Investment</b> 5.1 75 ○				7.2.3 Entertainment and media market/th pop. 15-69 13.5 29 ◇		
4.2.1 Market capitalization, % GDP 18.6 61 ○				7.2.4 Creative goods exports, % total trade 6.8 9 ◆◆		
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP 0.0 59 ○				<b>7.3 Online creativity</b> 37.6 32		
4.2.3 VC recipients, deals/bn PPP\$ GDP 0.0 76 ○				7.3.1 Generic top-level domains (TLDs)/th pop. 15-69 12.4 39		
4.2.4 VC received, value, % GDP 0.0 65 ○				7.3.2 Country-code TLDs/th pop. 15-69 35.3 20		
<b>4.3 Trade, diversification, and market scale</b> 64.5 32				7.3.3 GitHub commits/mn pop. 15-69 34.9 31		
4.3.1 Applied tariff rate, weighted avg., % 1.5 20				7.3.4 Mobile app creation/bn PPP\$ GDP 67.7 58		
4.3.2 Domestic industry diversification 94.3 32						
4.3.3 Domestic market scale, bn PPP\$ 409.8 52						

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/gii-ranking>. 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 Hungary.



> Hungary has missing data for one indicator and outdated data for one indicator.

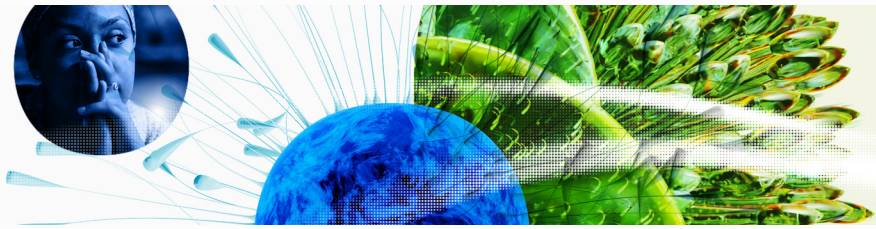
## > Missing data for Hungary

Code	Indicator name	Economy Year	Model Year	Source
4.1.3	Loans from microfinance institutions, % GDP	n/a	2021	International Monetary Fund, Financial Access Survey (FAS)

## > Outdated data for Hungary

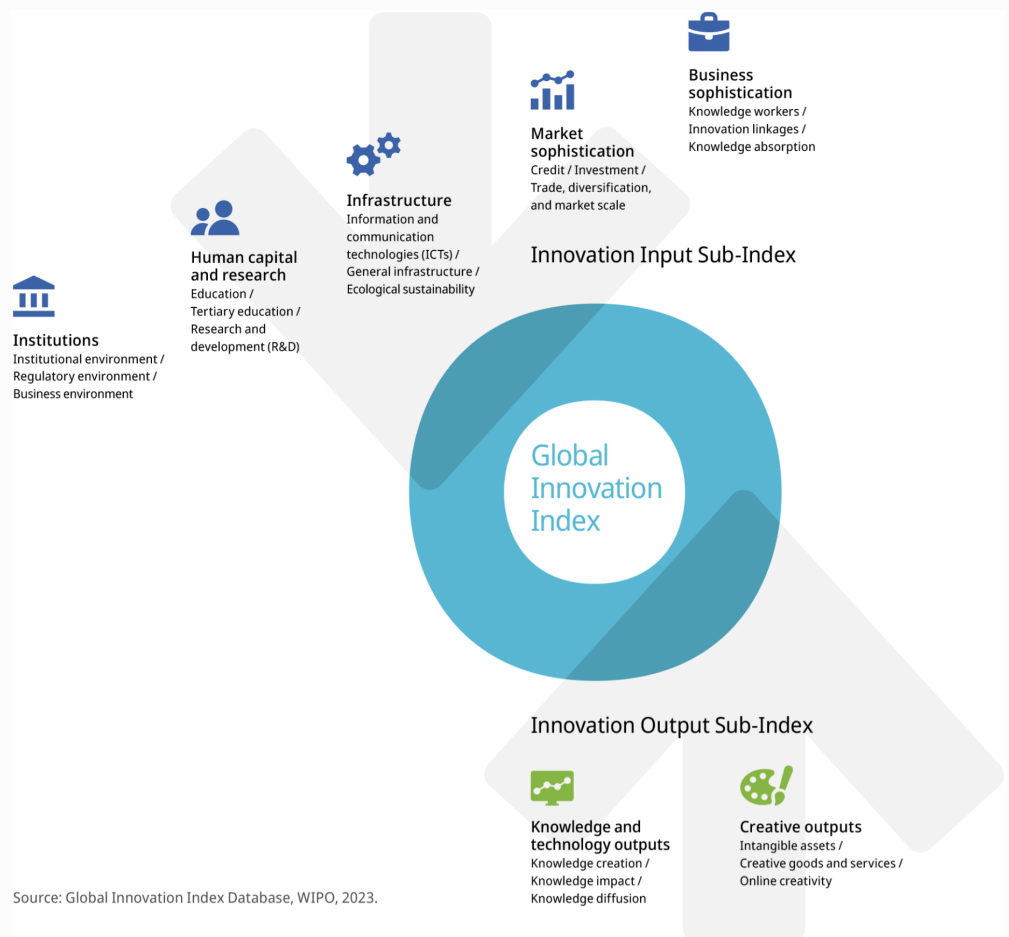
Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	2019	2021	UNESCO Institute for Statistics

# Global Innovation Index 2023



## → 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.



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.