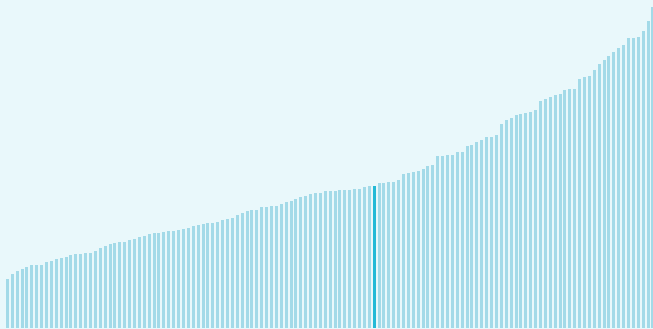




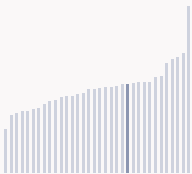
## North Macedonia ranking in the Global Innovation Index 2024

North Macedonia ranks **58th** among the 133 economies featured in the GII 2024.

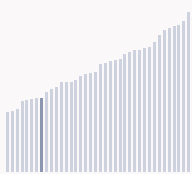
The Global Innovation Index (GII) ranks world economies according to their innovation capabilities. Consisting of roughly 80 indicators, grouped into innovation inputs and outputs, the GII aims to capture the multi-dimensional facets of innovation.



North Macedonia ranks **12th** among the 34 upper-middle-income group economies.



North Macedonia ranks **32nd** among the 39 economies in Europe.



### > North Macedonia GII Ranking (2020-2024)

The table shows the rankings of North Macedonia 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 North Macedonia in the GII 2024 is between ranks 56 and 69.

Year	GII Position	Innovation Inputs	Innovation Outputs
2020	57th	46th	63rd
2021	59th	40th	69th
2022	66th	60th	77th
2023	54th	49th	58th
2024	58th	60th	63rd

North Macedonia performs worse in innovation outputs than innovation inputs in 2024.

This year North Macedonia ranks 60th in innovation inputs. This position is lower than last year.

North Macedonia ranks 63rd in innovation outputs. This position is lower than last year.

North Macedonia has no clusters in the top 100 S&T clusters of the Global Innovation Index.

# Global Innovation Index 2024



## > Global Innovation Tracker

The Global Innovation Tracker 2024 shows what is the current state of innovation in North Macedonia, how rapidly is technology being embraced and what are the resulting societal impacts.



For North Macedonia, 7 indicators have improved in the short-term and 3 indicators have worsened.

### Science and innovation investment

Scientific publications	R&D investments	Venture capital		International patent filings
		Deal numbers	Deal values	
▼ -13% 2022 - 2023	▲ 5.3% 2020 - 2022	▲ 100% 2022 - 2023	▲ 150% 2022 - 2023	▲ 50% 2022 - 2023
▲ 4.7% 2013 - 2023	▼ -0.4% 2015 - 2022	n/a	n/a	▲ 19.6% 2013 - 2023

### Technology adoption

Safe sanitation	Connectivity		Robots	Electric vehicles
	Fixed broadband	5G		
▼ -0.2% 2021 - 2022	▲ 3.8% 2021 - 2022	n/a	n/a	n/a
▼ -0.4% 2012 - 2022	▲ 5.2% 2012 - 2022		n/a	n/a
12.2 per 100 inhabitants in 2022	24.6 per 100 inhabitants in 2022	n/a		n/a

### Socioeconomic impact

Labor productivity	Life expectancy	Temperature change
▲ 5.4% 2022 - 2023	▲ 1.6% 2021 - 2022	▲ 2.2°C 2023
▲ 2.1% 2013 - 2023	▼ -0.1% 2012 - 2022	n/a
54,274 USD in 2023	74.4 years in 2022	

Notes: Not all indicators of the Global Innovation Tracker are used to calculate the Global Innovation Index. Long-term annual growth refers to the compound annual growth rate (CAGR) over the indicated period. For each variable, a one-year growth rate is set for the short run, and ten-year CAGR is set for the long run; time windows might differ when gaps exist in data availability. The end period corresponds to the most recent available observation, which may differ among countries. Temperature change is an exception: it indicates the change in degrees Celsius with respect to the average temperature in the country from 1951–1980. Figures are rounded.



### 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, North Macedonia's performance is at expectations for its level of development.

> Innovation overperformers relative to their economic 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.



North Macedonia produces less innovation outputs relative to its level of innovation investments.

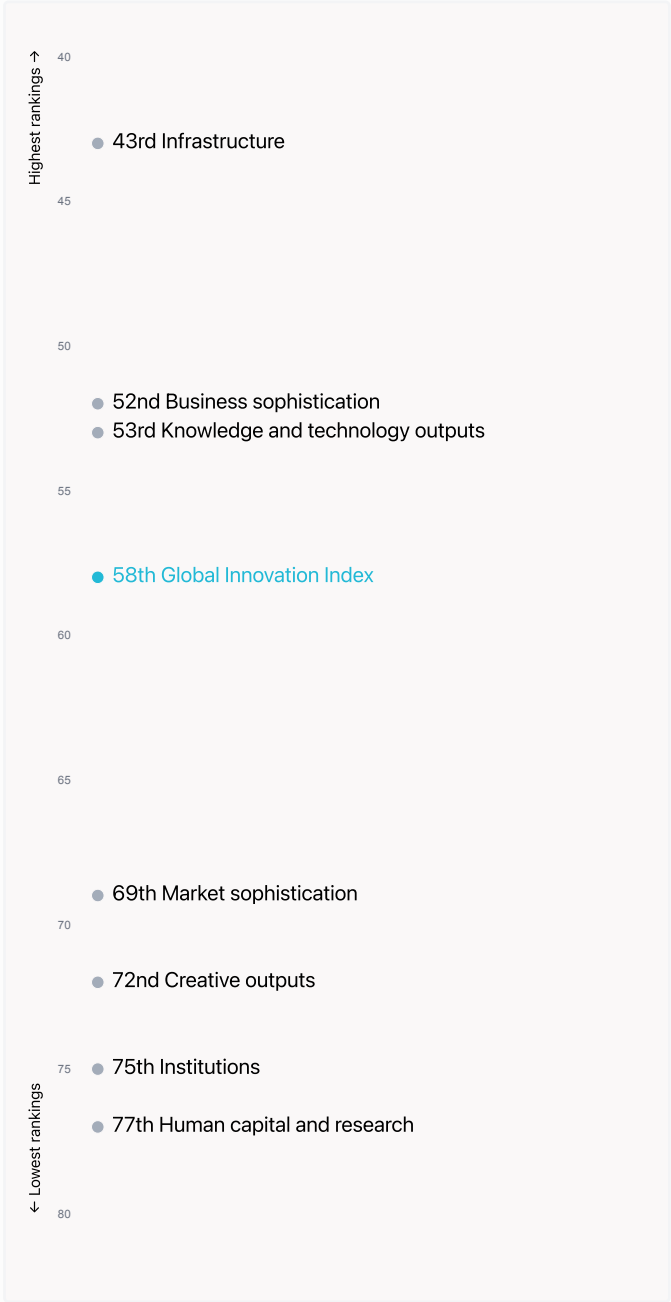
### > Relationship between innovation inputs and outputs





## Overview of North Macedonia's rankings in the seven areas of the GII in 2024

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



### Highest rankings



North Macedonia ranks highest in Infrastructure (43rd), Business sophistication (52nd) and Knowledge and technology outputs (53rd).

### Lowest rankings



North Macedonia ranks lowest in Human capital and research (77th), Institutions (75th) and Creative outputs (72nd).

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



Benchmark of North Macedonia against other economy groupings for each of the seven areas of the GII Index

The charts shows the relative position of North Macedonia (blue bar) against other economy groupings (grey bars), for each of the seven areas of the GII Index.



Upper-Middle-Income economies

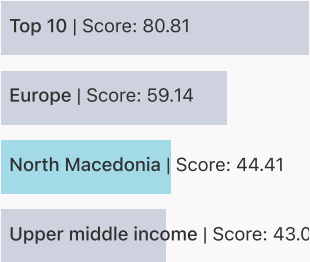
North Macedonia performs above the upper-middle-income group average in Institutions, Infrastructure, Business sophistication, Knowledge and technology outputs.



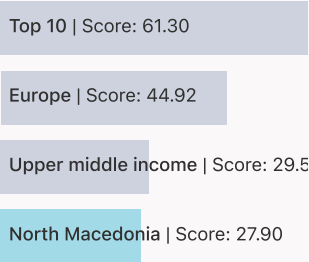
Europe

North Macedonia performs below the regional average in all pillars.

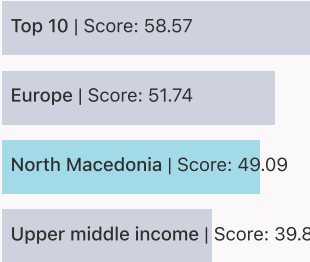
Institutions



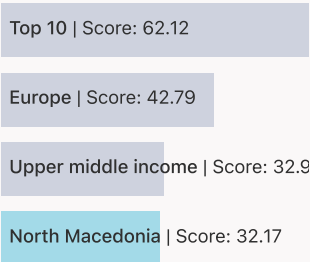
Human capital and research



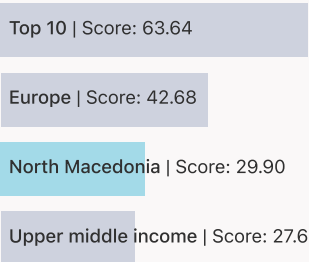
Infrastructure



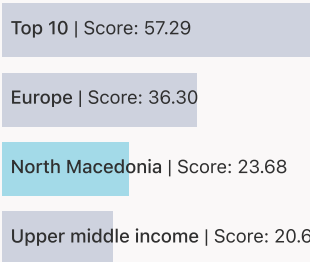
Market sophistication



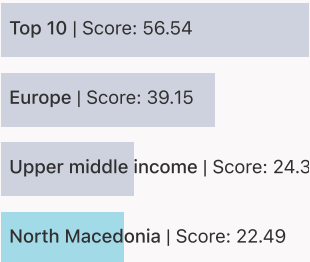
Business sophistication



Knowledge and technology outputs



Creative outputs





Innovation strengths and weaknesses in North Macedonia

The table below gives an overview of the indicator strengths and weaknesses of North Macedonia in the GII 2024.



North Macedonia's main innovation strengths are **ISO 14001 environment/bn PPP\$ GDP (rank 3)**, **High-tech manufacturing, % (rank 10)** and **Pupil–teacher ratio, secondary (rank 10)**.

Strengths

Rank	Code	Indicator name
3	3.3.3	ISO 14001 environment/bn PPP\$ GDP
10	6.2.4	High-tech manufacturing, %
10	2.1.5	Pupil–teacher ratio, secondary
12	7.2.2	National feature films/mn pop. 15–69
15	6.3.5	ISO 9001 quality/bn PPP\$ GDP
16	5.3.1	Intellectual property payments, % total trade
19	7.2.1	Cultural and creative services exports, % total trade
24	6.3.4	ICT services exports, % total trade
25	5.1.2	Firms offering formal training, %
36	5.3.4	FDI net inflows, % GDP

Weaknesses

Rank	Code	Indicator name
117	4.3.3	Domestic market scale, bn PPP\$
106	5.2.3	State of cluster development <sup>†</sup>
104	4.2.4	VC received, value, % GDP
102	1.3.1	Policy stability for doing business <sup>†</sup>
75	7.1.3	Global brand value, top 5,000, % GDP
75	7.1.1	Intangible asset intensity, top 15, %
75	2.3.4	QS university ranking, top 3*
73	2.1.4	PISA scales in reading, maths and science
49	6.2.2	Unicorn valuation, % GDP
41	2.3.3	Global corporate R&D investors, top 3, mn USD



North Macedonia's innovation system

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

> Innovation inputs in North Macedonia



2.2.2 Graduates in science and engineering

was equal to 20.61 % of total graduates in 2021, up by 0.001 percentage points from the year prior – and equivalent to an indicator rank of 73.



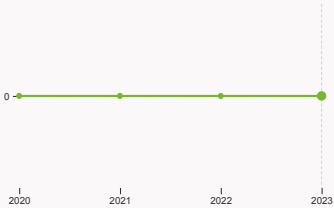
2.3.1 Researchers

was equal to 733.81 FTE per million population in 2022, down by 7.04% from the year prior – and equivalent to an indicator rank of 62.



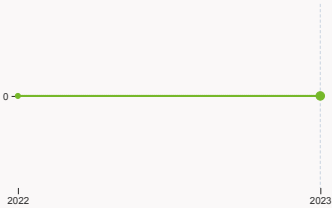
2.3.2 Gross expenditure on R&D

was equal to 0.38 % GDP in 2022, up by 0.01 percentage points from the year prior – and equivalent to an indicator rank of 66.



2.3.4 QS university ranking

was equal to an average score of 0 for the top three universities in 2023 with no change from the year prior – and equivalent to an indicator rank of 75.



4.2.4 VC received, value

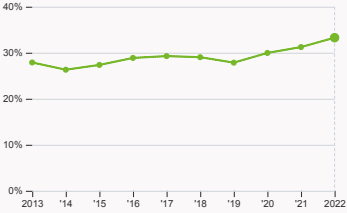
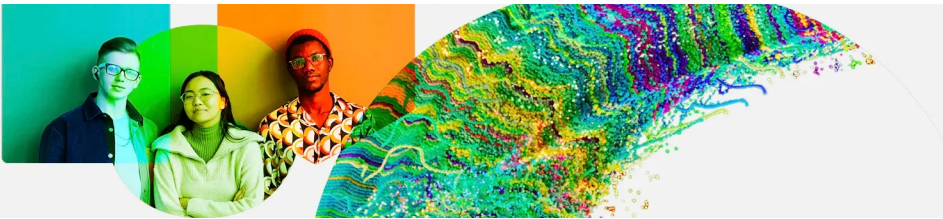
was equal to 0 USD in 2023 with no change from the year prior – and equivalent to an indicator rank of 104.



4.3.2 Domestic industry diversification

was equal to an index score of 0.14 in 2021, up by 2.62% from the year prior – and equivalent to an indicator rank of 54.

# Global Innovation Index 2024

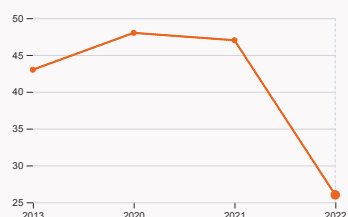


**5.1.1 Knowledge-intensive employment** was equal to 33.27 % in 2022, up by 2.04 percentage points from the year prior – and equivalent to an indicator rank of 44.

# Global Innovation Index 2024

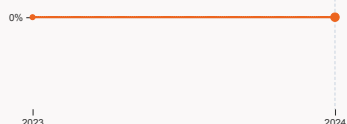


## > Innovation outputs in North Macedonia



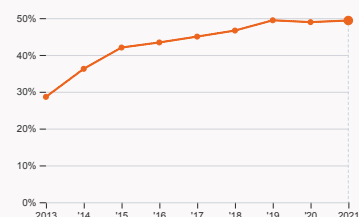
### 6.1.1 Patents by origin

was equal to 26 patents in 2022, down by 44.68% from the year prior – and equivalent to an indicator rank of 70.



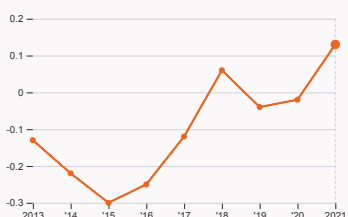
### 6.2.2 Unicorn valuation

was equal to 0 % GDP in 2024 with no change from the year prior – and equivalent to an indicator rank of 49.



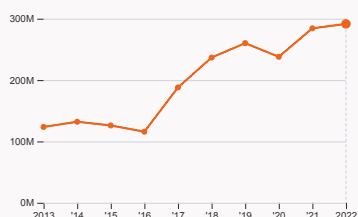
### 6.2.4 High-tech manufacturing

was equal to 49.36 % of total manufacturing output in 2021, up by 0.44 percentage points from the year prior – and equivalent to an indicator rank of 10.



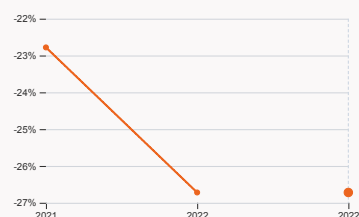
### 6.3.2 Production and export complexity

was equal to a score of 0.13 in 2021, up by 750% from the year prior – and equivalent to an indicator rank of 54.



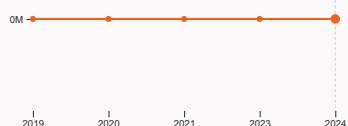
### 6.3.3 High-tech exports

was equal to 291.54 million USD in 2022, up by 2.56% from the year prior – and equivalent to an indicator rank of 52.



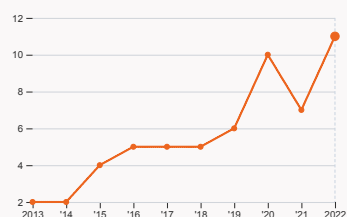
### 7.1.1 Intangible asset intensity

was equal to -26.72 % for the top 15 companies in 2022 with no change from the year prior – and equivalent to an indicator rank of 75.



### 7.1.3 Global brand value

was equal to 0 million USD for the brands in the top 5,000 in 2024 with no change from the year prior – and equivalent to an indicator rank of 75.



### 7.2.2 National feature films

was equal to 11 films in 2022, up by 57.14% from the year prior – and equivalent to an indicator rank of 12.



### 7.3.3 Mobile app creation

was equal to 12.09 million global downloads of mobile apps in 2023, down by 6.35% from the year prior – and equivalent to an indicator rank of 58.

58

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; \* an index; † a survey question, ● that the economy's data is outdated. Square brackets [ ] indicate the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level; n/a represents missing values; a dash - indicates an indicator which is not relevant to this economy and thus not considered for DMC thresholds.



## Data availability

The following tables list indicators that are either missing or outdated for North Macedonia.



North Macedonia has missing data for nine indicators and outdated data for five indicators.

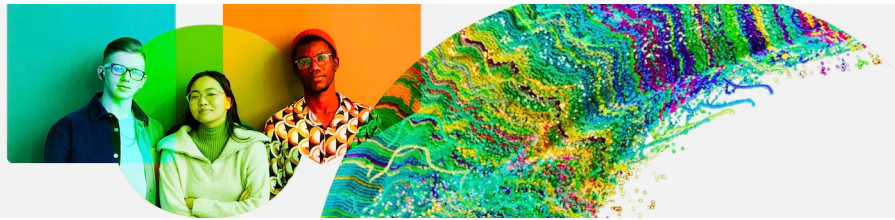
## Missing data for North Macedonia

Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	n/a	2022	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2020	UNESCO Institute for Statistics
3.2.3	Gross capital formation, % GDP	n/a	2023	International Monetary Fund
4.1.3	Loans from microfinance institutions, % GDP	n/a	2022	International Monetary Fund, Financial Access Survey (FAS)
4.2.1	Market capitalization, % GDP	n/a	2022	World Federation of Exchanges; World Bank
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	2023	LSEG Data & Analytics; International Monetary Fund
5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	n/a	2023	LSEG Data & Analytics; International Monetary Fund
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2022	World Intellectual Property Organization; International Monetary Fund
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2023	PwC, GEMO; United Nations, World Population Prospects; International Monetary Fund

## Outdated data for North Macedonia

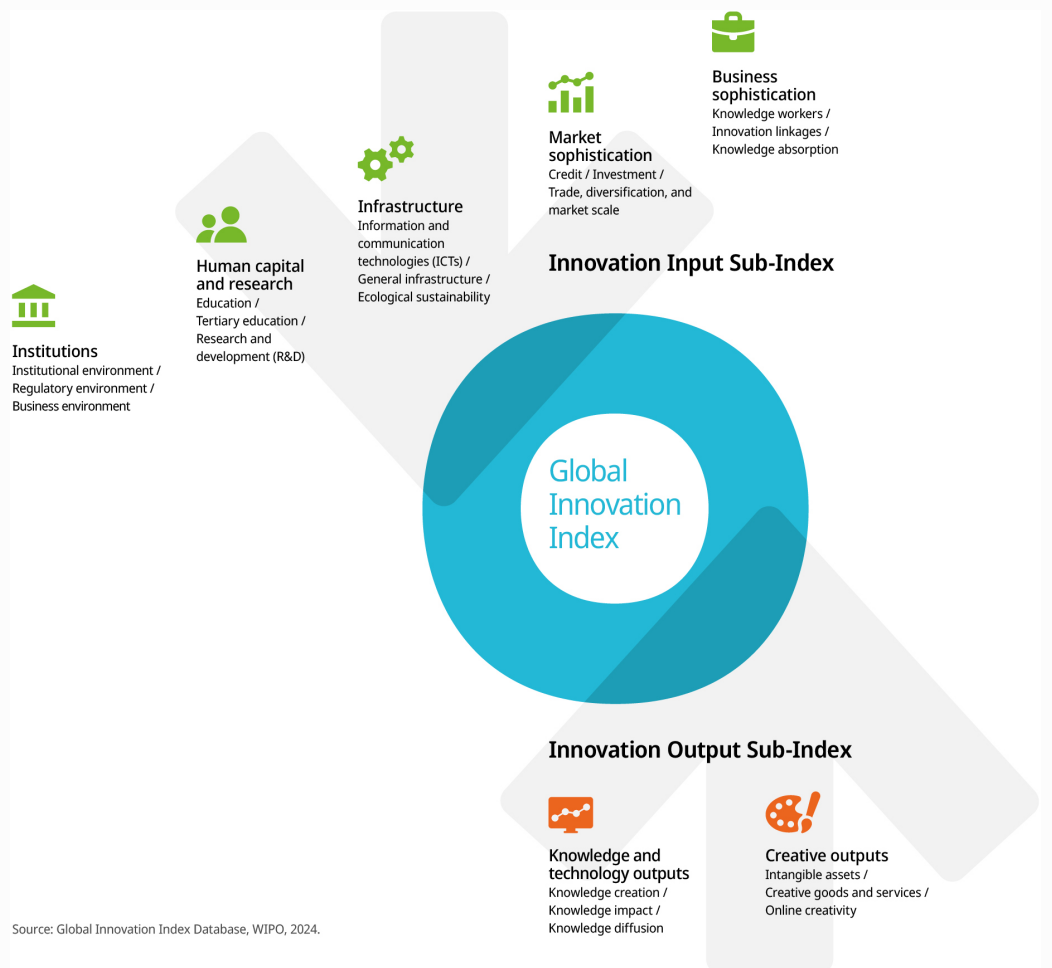
Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture <sup>†</sup>	2019	2023	Global Entrepreneurship Monitor
2.1.5	Pupil–teacher ratio, secondary	2021	2022	UNESCO Institute for Statistics
4.1.1	Finance for startups and scaleups <sup>†</sup>	2019	2023	Global Entrepreneurship Monitor
5.1.5	Females employed w/advanced degrees, %	2022	2023	International Labour Organization
7.1.1	Intangible asset intensity, top 15, %	2022	2023	Brand Finance

# Global Innovation Index 2024



## 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.