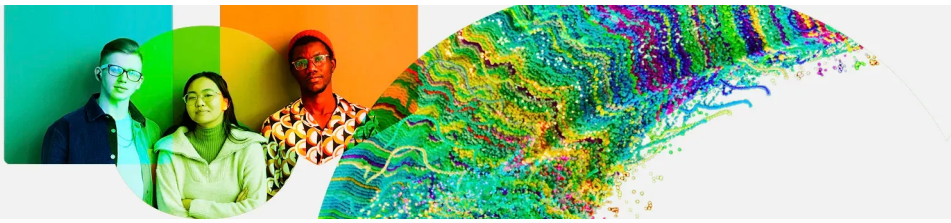
Global Innovation Index 2024



Republic of Korea ranking in the Global Innovation Index 2024

Republic of Korea ranks 6th 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.

Republic of Korea ranks 6th among the 51 high-income group economies.

Republic of Korea ranks 2nd among the 17 economies in South East Asia, East Asia, and Oceania.

Republic of Korea GII Ranking (2020-2024)

The table shows the rankings of Republic of Korea 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 Republic of Korea in the GII 2024 is between ranks 3 and 6.

Year	GII Position	Innovation Inputs	Innovation Outputs
2020	10th	10th	10th
2021	5th	9th	5th
2022	6th	16th	4th
2023	10th	12th	7th
2024	6th	6th	4th

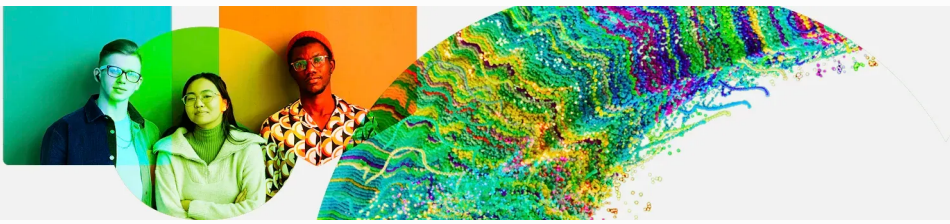
Republic of Korea performs better in innovation outputs than innovation inputs in 2024.

This year **Republic of Korea ranks 6th in innovation inputs.** This position is higher than last year.

Republic of Korea ranks 4th in innovation outputs. This position is higher than last year.

Republic of Korea has 4 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 Republic of Korea, how rapidly is technology being embraced and what are the resulting societal impacts.

For Republic of Korea, 7 indicators have improved in the short-term and 4 indicators have worsened.

Science and innovation investment

Scientific publications	R&D investments	Venture capital		International patent filings
		Deal numbers	Deal values	
▼ -5.3% 2022 - 2023	▲ 9.1% 2021 - 2022	▲ 15.9% 2022 - 2023	▼ -38.6% 2022 - 2023	▲ 1.2% 2022 - 2023
▲ 3% 2013 - 2023	▲ 5.8% 2012 - 2022	▲ 32.3% 2013 - 2023	▲ 31.5% 2013 - 2023	▲ 6.1% 2013 - 2023

Technology adoption

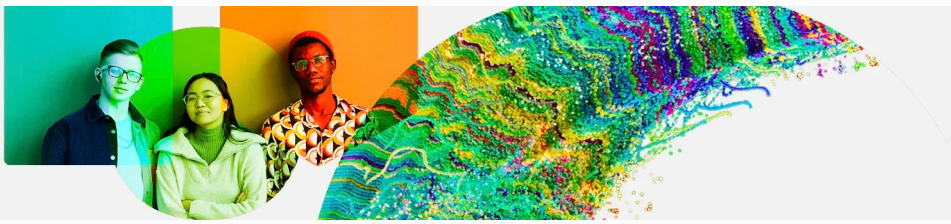
Safe sanitation	Connectivity		Robots	Electric vehicles
	Fixed broadband	5G		
0% 2021 - 2022	▲ 2.6% 2021 - 2022	n/a	▲ 2.2% 2021 - 2022	▲ 45.4% 2022 - 2023
▲ 0.5% 2012 - 2022	▲ 2.1% 2012 - 2022		▲ 10.4% 2012 - 2022	▲ 80.7% 2013 - 2023
99.5 per 100 inhabitants in 2022	45.4 per 100 inhabitants in 2022	n/a		2.4 per 100 inhabitants in 2023

Socioeconomic impact

Labor productivity	Life expectancy	Temperature change
▲ 0.4% 2022 - 2023	▼ -1% 2021 - 2022	▲ 1.6°C 2023
▲ 2.4% 2013 - 2023	▲ 0.2% 2012 - 2022	n/a
102,784 USD in 2023	82.7 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.

Global Innovation Index 2024



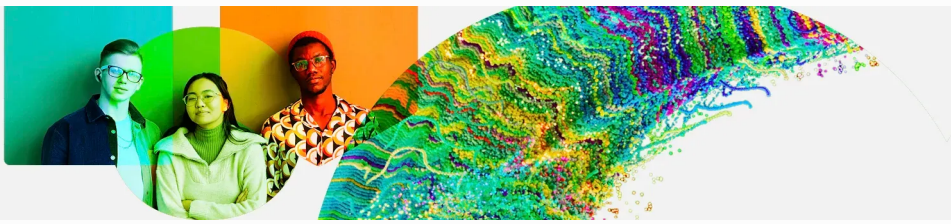
Expected vs. observed innovation performance

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.

Republic of Korea is an innovation leader, ranking in the top 25 of the GII.

> Innovation overperformers relative to their economic development

Global Innovation Index 2024



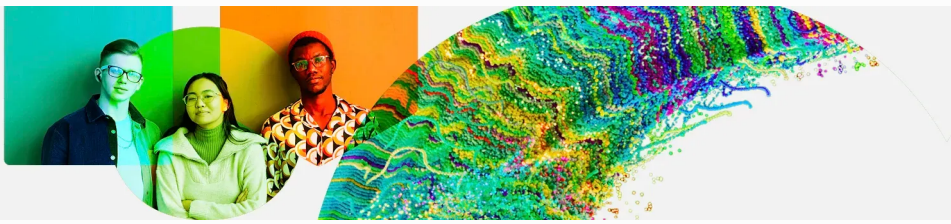
Effectively translating innovation investments into innovation outputs

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.

Republic of Korea produces more innovation outputs relative to its level of innovation investments.

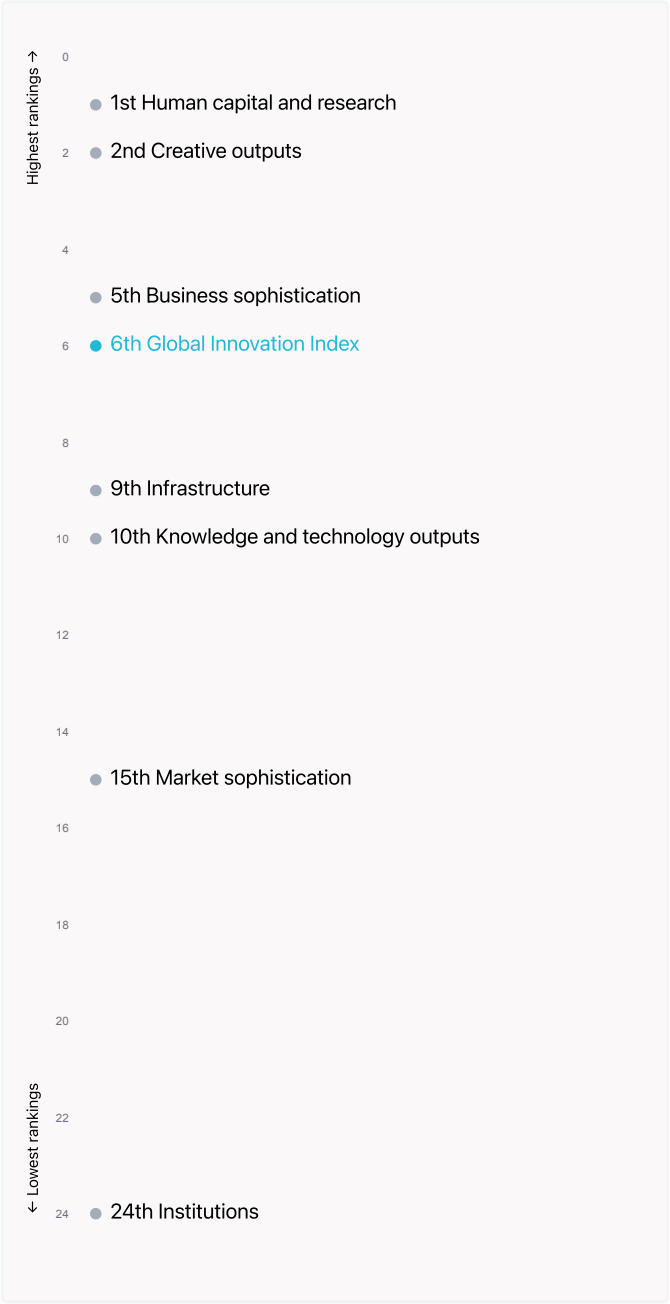
> Relationship between innovation inputs and outputs

Global Innovation Index 2024



Overview of Republic of Korea'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 Republic of Korea are those that rank above the GII (shown in blue) and the weakest are those that rank below.



Highest rankings

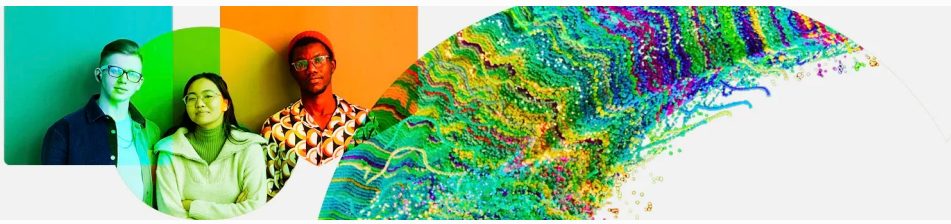
Republic of Korea ranks highest in Human capital and research (1st), Creative outputs (2nd) and Business sophistication (5th).

Lowest rankings

Republic of Korea ranks lowest in Institutions (24th), Market sophistication (15th) and Knowledge and technology outputs (10th).

The full WIPO Intellectual Property Statistics profile for Republic of Korea can be found on this link.

Global Innovation Index 2024



Benchmark of Republic of Korea against other economy groupings for each of the seven areas of the GII Index

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

High-Income economies

Republic of Korea performs above the high-income group average in all pillars.

South East Asia, East Asia, And Oceania

Republic of Korea performs above the regional average in all pillars.

Institutions

- Top 10 | Score: 80.81
- Republic of Korea | Score: 70.99
- High income | Score: 67.41
- SEAO | Score: 59.26

Human capital and research

- Republic of Korea | Score: 68.61
- Top 10 | Score: 61.30
- High income | Score: 46.99
- SEAO | Score: 39.09

Infrastructure

- Republic of Korea | Score: 60.47
- Top 10 | Score: 58.57
- High income | Score: 51.96
- SEAO | Score: 45.67

Market sophistication

- Top 10 | Score: 62.12
- Republic of Korea | Score: 55.81
- SEAO | Score: 45.28
- High income | Score: 44.90

Business sophistication

- Republic of Korea | Score: 63.69
- Top 10 | Score: 63.64
- High income | Score: 44.71
- SEAO | Score: 39.01

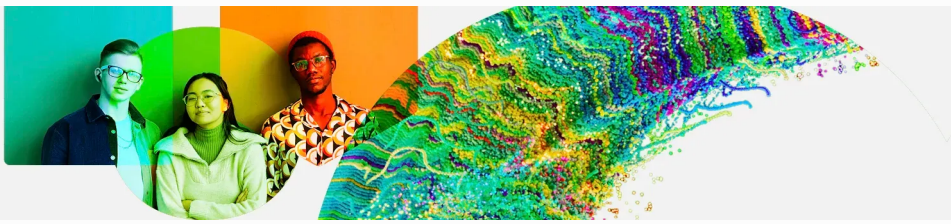
Knowledge and technology outputs

- Top 10 | Score: 57.29
- Republic of Korea | Score: 54.15
- High income | Score: 35.79
- SEAO | Score: 29.72

Creative outputs

- Republic of Korea | Score: 61.75
- Top 10 | Score: 56.54
- High income | Score: 39.44
- SEAO | Score: 33.06

Global Innovation Index 2024



Innovation strengths and weaknesses in Republic of Korea

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

Republic of Korea's main innovation strengths are **GERD performed by business, % GDP** (rank 1), **Industrial designs by origin/bn PPP$ GDP** (rank 1) and **Patents by origin/bn PPP$ GDP** (rank 1).

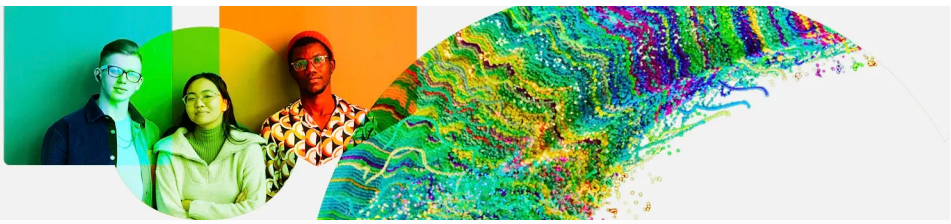
Strengths

Rank	Code	Indicator name
1	5.1.3	GERD performed by business, % GDP
1	7.1.4	Industrial designs by origin/bn PPP$ GDP
1	6.1.1	Patents by origin/bn PPP$ GDP
1	6.1.2	PCT patents by origin/bn PPP$ GDP
1	5.3.5	Research talent, % in businesses
2	5.2.5	Patent families/bn PPP$ GDP
2	2.3.2	Gross expenditure on R&D, % GDP
2	2.3.1	Researchers, FTE/mn pop.
3	6.3.2	Production and export complexity
3	2.1.2	Government funding/pupil, secondary, % GDP/cap
3	3.1.3	Government's online service*
4	6.2.4	High-tech manufacturing, %

Weaknesses

Rank	Code	Indicator name
100	5.3.4	FDI net inflows, % GDP
93	4.3.1	Applied tariff rate, weighted avg., %
93	3.3.1	GDP/unit of energy use
67	6.3.4	ICT services exports, % total trade
67	5.3.3	ICT services imports, % total trade
67	3.3.2	Low-carbon energy use, %
64	6.2.3	Software spending, % GDP
60	1.3.1	Policy stability for doing business†
55	2.2.3	Tertiary inbound mobility, %
48	7.1.1	Intangible asset intensity, top 15, %

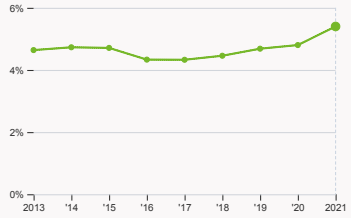
Global Innovation Index 2024



Republic of Korea's innovation system

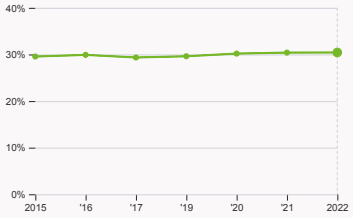
As far as practicable, the plots below present unscaled indicator data.

Innovation inputs in Republic of Korea



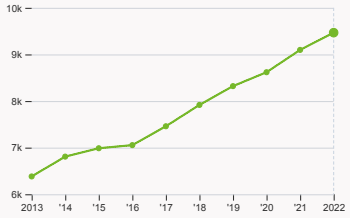
2.1.1 **Expenditure on education**

was equal to 5.4 % GDP in 2021, up by 0.6 percentage points from the year prior – and equivalent to an indicator rank of 32.



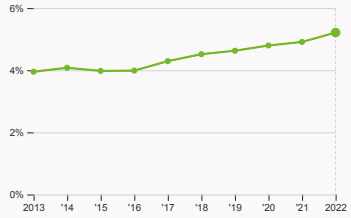
2.2.2 **Graduates in science and engineering**

was equal to 30.42 % of total graduates in 2022, up by 0.03 percentage points from the year prior – and equivalent to an indicator rank of 18.



2.3.1 **Researchers**

was equal to 9467.22 FTE per million population in 2022, up by 4.07% from the year prior – and equivalent to an indicator rank of 2.



2.3.2 **Gross expenditure on R&D**

was equal to 5.21 % GDP in 2022, up by 0.3 percentage points from the year prior – and equivalent to an indicator rank of 2.

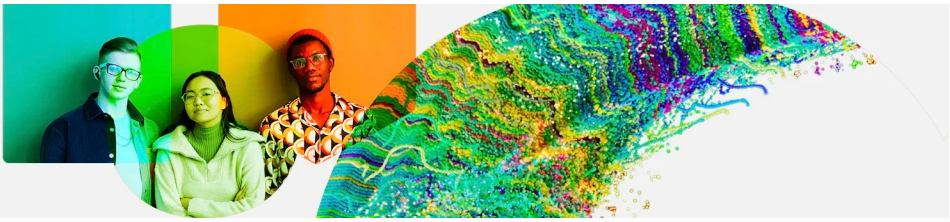
2.3.4 **QS university ranking**

was equal to an average score of 71.97 for the top three universities in 2023, down by 5.8% from the year prior – and equivalent to an indicator rank of 10.

4.2.4 **VC received, value**

was equal to 3.09 million USD in 2023, down by 38.57% from the year prior – and equivalent to an indicator rank of 31.

Global Innovation Index 2024



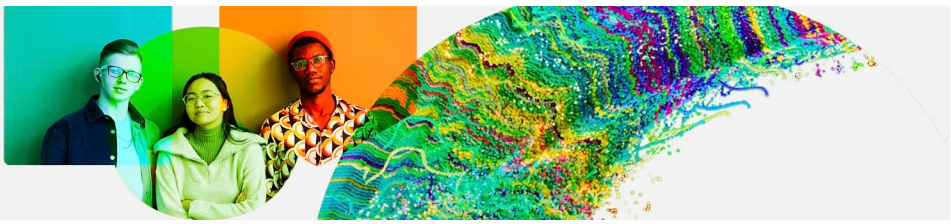
4.3.2 Domestic industry diversification

was equal to an index score of 0.1 in 2021, up by 2.89% from the year prior – and equivalent to an indicator rank of 24.

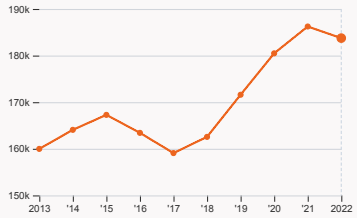
5.1.1 Knowledge-intensive employment

was equal to 40.66 % in 2023, up by 1.07 percentage points from the year prior – and equivalent to an indicator rank of 30.

Global Innovation Index 2024

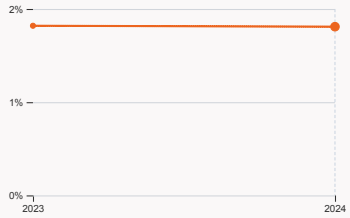


Innovation outputs in Republic of Korea



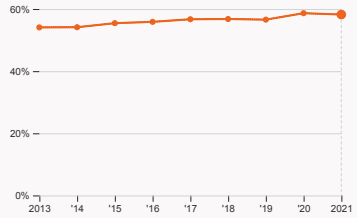
6.1.1 Patents by origin

was equal to 183.75 thousand patents in 2022, down by 1.34% from the year prior – and equivalent to an indicator rank of 1.



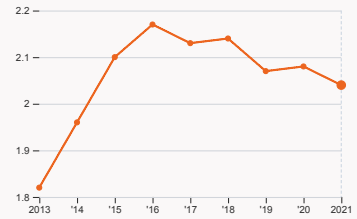
6.2.2 Unicorn valuation

was equal to 1.81 % GDP in 2024, down by 0.01 percentage points from the year prior – and equivalent to an indicator rank of 20.



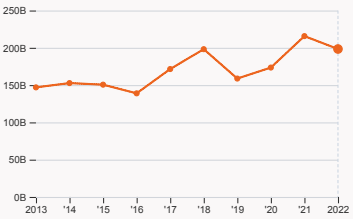
6.2.4 High-tech manufacturing

was equal to 58.21 % of total manufacturing output in 2021, down by 0.43 percentage points from the year prior – and equivalent to an indicator rank of 4.



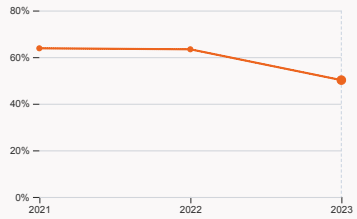
6.3.2 Production and export complexity

was equal to a score of 2.04 in 2021, down by 1.92% from the year prior – and equivalent to an indicator rank of 3.



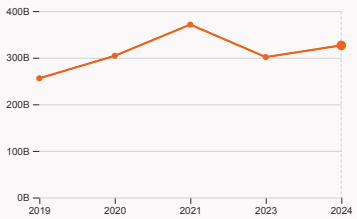
6.3.3 High-tech exports

was equal to 198.4 billion USD in 2022, down by 8.02% from the year prior – and equivalent to an indicator rank of 6.



7.1.1 Intangible asset intensity

was equal to 50.14 % for the top 15 companies in 2023, down by 13.22 percentage points from the year prior – and equivalent to an indicator rank of 48.

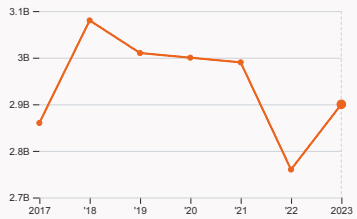


7.1.3 Global brand value

was equal to 326.38 billion USD for the brands in the top 5,000 in 2024, up by 8.33% from the year prior – and equivalent to an indicator rank of 5.

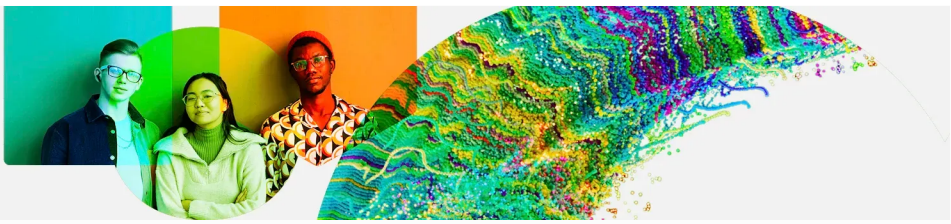
7.2.2 National feature films

was equal to 197 films in 2022, down by 1.5% from the year prior – and equivalent to an indicator rank of 25.



7.3.3 Mobile app creation

was equal to 2.9 billion global downloads of mobile apps in 2023, up by 5.07% from the year prior – and equivalent to an indicator rank of 20.



Republic of Korea's innovation top performers

2.3.3 Global corporate R&D investors from Republic of Korea

Rank	Firm	Industry	R&D	R&D Growth	R&D Intensity
			[mn EUR]	[%]	[%]
7	SAMSUNG ELECTRONICS	Electronic & Electrical Equipment	18,435	10	8
59	SK HYNIX	Technology Hardware & Equipment	3,324	19	10
72	LG ELECTRONICS	Leisure Goods	2,746	3	4
91	HYUNDAI MOTOR	Automobiles & Parts	2,468	8	2

Source: European Commission's Joint Research Centre (https://iri.jrc.ec.europa.eu/scoreboard/2022-eu-industrial-rd-investment-scoreboard).
Note: European Commission's Joint Research Centre ranks the top 2,500 firms by R&D investment annually.

2.3.4 QS university ranking of Republic of Korea's top universities

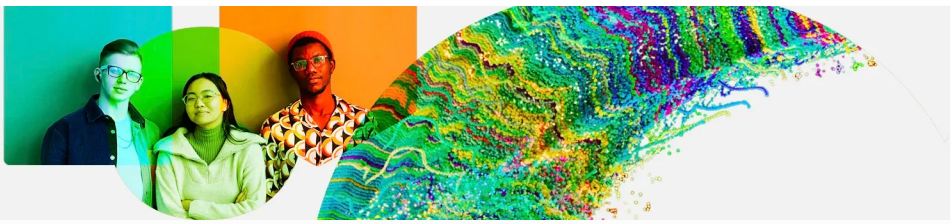
Rank	University	Score
41	SEOUL NATIONAL UNIVERSITY	78.50
56	KAIST - KOREA ADVANCED INSTITUTE OF SCIENCE & TECHNOLOGY	72.20
76	YONSEI UNIVERSITY	65.20

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".

6.2.2 Top Unicorn Companies in Republic of Korea

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	TOSS	Financial Services	Seoul	7
2	YELLO MOBILE	Consumer & Retail	Seoul	4
3	KURLY	Consumer & Retail	Seoul	3

Source: CBInsights, Tracker – The Complete List of Unicorn Companies: https://www.cbinsights.com/research-unicorn-companies



7.1.1 Top 15 intangible-asset intensive companies in Republic of Korea

Rank	Firm	Intensity, %
1	SAMSUNG BIOLOGICS CO.,LTD.	87.23
2	ECOPRO CO., LTD.	81.70
3	SK HYNIX INC.	16.70

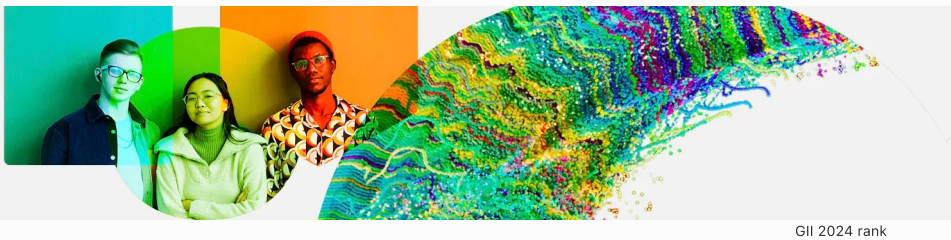
Source: Brand Finance (https://brandirectory.com/reports/gift-2022).
Note: Brand Finance only provides within economy ranks.

7.1.3 Top 5,000 companies in Republic of Korea with highest global brand value

Rank	Brand	Industry	Brand Value, mn USD
1	SAMSUNG GROUP	Diversified	99,364.8
2	HYUNDAI GROUP	Diversified	36,962
3	SK GROUP	Diversified	23,096.8

Source: Brand Finance (https://brandirectory.com).
Note: Rank corresponds to within economy ranks.

Global Innovation Index 2024



GII 2024 rank

Republic of Korea

6

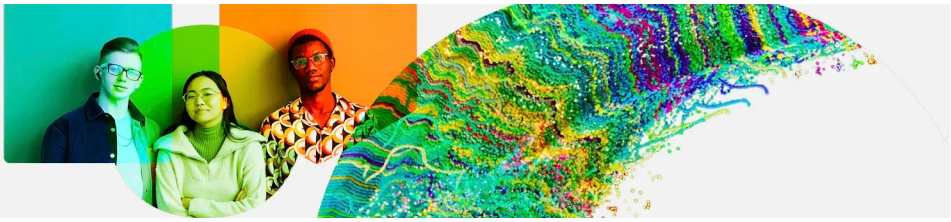
Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
4	6	High	SEAO	51.7	2,924.2	56,708.9

	Score / Value	Rank	
Institutions	**71**	**24**	
1.1 Institutional environment	**80.3**	**19**	
1.1.1 Operational stability for businesses*	81.3	18	
1.1.2 Government effectiveness*	79.2	17	
1.2 Regulatory environment	**74.5**	**25**	
1.2.1 Regulatory quality*	71.9	28	
1.2.2 Rule of law*	77.1	23	
1.3 Business environment	**58.2**	**35**	
1.3.1 Policy stability for doing business†	51.2	60	○ ◇
1.3.2 Entrepreneurship policies and culture†	65.1	15	
Human capital and research	**68.6**	**1**	● ◆
2.1 Education	**71.2**	**2**	● ◆
2.1.1 Expenditure on education, % GDP	5.4	32	
2.1.2 Government funding/pupil, secondary, % GDP/cap	36.8	3	● ◆
2.1.3 School life expectancy, years	16.6	28	
2.1.4 PISA scales in reading, maths and science	523.5	4	
2.1.5 Pupil–teacher ratio, secondary	11.5	46	
2.2 Tertiary education	**49.2**	**17**	
2.2.1 Tertiary enrolment, % gross	103.3	6	◆
2.2.2 Graduates in science and engineering, %	30.4	18	◆
2.2.3 Tertiary inbound mobility, %	4.4	55	○
2.3 Research and development (R&D)	**85.5**	**1**	● ◆
2.3.1 Researchers, FTE/mn pop.	9,467.2	2	● ◆
2.3.2 Gross expenditure on R&D, % GDP	5.2	2	● ◆
2.3.3 Global corporate R&D investors, top 3, mn USD	87.1	5	
2.3.4 QS university ranking, top 3*	72.8	10	
Infrastructure	**60.5**	**9**	
3.1 Information and communication technologies (ICTs)	**95**	**6**	
3.1.1 ICT access*	100	11	
3.1.2 ICT use*	87.9	24	
3.1.3 Government's online service*	98.1	3	● ◆
3.1.4 E-participation*	94.2	9	
3.2 General infrastructure	**60.7**	**8**	◆
3.2.1 Electricity output, GWh/mn pop.	12,290	12	
3.2.2 Logistics performance*	77.3	16	
3.2.3 Gross capital formation, % GDP	32.9	15	◆
3.3 Ecological sustainability	**25.7**	**47**	
3.3.1 GDP/unit of energy use	8	93	○
3.3.2 Low-carbon energy use, %	16.5	67	○
3.3.3 ISO 14001 environment/bn PPP$ GDP	5.3	18	
Market sophistication	**55.8**	**15**	
4.1 Credit	**65.9**	**7**	
4.1.1 Finance for startups and scaleups†	66.5	18	
4.1.2 Domestic credit to private sector, % GDP	175	6	
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	
4.2 Investment	**30.1**	**26**	
4.2.1 Market capitalization, % GDP	117.5	11	
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.2	28	
4.2.3 VC recipients, deals/bn PPP$ GDP	0.1	25	
4.2.4 VC received, value, % GDP	0.002	31	
4.3 Trade, diversification and market scale	**71.5**	**18**	
4.3.1 Applied tariff rate, weighted avg., %	4.7	93	○ ◇
4.3.2 Domestic industry diversification	93.4	24	
4.3.3 Domestic market scale, bn PPP$	2,924.2	14	

	Score / Value	Rank	
Business sophistication	**63.7**	**5**	
5.1 Knowledge workers	**82.2**	**1**	● ◆
5.1.1 Knowledge-intensive employment, %	40.7	30	◇
5.1.2 Firms offering formal training, %	n/a	n/a	
5.1.3 GERD performed by business, % GDP	4.1	1	● ◆
5.1.4 GERD financed by business, %	76.3	4	◆
5.1.5 Females employed w/advanced degrees, %	22.3	26	
5.2 Innovation linkages	**58.4**	**14**	
5.2.1 Public Research-Industry co-publications, %	6.6	5	
5.2.2 University-industry R&D collaboration†	69	26	
5.2.3 State of cluster development†	70.8	31	
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.03	32	◇
5.2.5 Patent families/bn PPP$ GDP	13.3	2	● ◆
5.3 Knowledge absorption	**50.4**	**9**	
5.3.1 Intellectual property payments, % total trade	1.6	21	
5.3.2 High-tech imports, % total trade	18.2	11	◆
5.3.3 ICT services imports, % total trade	1.2	67	○ ◇
5.3.4 FDI net inflows, % GDP	0.9	100	○
5.3.5 Research talent, % in businesses	82.6	1	● ◆
Knowledge and technology outputs	**54.1**	**10**	
6.1 Knowledge creation	**65.1**	**4**	● ◆
6.1.1 Patents by origin/bn PPP$ GDP	66.1	1	● ◆
6.1.2 PCT patents by origin/bn PPP$ GDP	7.6	1	● ◆
6.1.3 Utility models by origin/bn PPP$ GDP	1	20	
6.1.4 Scientific and technical articles/bn PPP$ GDP	22.7	29	
6.1.5 Citable documents H-index	47.1	16	
6.2 Knowledge impact	**45.1**	**21**	
6.2.1 Labor productivity growth, %	0.8	60	
6.2.2 Unicorn valuation, % GDP	1.8	20	
6.2.3 Software spending, % GDP	0.2	64	○ ◇
6.2.4 High-tech manufacturing, %	58.2	4	● ◆
6.3 Knowledge diffusion	**52.3**	**13**	
6.3.1 Intellectual property receipts, % total trade	1.1	18	
6.3.2 Production and export complexity	94.3	3	● ◆
6.3.3 High-tech exports, % total trade	24.3	6	◆
6.3.4 ICT services exports, % total trade	1.4	67	○
6.3.5 ISO 9001 quality/bn PPP$ GDP	10.5	25	
Creative outputs	**61.7**	**2**	● ◆
7.1 Intangible assets	**81.5**	**2**	● ◆
7.1.1 Intangible asset intensity, top 15, %	50.1	48	○ ◇
7.1.2 Trademarks by origin/bn PPP$ GDP	96.5	8	◆
7.1.3 Global brand value, top 5,000, % GDP	18.3	5	◆
7.1.4 Industrial designs by origin/bn PPP$ GDP	19	1	● ◆
7.2 Creative goods and services	**37.8**	**16**	
7.2.1 Cultural and creative services exports, % total trade	0.8	39	
7.2.2 National feature films/mn pop. 15–69	4.9	25	
7.2.3 Entertainment and media market/th pop. 15–69	46.9	15	
7.2.4 Creative goods exports, % total trade	4.2	13	◆
7.3 Online creativity	**46.2**	**30**	
7.3.1 Top-level domains (TLDs)/th pop. 15–69	7.2	48	◇
7.3.2 GitHub commits/mn pop. 15–69	56.1	20	
7.3.3 Mobile app creation/bn PPP$ GDP	75.4	20	

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 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.

Global Innovation Index 2024



Data availability

The following tables list indicators that are either missing or outdated for Republic of Korea.

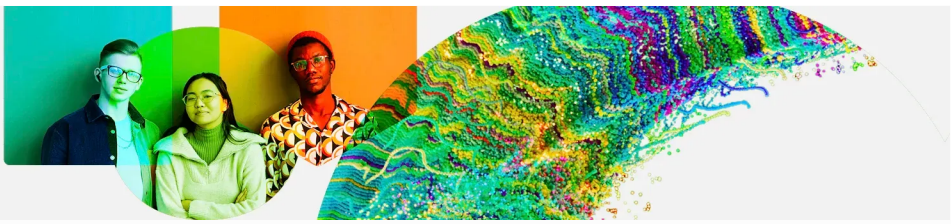
Republic of Korea has missing data for two indicators and outdated data for one indicator.

Missing data for Republic of Korea

Code	Indicator name	Economy Year	Model Year	Source
4.1.3	Loans from microfinance institutions, % GDP	n/a	2022	International Monetary Fund, Financial Access Survey (FAS)
5.1.2	Firms offering formal training, %	n/a	2023	World Bank Enterprise Surveys

Outdated data for Republic of Korea

Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	2021	2022	UNESCO Institute for Statistics



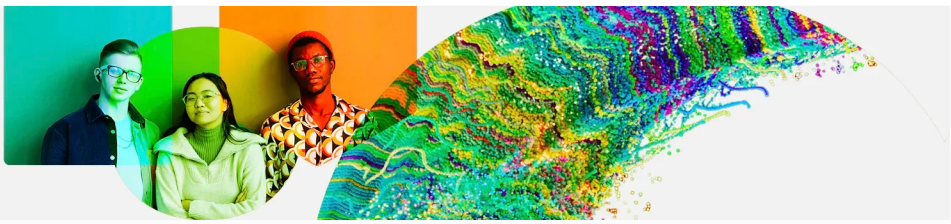
Top science and technology clusters in Republic of Korea

Republic of Korea has 4 clusters in the top 100 S&T clusters of the Global Innovation Index, the same number as in 2023.

The table and map below give an overview of the top science and technology clusters in Republic of Korea.

Rank	Cluster name	Top patent field	Top academic subject
4	Seoul	Digital communication	Engineering
17	Daejeon	Electrical machinery, apparatus, energy	Engineering
81	Busan	Medical technology	Engineering
88	Daegu	Medical technology	Engineering

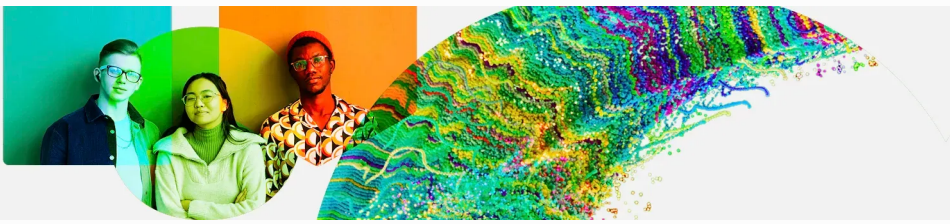
Global Innovation Index 2024



The table and map below give an overview of the top science and technology clusters by intensity in Republic of Korea.

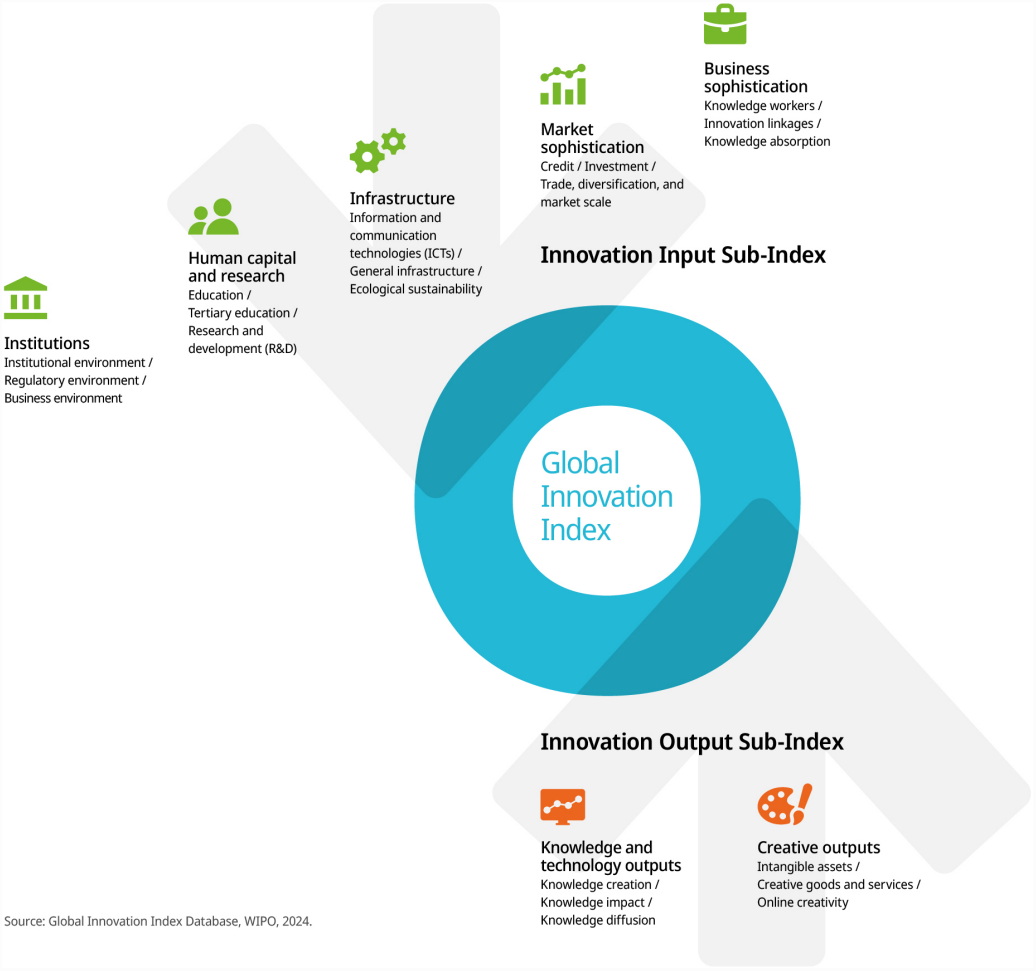
Rank	Cluster name	Top patent field	Top academic subject
7	Daejeon	Electrical machinery, apparatus, energy	Engineering
22	Seoul	Digital communication	Engineering
72	Daegu	Medical technology	Engineering
85	Busan	Medical technology	Engineering

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.



Source: Global Innovation Index Database, WIPO, 2024.

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.