



REPUBLIC OF KOREA

6th

The Republic of Korea ranks 6th among the 132 economies featured in the GII 2022.

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 the Republic of Korea 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 the Republic of Korea in the GII 2022 is between ranks 5 and 9.

Rankings for the Republic of Korea (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	10	10	10
2021	5	9	5
2022	6	16	4

- The Republic of Korea performs better in innovation outputs than innovation inputs in 2022.
- This year the Republic of Korea ranks 16th in innovation inputs, lower than both 2021 and 2020.
- As for innovation outputs, the Republic of Korea ranks 4th. This position is higher than both 2021 and 2020.

6th

The Republic of Korea ranks 6th among the 48 high-income group economies.

1st

The Republic of Korea ranks 1st among the 17 economies in South East Asia, East Asia, and Oceania.

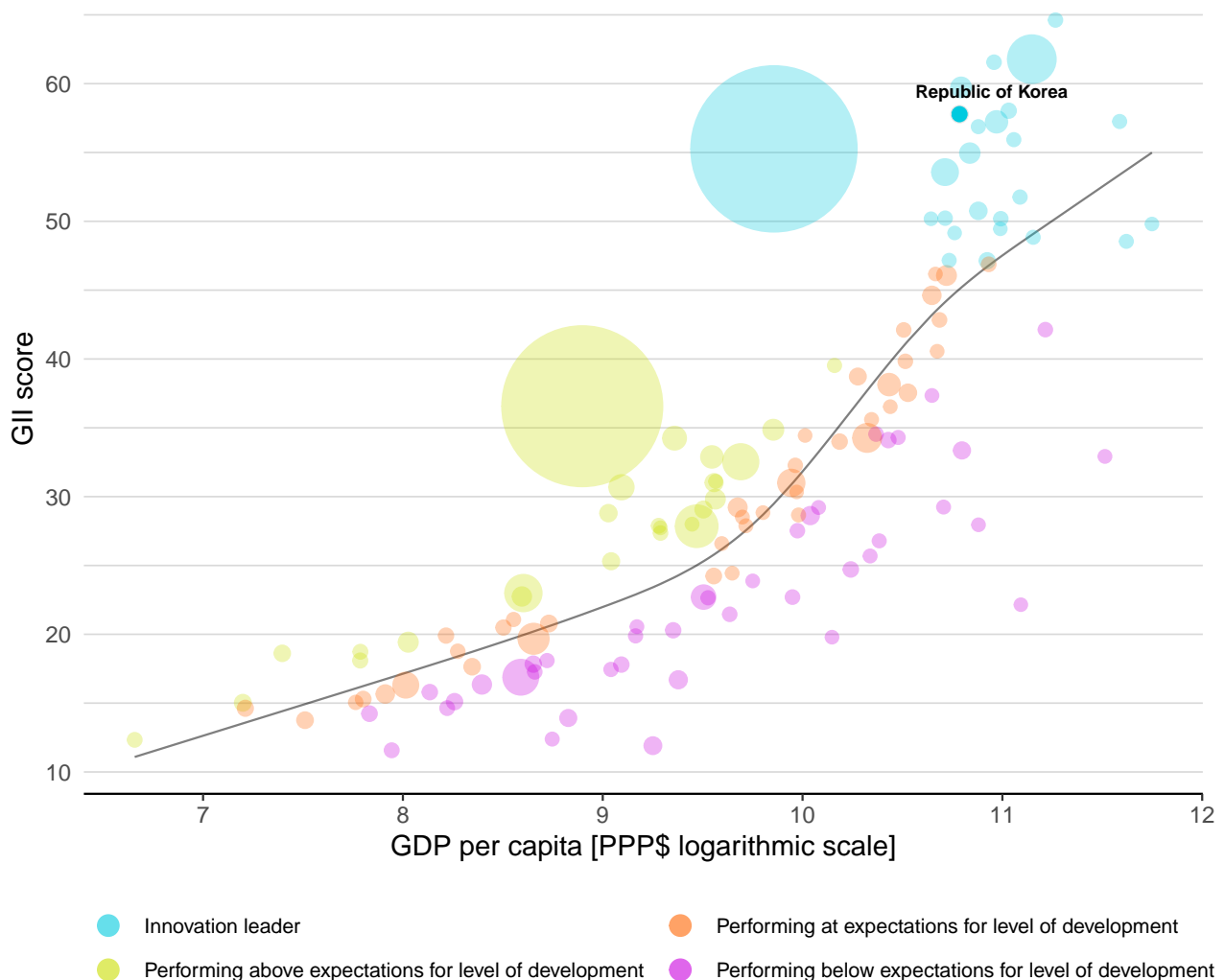


EXPECTED VS. OBSERVED INNOVATION PERFORMANCE

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

The positive relationship between innovation and development

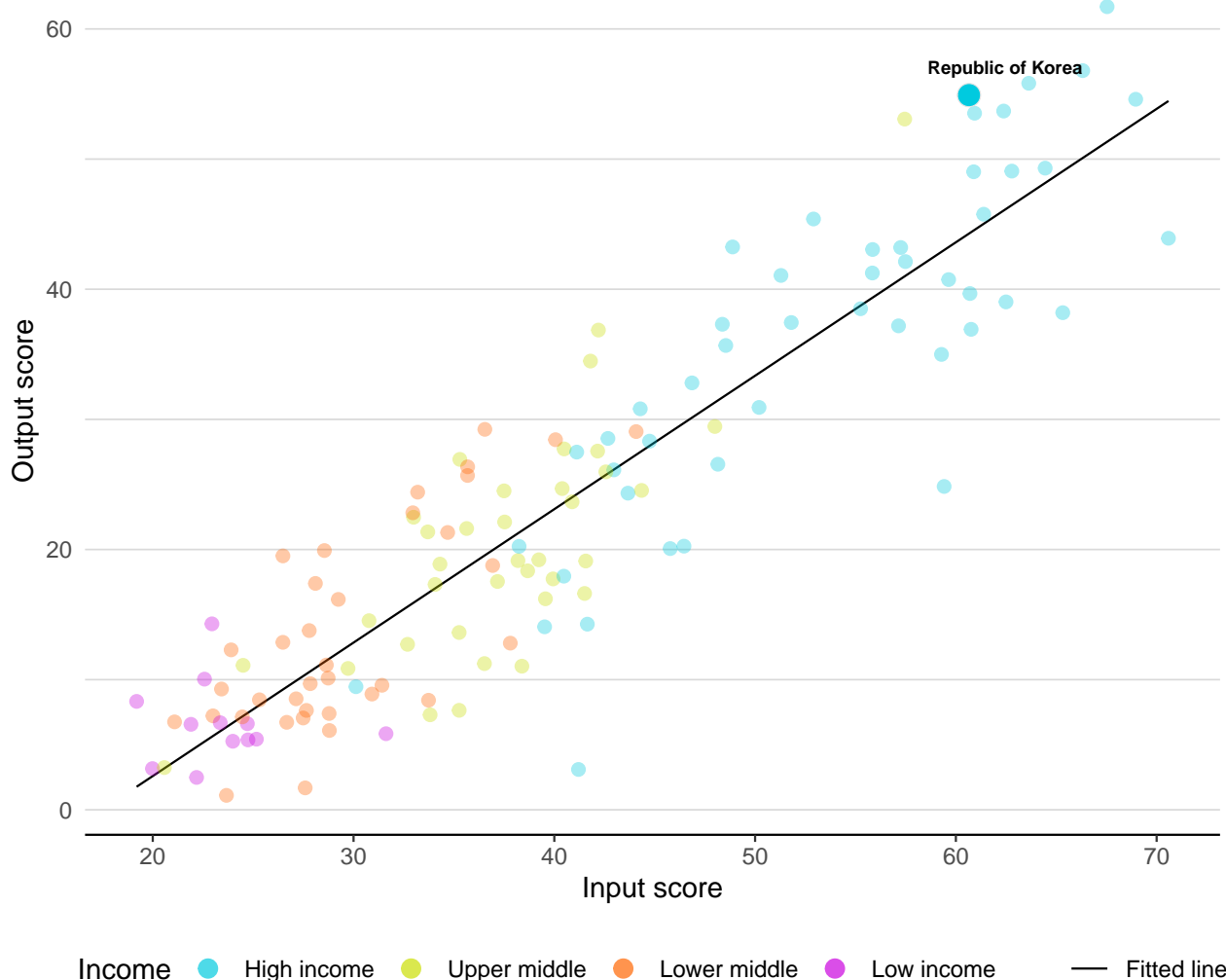


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

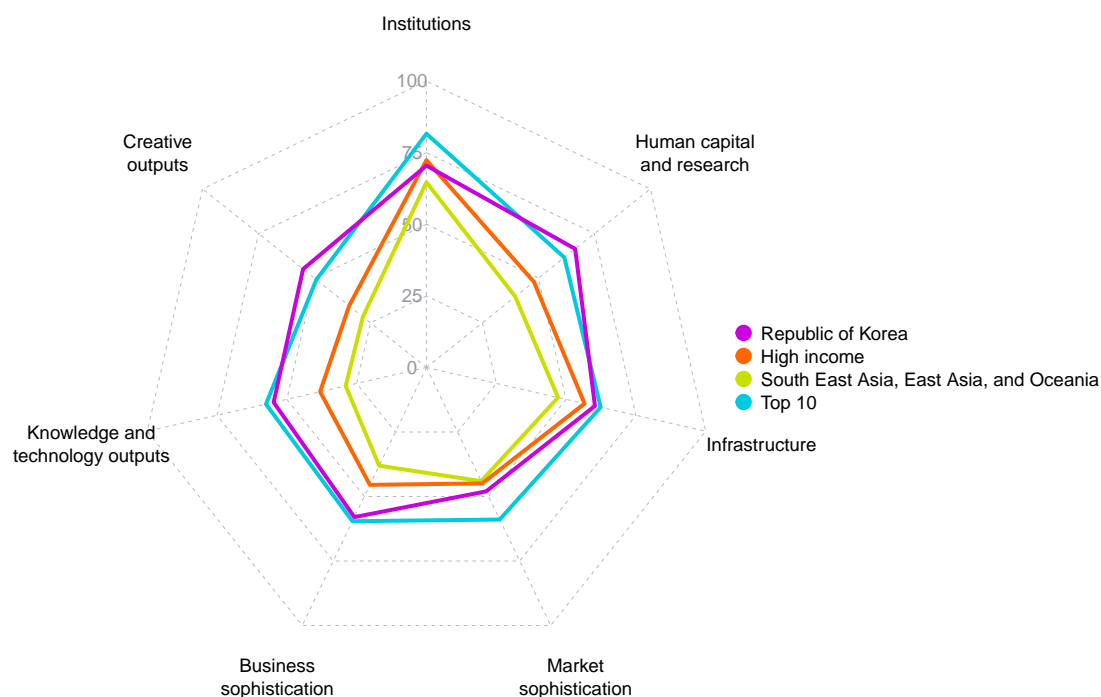
The Republic of Korea produces more innovation outputs relative to its level of innovation investments.

Innovation input to output performance



BENCHMARKING AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND SOUTH EAST ASIA, EAST ASIA, AND OCEANIA

The seven GII pillar scores for the Republic of Korea



High-income group economies

The Republic of Korea performs above the high-income group average in six pillars, namely: Human capital and research; Infrastructure; Market sophistication; Business sophistication; Knowledge and technology outputs; and, Creative outputs.

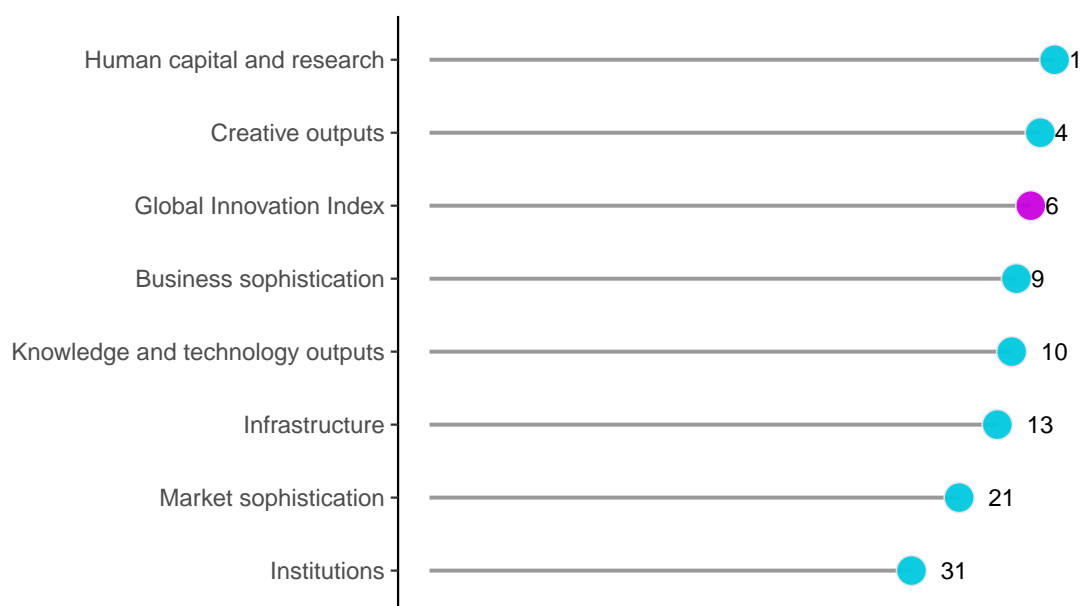
South East Asia, East Asia, and Oceania

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

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

The Republic of Korea performs best in Human capital and research and its weakest performance is in Institutions.

The seven GII pillar ranks for the Republic of Korea



Note: The highest possible ranking in each pillar is 1.

The full WIPO Intellectual Property Statistics profile for the Republic of Korea can be found at:

https://www.wipo.int/ipstats/en/statistics/country_profile/profile.jsp?code=KR.

INNOVATION STRENGTHS AND WEAKNESSES








The table below gives an overview of the indicator strengths and weaknesses of the Republic of Korea in the GII 2022.

Strengths and weaknesses for the Republic of Korea

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
2.3.1	Researchers, FTE/mn pop.	1	1.2.3	Cost of redundancy dismissal	111
2.3.2	Gross expenditure on R&D, % GDP	2	2.2.3	Tertiary inbound mobility, %	66
2.3.3	Global corporate R&D investors, top 3, mn USD	4	3.3.1	GDP/unit of energy use	97
3.1.2	ICT use	4	4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	65
3.1.3	Government's online service	1	4.3.1	Applied tariff rate, weighted avg., %	94
3.1.4	E-participation	1	5.2.3	GERD financed by abroad, % GDP	72
5.1.3	GERD performed by business, % GDP	2	5.3.3	ICT services imports, % total trade	97
5.2.5	Patent families/bn PPP\$ GDP	2	5.3.4	FDI net inflows, % GDP	112
5.3.5	Research talent, % in businesses	1	6.3.4	ICT services exports, % total trade	84
6.1.1	Patents by origin/bn PPP\$ GDP	1	7.2.4	Printing and other media, % manufacturing	95
6.1.2	PCT patents by origin/bn PPP\$ GDP	1			
7.1.4	Industrial designs by origin/bn PPP\$ GDP	1			

Republic of Korea

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
4	16	High	SEAO	51.3	2,503.4	48,309

	Score/Value	Rank		Score/Value	Rank
 Institutions	70.5	31	 Business sophistication	58.0	9
1.1 Political environment	81.9	18	5.1 Knowledge workers	75.2	3 ● ◆
1.1.1 Political and operational stability*	83.6	16	5.1.1 Knowledge-intensive employment, %	39.2	32 ◇
1.1.2 Government effectiveness*	80.2	18	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	67.7	59 ◇	5.1.3 GERD performed by business, % GDP	3.8	2 ● ◆
1.2.1 Regulatory quality*	70.7	32 ◇	5.1.4 GERD financed by business, %	76.6	4 ◆
1.2.2 Rule of law*	76.8	24	5.1.5 Females employed w/advanced degrees, %	20.7	30
1.2.3 Cost of redundancy dismissal	27.4	111 ○ ◇	5.2 Innovation linkages	47.9	18
1.3 Business environment	61.9	31	5.2.1 University-industry R&D collaboration†	65.7	14
1.3.1 Policies for doing business†	54.0	52 ◇	5.2.2 State of cluster development and depth†	62.8	20
1.3.2 Entrepreneurship policies and culture*	69.8	14	5.2.3 GERD financed by abroad, % GDP	0.0	72 ○ ◇
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	34 ◇
			5.2.5 Patent families/bn PPP\$ GDP	11.4	2 ● ◆
 Human capital and research	66.4	1 ● ◆	5.3 Knowledge absorption	50.9	14
2.1 Education	65.1	13	5.3.1 Intellectual property payments, % total trade	1.6	20
2.1.1 Expenditure on education, % GDP	4.5	61	5.3.2 High-tech imports, % total trade	18.4	12
2.1.2 Government funding/pupil, secondary, % GDP/cap	31.0	9 ◆	5.3.3 ICT services imports, % total trade	0.7	97 ○ ◇
2.1.3 School life expectancy, years	16.5	25	5.3.4 FDI net inflows, % GDP	0.6	112 ○
2.1.4 PISA scales in reading, maths and science	519.7	6	5.3.5 Research talent, % in businesses	81.8	1 ● ◆
2.1.5 Pupil-teacher ratio, secondary	11.9	49			
2.2 Tertiary education	47.3	18	 Knowledge and technology outputs	54.7	10
2.2.1 Tertiary enrolment, % gross	98.4	4 ◆	6.1 Knowledge creation	67.0	8
2.2.2 Graduates in science and engineering, %	29.6	19 ◆	6.1.1 Patents by origin/bn PPP\$ GDP	77.9	1 ● ◆
2.2.3 Tertiary inbound mobility, %	3.3	66 ○ ◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	8.3	1 ● ◆
2.3 Research and development (R&D)	86.8	1 ● ◆	6.1.3 Utility models by origin/bn PPP\$ GDP	2.0	10
2.3.1 Researchers, FTE/mn pop.	8,713.6	1 ● ◆	6.1.4 Scientific and technical articles/bn PPP\$ GDP	31.6	29
2.3.2 Gross expenditure on R&D, % GDP	4.8	2 ● ◆	6.1.5 Citable documents H-index	45.9	17
2.3.3 Global corporate R&D investors, top 3, mn USD	90.4	4 ●	6.2 Knowledge impact	42.1	18
2.3.4 QS university ranking, top 3*	75.7	9	6.2.1 Labor productivity growth, %	1.6	45
			6.2.2 New businesses/th pop. 15–64	n/a	n/a
 Infrastructure	60.3	13	6.2.3 Software spending, % GDP	0.2	66 ◇
3.1 Information and communication technologies (ICTs)	95.6	1 ● ◆	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	5.6	51
3.1.1 ICT access*	95.0	12	6.2.5 High-tech manufacturing, %	56.3	8
3.1.2 ICT use*	87.4	4 ● ◆	6.3 Knowledge diffusion	55.1	11
3.1.3 Government's online service*	100.0	1 ● ◆	6.3.1 Intellectual property receipts, % total trade	1.2	18
3.1.4 E-participation*	100.0	1 ●	6.3.2 Production and export complexity	89.7	4 ◆
3.2 General infrastructure	58.7	9	6.3.3 High-tech exports, % total trade	28.8	6 ◆
3.2.1 Electricity output, GWh/mn pop.	11,243.0	13	6.3.4 ICT services exports, % total trade	1.2	84 ○
3.2.2 Logistics performance*	72.6	25			
3.2.3 Gross capital formation, % GDP	32.4	14 ◆	 Creative outputs	55.1	4 ● ◆
3.3 Ecological sustainability	26.7	60 ◇	7.1 Intangible assets	85.7	1 ● ◆
3.3.1 GDP/unit of energy use	7.7	97 ○	7.1.1 Intangible asset intensity, top 15, %	63.8	36
3.3.2 Environmental performance*	46.9	49 ◇	7.1.2 Trademarks by origin/bn PPP\$ GDP	116.2	7 ◆
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	2.4	37	7.1.3 Global brand value, top 5,000, % GDP	203.4	5 ◆
			7.1.4 Industrial designs by origin/bn PPP\$ GDP	27.6	1 ● ◆
 Market sophistication	48.0	21	7.2 Creative goods and services	33.9	20
4.1 Credit	54.8	12	7.2.1 Cultural and creative services exports, % total trade	0.8	37
4.1.1 Finance for startups and scaleups*	46.7	20	7.2.2 National feature films/mn pop. 15–69	8.1	11
4.1.2 Domestic credit to private sector, % GDP	164.8	7	7.2.3 Entertainment and media market/th pop. 15–69	50.7	13
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.2.4 Printing and other media, % manufacturing	0.3	95 ○ ◇
4.2 Investment	16.6	39 ◇	7.2.5 Creative goods exports, % total trade	5.0	12 ◆
4.2.1 Market capitalization, % GDP	101.6	15	7.3 Online creativity	15.1	37 ◇
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.1	34 ◇	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	8.7	42 ◇
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	65 ○ ◇	7.3.2 Country-code TLDs/th pop. 15–69	8.0	43 ◇
4.2.4 Venture capital received, value, % GDP	0.0	45 ◇	7.3.3 GitHub commit pushes received/mn pop. 15–69	25.5	27
4.3 Trade, diversification, and market scale	72.7	17	7.3.4 Mobile app creation/bn PPP\$ GDP	18.3	14
4.3.1 Applied tariff rate, weighted avg., %	5.5	94 ○ ◇			
4.3.2 Domestic industry diversification	97.3	16			
4.3.3 Domestic market scale, bn PPP\$	2,503.4	14			

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/global_innovation_index/en/2022. 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 the Republic of Korea.

Missing data for the Republic of Korea

Code	Indicator name	Economy year	Model year	Source
4.1.3	Loans from microfinance institutions, % GDP	n/a	2020	International Monetary Fund, Financial Access Survey (FAS)
5.1.2	Firms offering formal training, %	n/a	2019	World Bank Enterprise Surveys
6.2.2	New businesses/th pop. 15–64	n/a	2020	World Bank, Entrepreneurship Database

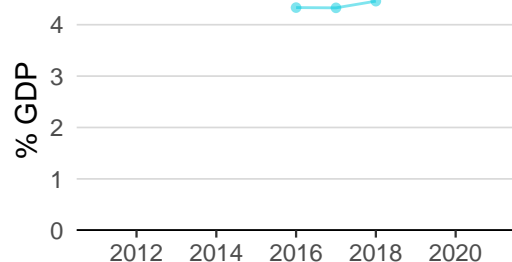
Outdated data for the Republic of Korea

Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	2018	2020	UNESCO Institute for Statistics
2.2.2	Graduates in science and engineering, %	2019	2020	UNESCO Institute for Statistics
4.3.2	Domestic industry diversification	2017	2019	United Nations Industrial Development Organization
6.2.5	High-tech manufacturing, %	2017	2019	United Nations Industrial Development Organization
7.2.4	Printing and other media, % manufacturing	2017	2019	United Nations Industrial Development Organization

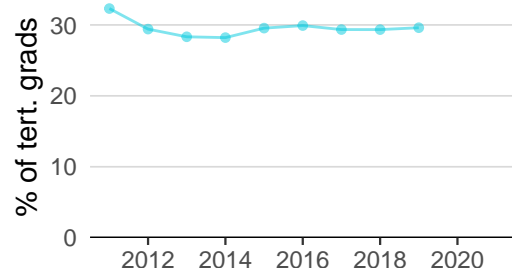
INNOVATION SYSTEM FOR THE REPUBLIC OF KOREA

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

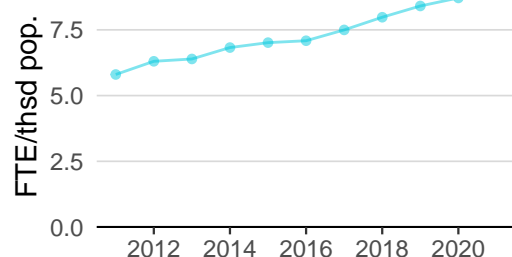
Innovation inputs



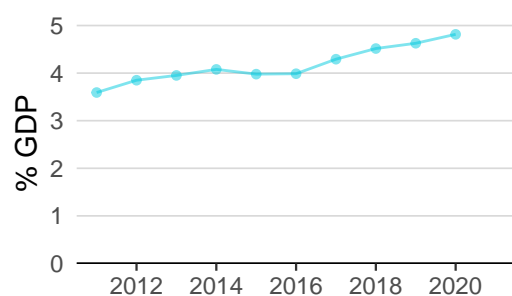
2.1.1 Expenditure on education was equal to 4.5% GDP in 2018—up by 3 percentage points from the year prior—and equivalent to an indicator rank of 61.



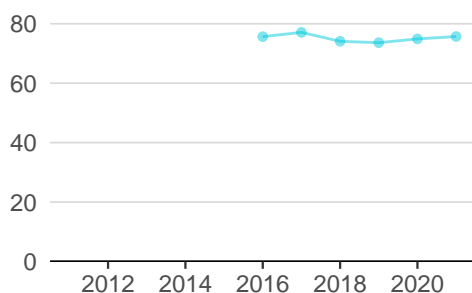
2.2.2 Graduates in science and engineering was equal to 29.6% of tert. grads in 2019—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 19.



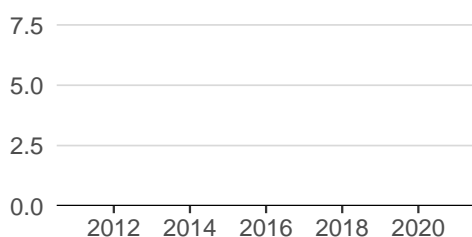
2.3.1 Researchers was equal to 8.7 FTE/thsd pop. in 2020—up by 4 percentage points from the year prior—and equivalent to an indicator rank of 1.



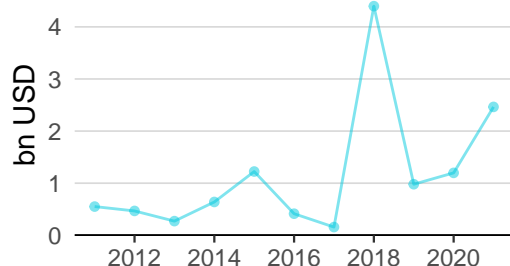
2.3.2 Gross expenditure on R&D was equal to 4.8% GDP in 2020—up by 4 percentage points from the year prior—and equivalent to an indicator rank of 2.



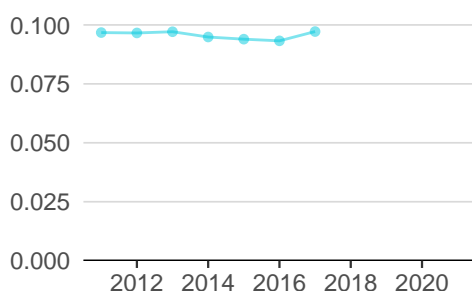
2.3.4 QS university ranking was equal to 75.7 in 2021—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 9.



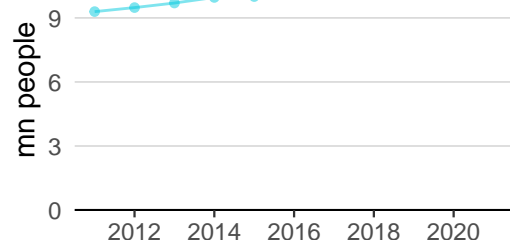
3.1.1 ICT access was equal to 9.5 in 2020 and equivalent to an indicator rank of 12.



4.2.4 Venture capital received was equal to 2.5 bn USD in 2021—up by 106 percentage points from the year prior—and equivalent to an indicator rank of 45.

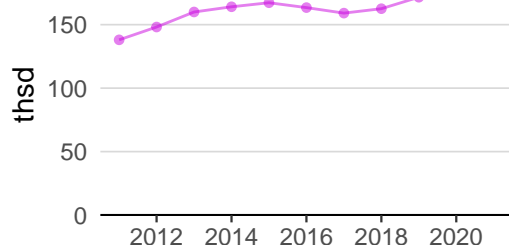


4.3.2 Domestic industry diversification was equal to 0.1 in 2017—up by 4 percentage points from the year prior—and equivalent to an indicator rank of 16.

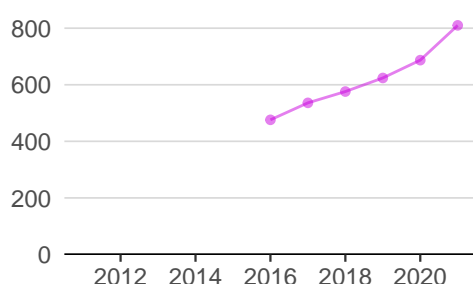


5.1.1 Knowledge-intensive employment was equal to 10.7 mn people in 2021—up by 2 percentage points from the year prior—and equivalent to an indicator rank of 32.

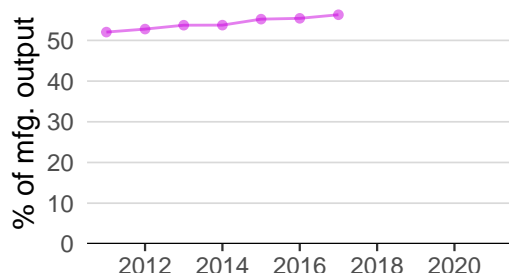
Innovation outputs



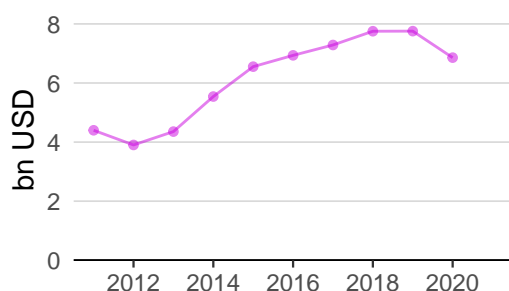
6.1.1 Patents by origin was equal to 180.5 thsd in 2020—up by 5 percentage points from the year prior—and equivalent to an indicator rank of 1.



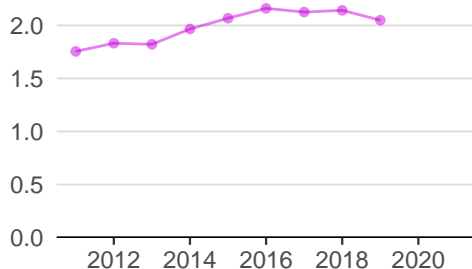
6.1.5 Citable documents H-index was equal to 810.0 in 2021—up by 18 percentage points from the year prior—and equivalent to an indicator rank of 17.



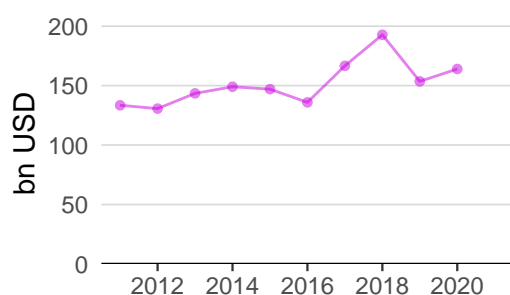
6.2.5 High-tech manufacturing was equal to 56.3% of mfg. output in 2017—up by 2 percentage points from the year prior—and equivalent to an indicator rank of 8.



6.3.1 Intellectual property receipts was equal to 6.9 bn USD in 2020—down by 12 percentage points from the year prior—and equivalent to an indicator rank of 18.



6.3.2 Production and export complexity was equal to 2.0 in 2019—down by 4 percentage points from the year prior—and equivalent to an indicator rank of 4.



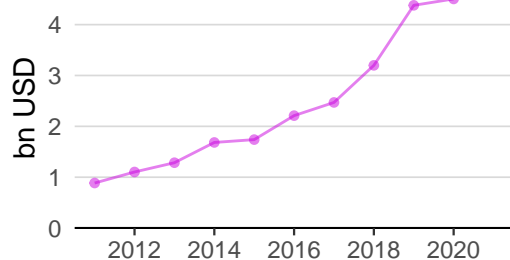
6.3.3 High-tech exports was equal to 164.0 bn USD in 2020—up by 7 percentage points from the year prior—and equivalent to an indicator rank of 6.



7.1.1 Intangible asset intensity was equal to 63.8% of total value in 2021 and equivalent to an indicator rank of 36.



7.1.3 Global brand value was equal to 371.0 bn USD in 2021—up by 22 percentage points from the year prior—and equivalent to an indicator rank of 5.



7.2.1 Cultural and creative services exports was equal to 4.5 bn USD in 2020—up by 3 percentage points from the year prior—and equivalent to an indicator rank of 37.

INNOVATION TOP PERFORMERS FOR THE REPUBLIC OF KOREA

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank
		[mn EUR]	[%]	[%]	
SAMSUNG ELECTRONICS	Electronic & Electrical Equipment	15,895	5.1	9.0	4
LG ELECTRONICS	Leisure Goods	2,651	-1.9	5.6	61
SK HYNIX	Technology Hardware & Equipment	2,487	5.6	10.4	62

Source: European Commission's Joint Research Centre (<https://iri.jrc.ec.europa.eu/scoreboard/2021-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

University	Score	Rank
SEOUL NATIONAL UNIVERSITY	81.7	36
KAIST - KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY	79.1	41
KOREA UNIVERSITY	66.3	74

Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2022>).
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 Intangible asset intensity, top 15

Firm	Rank
SAMSUNG ELECTRONICS	1
SAMSUNG BIOLOGICS	2
SK HYNIX	3

Source: Brand Finance (<https://brandirectory.com/reports/gift-2021>).
Note: Brand Finance only provides within economy ranks.

7.1.3 Global brand value, top 5,000

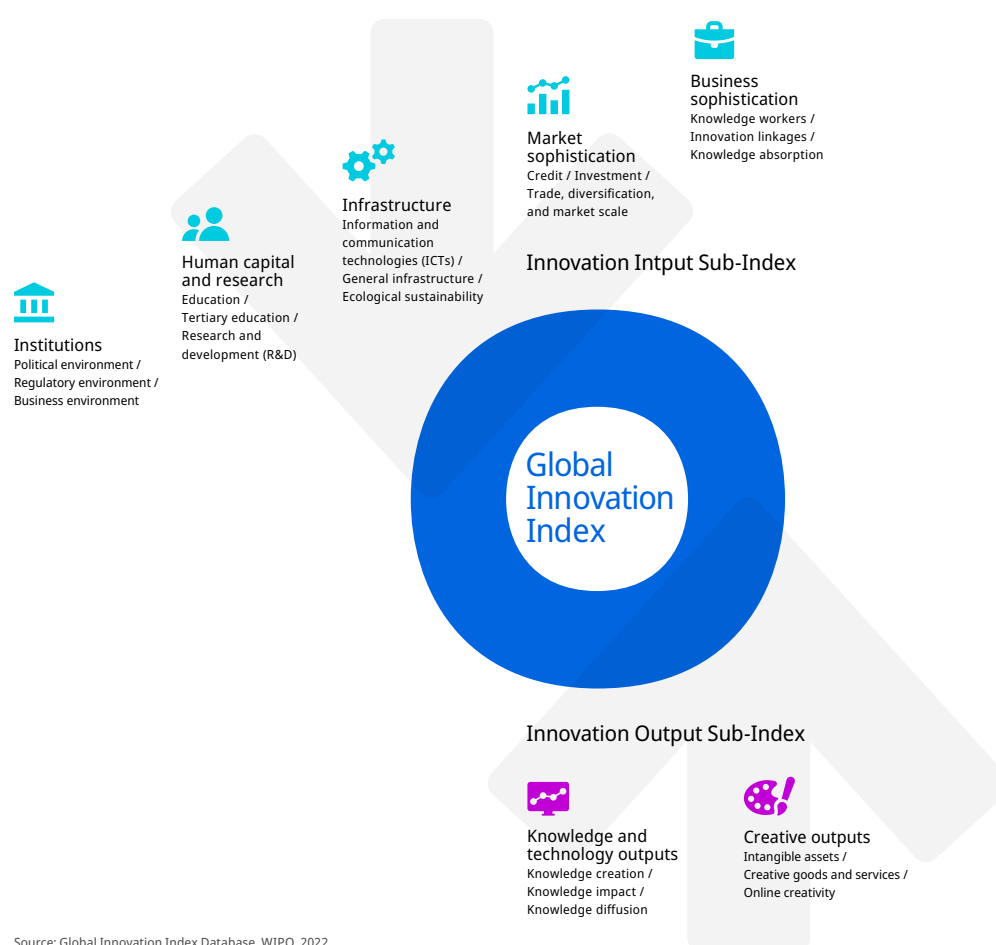
Brand	Industry	Rank
SAMSUNG GROUP	Tech	1
HYUNDAI GROUP	Automobiles	2
SK GROUP	Telecoms	3

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

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.