Global Innovation Index 2022

ARMENIA

80th Armenia ranks 80th 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 Armenia 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 Armenia in the GII 2022 is between ranks 72 and 80.

Rankings for Armenia (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	61	83	47
2021	69	85	56
2022	80	82	73

- Armenia performs better in innovation outputs than innovation inputs in 2022.
- This year Armenia ranks 82nd in innovation inputs, higher than both 2021 and 2020.
- As for innovation outputs, Armenia ranks 73rd. This position is lower than both 2021 and 2020.

25th Armenia ranks 25th among the 36 upper-middle-income group economies.

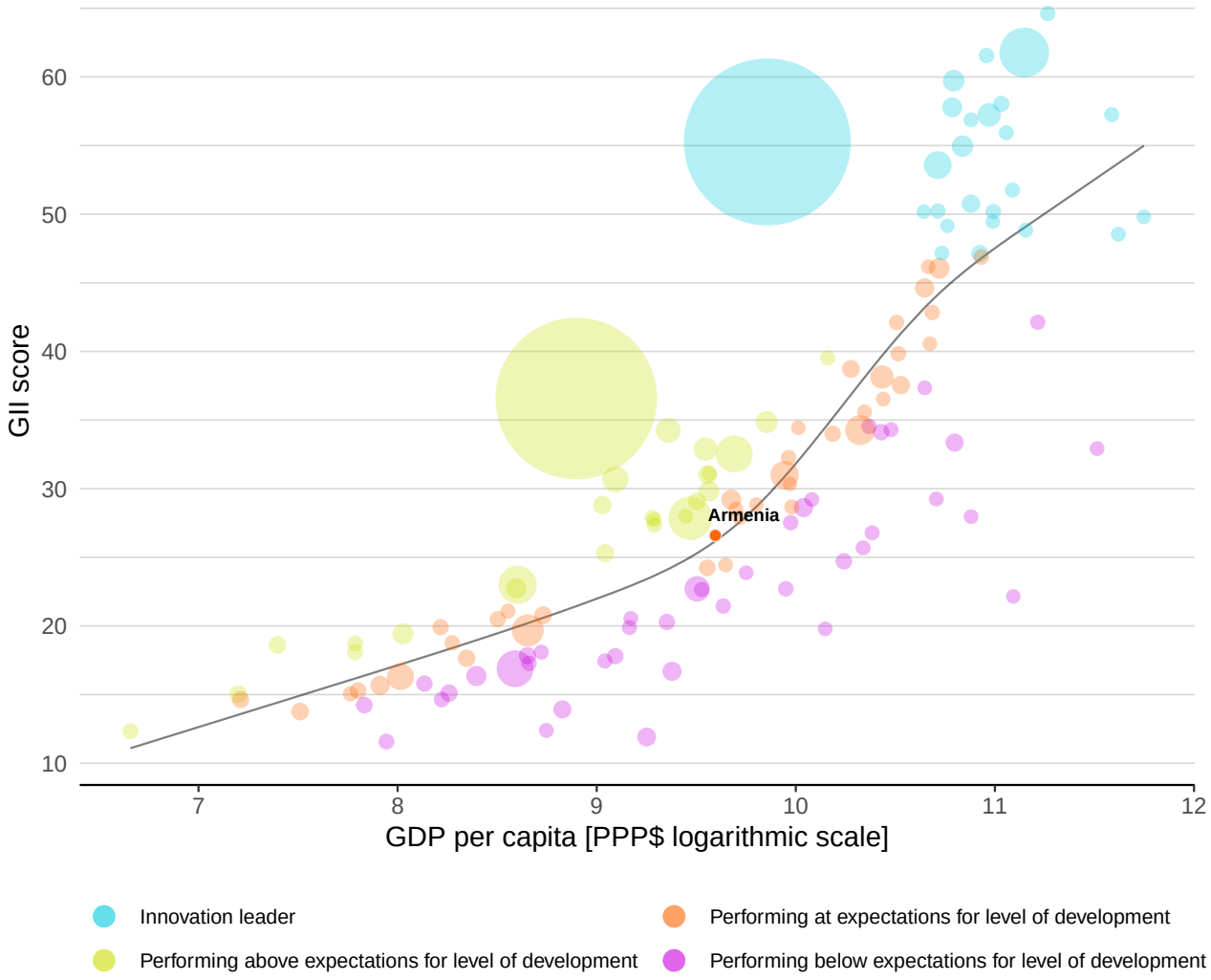
14th Armenia ranks 14th among the 19 economies in Northern Africa and Western Asia.

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, Armenia's performance is at expectations for its level of development.

The positive relationship between innovation and development

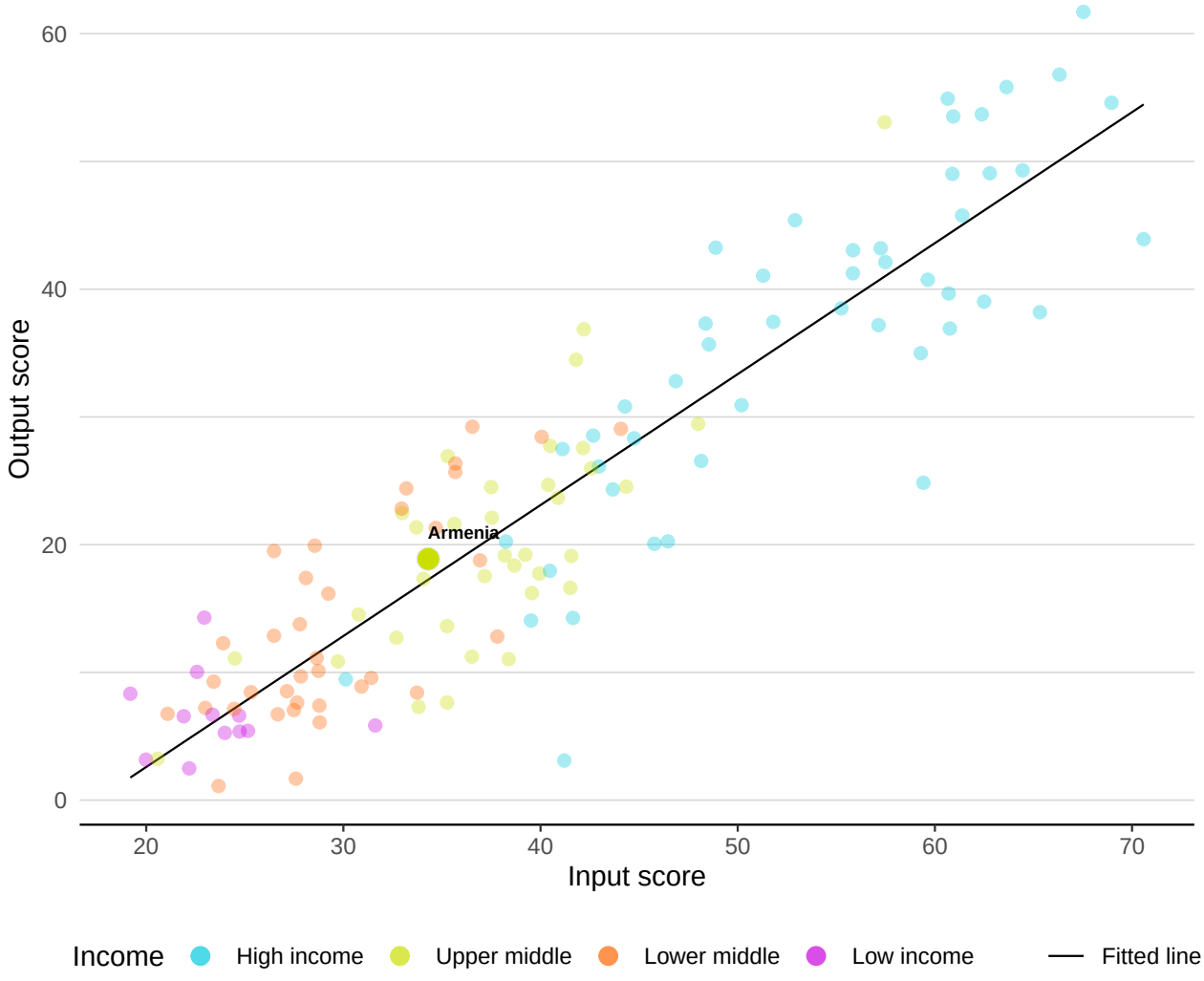


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

Innovation input to output performance



BENCHMARKING AGAINST OTHER UPPER MIDDLE-INCOME GROUP ECONOMIES AND NORTHERN AFRICA AND WESTERN ASIA

The seven GII pillar scores for Armenia

Upper-middle-income group economies

Armenia performs above the upper-middle-income group average in Institutions.

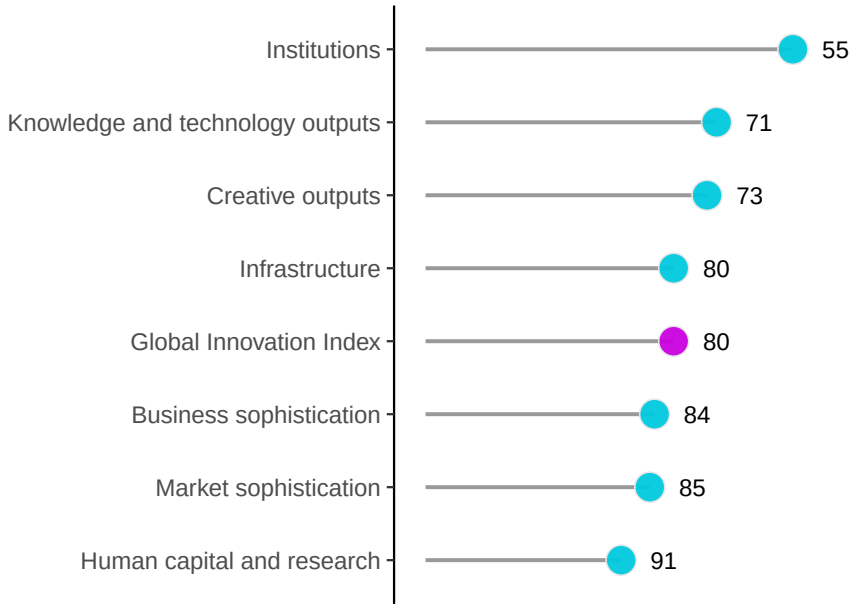
Northern Africa and Western Asia

Armenia performs above the regional average in Institutions.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Armenia performs best in Institutions and its weakest performance is in Human capital and research.

The seven GII pillar ranks for Armenia



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

The full WIPO Intellectual Property Statistics profile for Armenia can be found at:

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

INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths and weaknesses for Armenia

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
1.3.2	Entrepreneurship policies and culture	24	2.1.1	Expenditure on education, % GDP	113
2.1.5	Pupil-teacher ratio, secondary	35	2.2.2	Graduates in science and engineering, %	98
3.1.1	ICT access	20	2.3.3	Global corporate R&D investors, top 3, mn USD	38
3.3.2	Environmental performance	45	2.3.4	QS university ranking, top 3	72
5.1.5	Females employed w/advanced degrees, %	43	3.2.3	Gross capital formation, % GDP	114
6.2.1	Labor productivity growth, %	23	3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	127
6.3.4	ICT services exports, % total trade	9	5.3.1	Intellectual property payments, % total trade	122
7.1.2	Trademarks by origin/bn PPP$ GDP	17	6.2.5	High-tech manufacturing, %	98
7.2.4	Printing and other media, % manufacturing	22	6.3.1	Intellectual property receipts, % total trade	113
7.3.4	Mobile app creation/bn PPP$ GDP	40	7.1.3	Global brand value, top 5,000, % GDP	77

GII 2022 rank

Armenia

80

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
73	82	Upper middle	NAWA	3.0	43.5	14,701

		Score/ Value	Rank
Institutions		**59.7**	**55**
1.1	**Political environment**	54.4	82
1.1.1	Political and operational stability*	61.8	87
1.1.2	Government effectiveness*	47.0	76
1.2	**Regulatory environment**	68.8	54
1.2.1	Regulatory quality*	51.2	60
1.2.2	Rule of law*	43.9	65
1.2.3	Cost of redundancy dismissal	13.0	41
1.3	**Business environment**	55.9	44 ●
1.3.1	Policies for doing business†	53.3	54
1.3.2	Entrepreneurship policies and culture* 🕘	58.6	24 ● ◆
Human capital and research		**22.0**	**91**
2.1	**Education**	43.4	85
2.1.1	Expenditure on education, % GDP	2.7	113 ○ ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	15.6	79
2.1.3	School life expectancy, years	13.1	82
2.1.4	PISA scales in reading, maths and science	n/a	n/a
2.1.5	Pupil-teacher ratio, secondary	10.7	35 ●
2.2	**Tertiary education**	21.7	87
2.2.1	Tertiary enrolment, % gross	50.8	64
2.2.2	Graduates in science and engineering, %	14.6	98 ○ ◇
2.2.3	Tertiary inbound mobility, %	5.9	42
2.3	**Research and development (R&D)**	0.7	100
2.3.1	Researchers, FTE/mn pop.	n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP	0.2	88
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇
2.3.4	QS university ranking, top 3*	0.0	72 ○ ◇
Infrastructure		**39.9**	**80**
3.1	**Information and communication technologies (ICTs)**	75.3	62
3.1.1	ICT access*	93.3	20 ● ◆
3.1.2	ICT use*	62.9	64
3.1.3	Government's online service*	70.0	69
3.1.4	E-participation*	75.0	57
3.2	**General infrastructure**	18.9	112
3.2.1	Electricity output, GWh/mn pop.	2,608.1	69
3.2.2	Logistics performance*	26.0	87
3.2.3	Gross capital formation, % GDP	16.1	114 ○ ◇
3.3	**Ecological sustainability**	25.4	68
3.3.1	GDP/unit of energy use	10.5	65
3.3.2	Environmental performance*	48.3	45 ●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	127 ○
Market sophistication		**26.5**	**85**
4.1	**Credit**	28.5	60
4.1.1	Finance for startups and scaleups* 🕘	30.7	54
4.1.2	Domestic credit to private sector, % GDP	72.2	47
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a
4.2	**Investment**	2.6	[98]
4.2.1	Market capitalization, % GDP	n/a	n/a
4.2.2	Venture capital investors, deals/bn PPP$ GDP 🕘	0.0	68
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	n/a	n/a
4.2.4	Venture capital received, value, % GDP	n/a	n/a
4.3	**Trade, diversification, and market scale**	48.4	84
4.3.1	Applied tariff rate, weighted avg., %	3.1	74
4.3.2	Domestic industry diversification	64.5	94
4.3.3	Domestic market scale, bn PPP$	43.5	108

		Score/ Value	Rank
Business sophistication		**23.5**	**84**
5.1	**Knowledge workers**	33.1	61
5.1.1	Knowledge-intensive employment, % 🕘	19.2	79
5.1.2	Firms offering formal training, %	27.5	59
5.1.3	GERD performed by business, % GDP	n/a	n/a
5.1.4	GERD financed by business, % 🕘	16.7	70
5.1.5	Females employed w/advanced degrees, % 🕘	16.6	43 ●
5.2	**Innovation linkages**	17.2	112
5.2.1	University-industry R&D collaboration†	35.7	100
5.2.2	State of cluster development and depth†	42.8	89
5.2.3	GERD financed by abroad, % GDP 🕘	0.0	74
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	102
5.2.5	Patent families/bn PPP$ GDP	0.1	61
5.3	**Knowledge absorption**	20.1	109 ◇
5.3.1	Intellectual property payments, % total trade	0.0	122 ○ ◇
5.3.2	High-tech imports, % total trade	8.6	61
5.3.3	ICT services imports, % total trade	0.5	110 ◇
5.3.4	FDI net inflows, % GDP	1.1	100
5.3.5	Research talent, % in businesses	n/a	n/a
Knowledge and technology outputs		**19.6**	**71**
6.1	**Knowledge creation**	13.0	63
6.1.1	Patents by origin/bn PPP$ GDP	1.6	46
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	65
6.1.3	Utility models by origin/bn PPP$ GDP	0.6	34
6.1.4	Scientific and technical articles/bn PPP$ GDP	19.4	49
6.1.5	Citable documents H-index	9.9	73
6.2	**Knowledge impact**	20.2	95
6.2.1	Labor productivity growth, %	2.8	23 ●
6.2.2	New businesses/th pop. 15–64	2.9	47
6.2.3	Software spending, % GDP	0.1	81
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.9	108
6.2.5	High-tech manufacturing, %	5.4	98 ○ ◇
6.3	**Knowledge diffusion**	25.4	58
6.3.1	Intellectual property receipts, % total trade	0.0	113 ○ ◇
6.3.2	Production and export complexity	35.3	74
6.3.3	High-tech exports, % total trade	0.7	84
6.3.4	ICT services exports, % total trade	7.5	9 ● ◆
Creative outputs		**18.2**	**73**
7.1	**Intangible assets**	23.3	71
7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
7.1.2	Trademarks by origin/bn PPP$ GDP	87.9	17 ●
7.1.3	Global brand value, top 5,000, % GDP	0.0	77 ○ ◇
7.1.4	Industrial designs by origin/bn PPP$ GDP	0.8	74
7.2	**Creative goods and services**	19.7	[57]
7.2.1	Cultural and creative services exports, % total trade	0.5	54
7.2.2	National feature films/mn pop. 15–69	n/a	n/a
7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a
7.2.4	Printing and other media, % manufacturing	1.6	22 ●
7.2.5	Creative goods exports, % total trade	0.8	52
7.3	**Online creativity**	6.6	55
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.1	62
7.3.2	Country-code TLDs/th pop. 15–69	5.1	54
7.3.3	GitHub commit pushes received/mn pop. 15–69	8.0	48
7.3.4	Mobile app creation/bn PPP$ GDP	10.1	40 ●

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 Armenia.

Missing data for Armenia

Code	Indicator name	Economy year	Model year	Source
2.1.4	PISA scales in reading, maths and science	n/a	2018	OECD, PISA
2.3.1	Researchers, FTE/mn pop.	n/a	2020	UNESCO Institute for Statistics
4.1.3	Loans from microfinance institutions, % GDP	n/a	2020	International Monetary Fund, Financial Access Survey (FAS)
4.2.1	Market capitalization, % GDP	n/a	2020	World Federation of Exchanges
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	n/a	2021	Refinitiv
4.2.4	Venture capital received, value, % GDP	n/a	2021	Refinitiv
5.1.3	GERD performed by business, % GDP	n/a	2020	UNESCO Institute for Statistics
5.3.5	Research talent, % in businesses	n/a	2020	UNESCO Institute for Statistics
7.1.1	Intangible asset intensity, top 15, %	n/a	2021	Brand Finance
7.2.2	National feature films/mn pop. 15–69	n/a	2019	OMDIA
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2021	PwC, GEMO

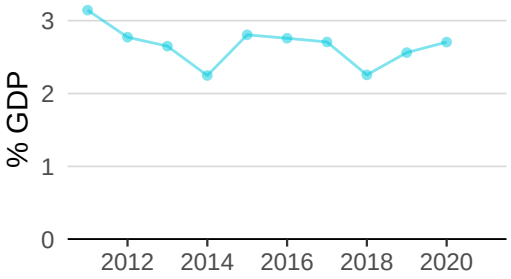
Outdated data for Armenia

Code	Indicator name	Economy year	Model year	Source
1.3.2	Entrepreneurship policies and culture	2019	2021	Global Entrepreneurship Monitor
4.1.1	Finance for startups and scaleups	2019	2021	Global Entrepreneurship Monitor
4.2.2	Venture capital investors, deals/bn PPP$ GDP	2019	2021	Refinitiv
5.1.1	Knowledge-intensive employment, %	2020	2021	International Labour Organization
5.1.4	GERD financed by business, %	2018	2019	UNESCO Institute for Statistics
5.1.5	Females employed w/advanced degrees, %	2020	2021	International Labour Organization
5.2.3	GERD financed by abroad, % GDP	2018	2019	UNESCO Institute for Statistics

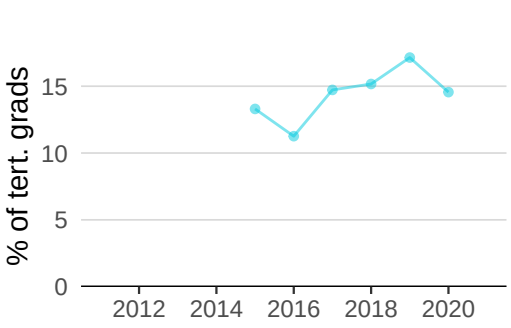
ARMENIA'S INNOVATION SYSTEM

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

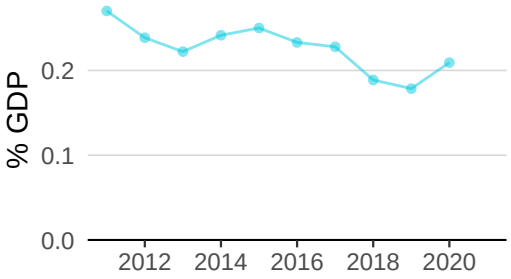
Innovation inputs



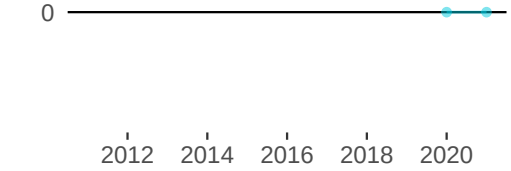
2.1.1 Expenditure on education was equal to 2.7% GDP in 2020–up by 6 percentage points from the year prior–and equivalent to an indicator rank of 113.



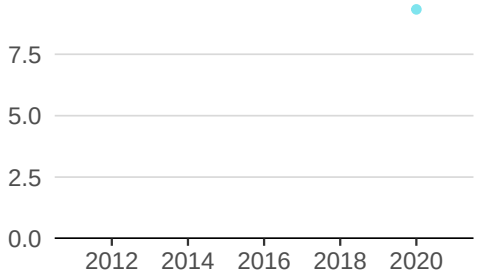
2.2.2 Graduates in science and engineering was equal to 14.6% of tert. grads in 2020–down by 15 percentage points from the year prior–and equivalent to an indicator rank of 98.



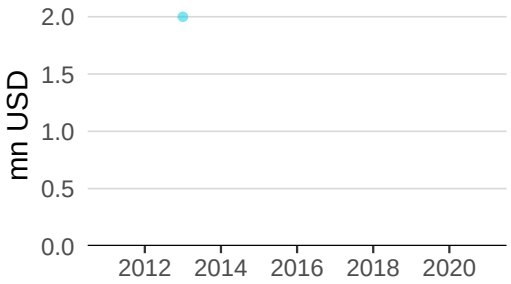
2.3.2 Gross expenditure on R&D was equal to 0.2% GDP in 2020–up by 17 percentage points from the year prior–and equivalent to an indicator rank of 88.



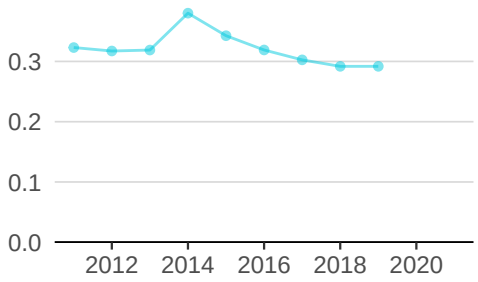
2.3.4 QS university ranking was equal to 0.0 in 2021–effectively unchanged from the year prior–and equivalent to an indicator rank of 72.



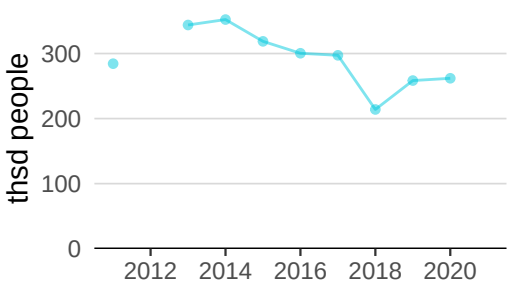
3.1.1 ICT access was equal to 9.3 in 2020 and equivalent to an indicator rank of 20.



4.2.4 Venture capital received was equal to 2.0 mn USD in 2013 .

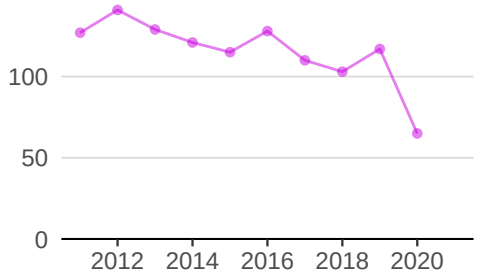


4.3.2 Domestic industry diversification was equal to 0.3 in 2019–effectively unchanged from the year prior–and equivalent to an indicator rank of 94.

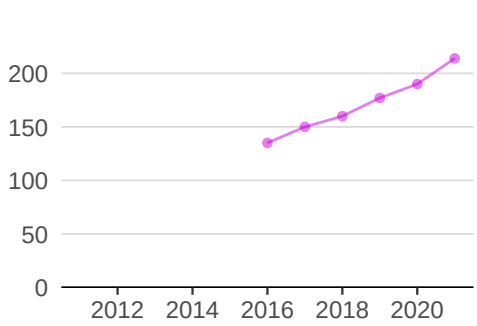


5.1.1 Knowledge-intensive employment was equal to 262.0 thsd people in 2020–up by 1 percentage point from the year prior–and equivalent to an indicator rank of 79.

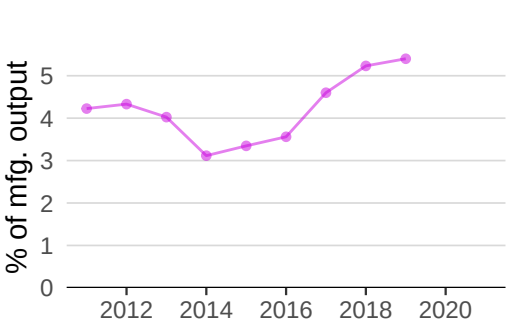
Innovation outputs



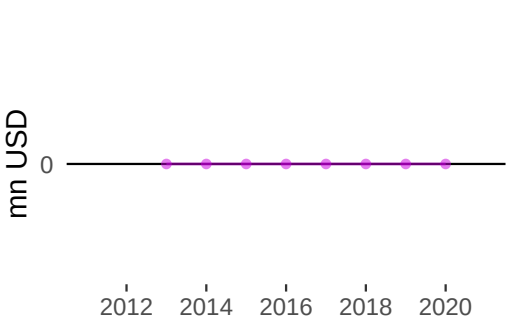
6.1.1 Patents by origin was equal to 65.0 in 2020–down by 44 percentage points from the year prior–and equivalent to an indicator rank of 46.



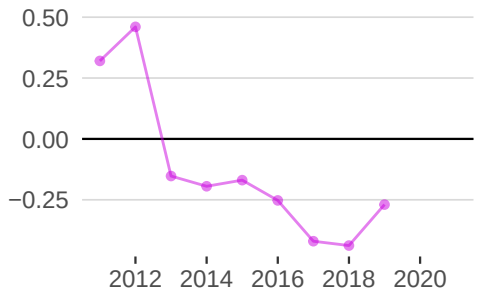
6.1.5 Citable documents H-index was equal to 214.0 in 2021–up by 13 percentage points from the year prior–and equivalent to an indicator rank of 73.



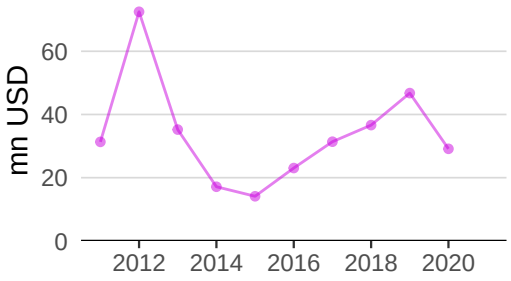
6.2.5 High-tech manufacturing was equal to 5.4% of mfg. output in 2019–up by 3 percentage points from the year prior–and equivalent to an indicator rank of 98.



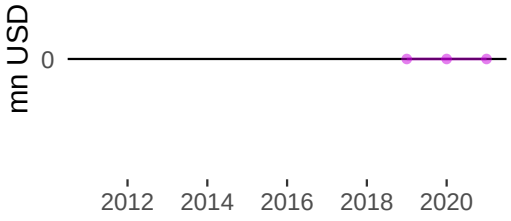
6.3.1 Intellectual property receipts was equal to 0.0 mn USD in 2020–effectively unchanged from the year prior–and equivalent to an indicator rank of 113.



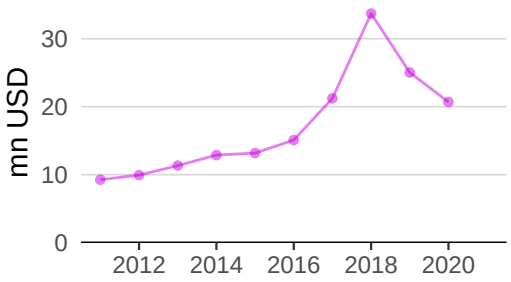
6.3.2 Production and export complexity was equal to -0.3 in 2019–up by 38 percentage points from the year prior–and equivalent to an indicator rank of 74.



6.3.3 High-tech exports was equal to 29.1 mn USD in 2020–down by 38 percentage points from the year prior–and equivalent to an indicator rank of 84.



7.1.3 Global brand value was equal to 0.0 mn USD in 2021–effectively unchanged from the year prior–and equivalent to an indicator rank of 77.



7.2.1 Cultural and creative services exports was equal to 20.7 mn USD in 2020–down by 17 percentage points from the year prior–and equivalent to an indicator rank of 54.

ARMENIA'S INNOVATION TOP PERFORMERS

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank

No observations

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

2.3.4 QS university ranking

University	Score	Rank

No observations

Source: QS Quacquarelli Symonds Ltd (https://www.topuniversities.com/university-rankings/world-university-rankings/2022).

7.1.1 Intangible asset intensity, top 15

Firm	Rank

No observations

Source: Brand Finance (https://brandirectory.com/reports/gift-2021).

7.1.3 Global brand value, top 5,000

Brand	Industry	Rank

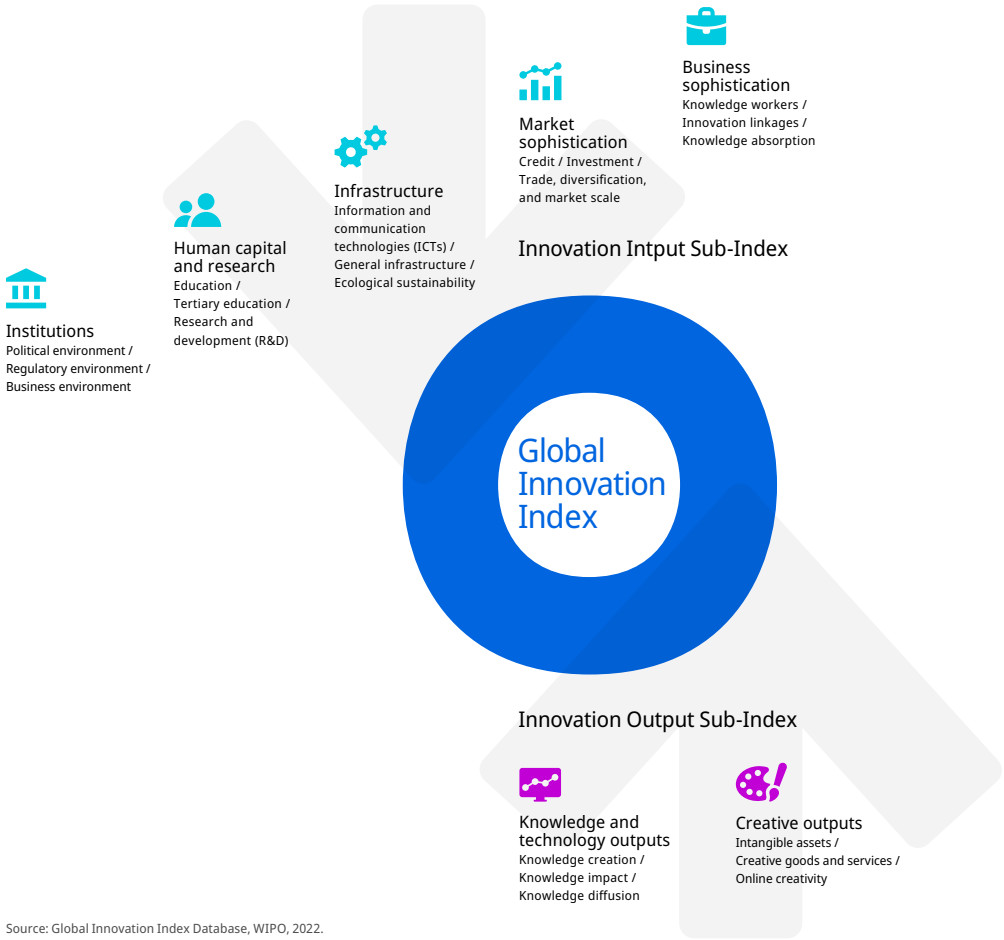
No observations

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

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, 2022.

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.