

GLOBAL INNOVATION INDEX 2018

Armenia

68th Armenia is ranked 68th in the GII 2018, moving down 9 positions from the previous year.

The GII indicators are grouped into innovation inputs and outputs. The following table reflects Armenia's ranking over time¹.

Armenia's ranking over time

	GII	Input	Output	Efficiency
2018	68	94	50	15
2017	59	82	47	17
2016	60	80	43	15

- Armenia performs much better in innovation outputs than inputs.
- Over the last three years, its position in both innovation inputs and outputs has deteriorated.
- In innovation inputs Armenia ranks 94th, dropping from the 82nd-80th positions in 2017-2016.
- The country ranks 50th in innovation outputs, down 3 positions from last year and 7 from 2016.
- Armenia positions 15th in the world in the Innovation Efficiency Ratio, improving from the 17th spot it held last year. Relative to its overall GII position (68th), the Efficiency Ratio (15th) is very strong, indicating that the economy is rather efficient in translating its innovation inputs into outputs. This high ranking is partly due to a much higher ranking in innovation outputs (50th) compared to inputs (94th).

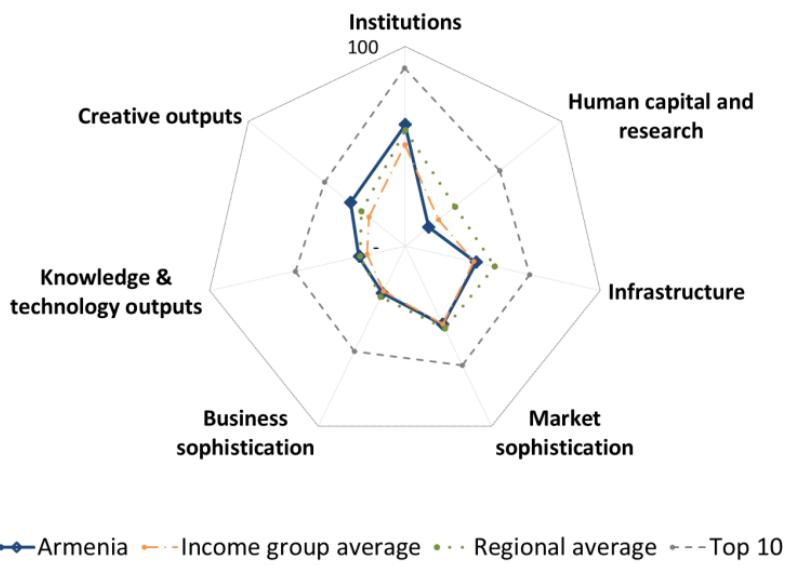
8th Armenia is ranked 8th among the 30 lower-middle-income economies in the GII 2018.

10th Armenia is ranked 10th among the 19 countries in Northern Africa and Western Asia.

¹ Note that year-on-year comparisons of the GII ranks are imperfect and influenced by changes in the GII model and data availability.

Benchmarking Armenia to other lower-middle-income countries and the Northern Africa and Western Asia region

Armenia's scores by GII area



Lower-middle-income countries

Armenia has high scores in 6 out of the 7 GII areas – **Institutions, Infrastructure, Market Sophistication, Business Sophistication, Knowledge & Technology Outputs** and **Creative Outputs**, in which it scores above the average of the lower-middle-income group.

Top scores in areas such as *Regulatory environment, Information & Communication Technologies (ICTs), Trade, competition & market scale, Knowledge workers, Knowledge creation, and Intangible assets* are behind these high rankings.

Northern Africa and Western Asia region

Compared to other countries in the Northern Africa and Western Asia region, Armenia performs above average in 3 out of the 7 GII areas: Institutions, Knowledge & Technology Outputs, and Creative Outputs.

Armenia's innovation profile

Strengths

- The leading GII strength for Armenia is the **Innovation Efficiency Ratio**, in which it ranks 15th in the world.
- Most other strengths for the country are on the **innovation output** side of the GII.
- In **Knowledge & Technology Outputs** (62nd), the area *Knowledge creation* (38th) is marked as a strength for Armenia. At the indicator level, the country performs strongly in *Patents by origin* (23rd), *Utility models by origin* (21st), *Scientific & technical articles* (15th), and *ICT services exports* (18th).
- In **Creative Outputs** (48th), the top-ranked GII area for Armenia, one of its three components – *Online creativity* (35th) – stands out as a strength. The country also exhibits strong ranking in the indicators *Trademarks by origin* (20th), *National feature films* (8th), *Printing & other media* (22nd), and *Wikipedia edits* (6th).

- On the **innovation input** side, Armenia exhibits strong performance in two indicators: *Ease of starting a business* (13th) in **Institutions** (67th) and *Microfinance gross loans* (21st) in **Market Sophistication** (81st).

Weaknesses

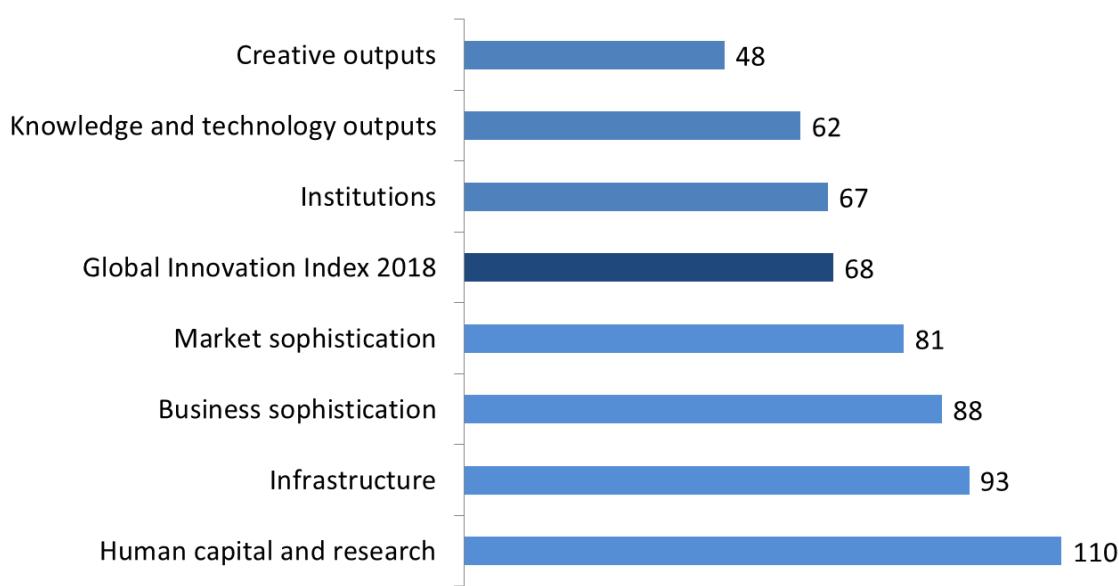
- Most relative weaknesses for Armenia are concentrated on the **innovation input** side, and especially in **Human Capital & Research** (110th).
- Human Capital & Research** (110th), the lowest-ranked GII area for Armenia, is signaled as a weakness. Here the country performs weakly in the area *Education* (117th) and in the indicators *Expenditure on education* (107th), *Graduates in science & engineering* (90th), *Global R&D companies expenditures* (40th), and *Quality of universities* (78th).
- GII weaknesses also appear in **Infrastructure** (93rd), where Armenia shows a relatively weak performance in the area *General infrastructure* (113th) and in its indicator *Logistics performance* (120th).
- The indicators *Market capitalization* (86th) and *Domestic market scale* (113th) are signaled as GII weaknesses in **Market Sophistication** (81st).
- In **Business Sophistication** (88th), only one indicator – *Firms offering formal training* (82nd) – present a relatively weak ranking for Armenia.
- Among **innovation outputs**, Armenia demonstrates weak performance only within **Knowledge & Technology Outputs** (62nd) in two indicators – *ISO 9001 quality certificates* (108th) and *High- & medium-high-tech manufactures* (95th).

The following figure presents a summary of Armenia's ranks in the 7 GII areas, as well as the overall rank in the GII 2018.

Armenia's rank in the GII 2018 and the 7 GII areas

Rank 1 is the highest possible in each pillar

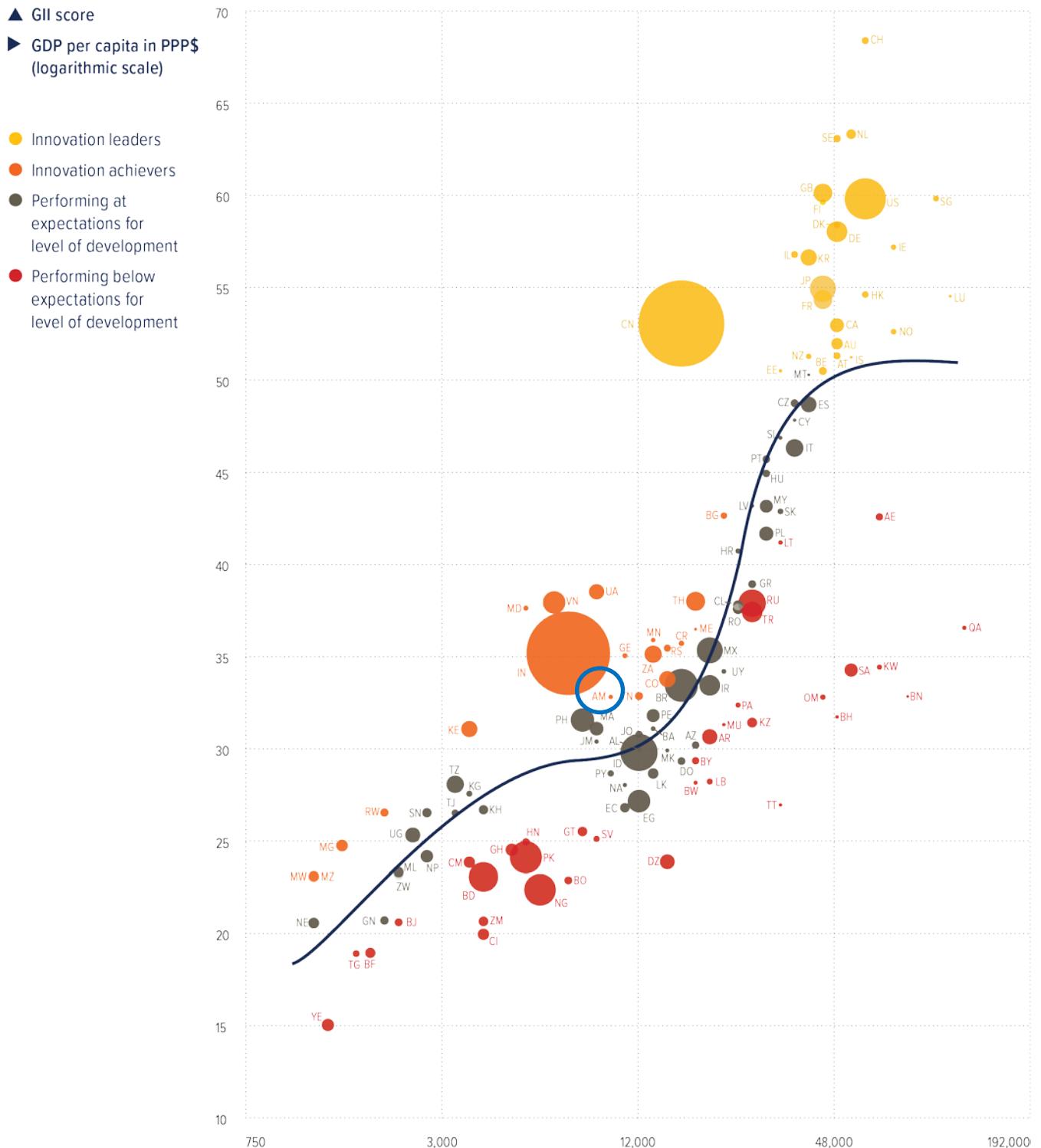
Total number of countries: 126



Expected vs. Observed Innovation Performance

The GII bubble chart shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The depicted trendline gives an indication of the expected innovation performance at different levels of income. Countries located above the trendline are performing better than what would be expected based on their income level. Countries below the line are Innovation Under-performers relative to GDP.

Relative to GDP, Armenia performs above its expected level of development.



Missing and Outdated Data

More and better data improves the ability of a country to understand its strengths and weaknesses and give policymakers greater capacity to plan and adapt public policies accordingly. The GII 2018 covers 126 countries that complied with the minimum indicator coverage of 35 indicators in the Innovation Input Sub-Index (66%) and 18 indicators in the Innovation Output Sub-Index (66%).

The following tables show data for Armenia that is not available or that is outdated.

Missing Data

Code	Indicator	Country Year	Model Year	Source
2.1.4	PISA scales in reading, maths & science	n/a	2015	OECD PISA
2.1.5	Pupil-teacher ratio, secondary	n/a	2016	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	n/a	2016	UNESCO Institute for Statistics
4.2.3	Venture capital deals/bn PPP\$ GDP	n/a	2017	Thomson Reuters, Thomson One Banker Private Equity, SDC Platinum
5.1.3	GERD performed by business, % GDP	n/a	2016	UNESCO Institute for Statistics
5.1.4	GERD financed by business, %	n/a	2015	UNESCO Institute for Statistics
5.2.4	JV–strategic alliance deals/bn PPP\$ GDP	n/a	2017	Thomson Reuters, Thomson One Banker Private Equity, SDC Platinum
5.3.1	Intellectual property payments, % total trade	n/a	2016	WTO, Trade in Commercial Services
5.3.5	Research talent, % in business enterprise	n/a	2016	UNESCO Institute for Statistics
6.3.1	Intellectual property receipts, % total trade	n/a	2016	WTO, Trade in Commercial Services
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	2016	PwC's Global Entertainment and Media Outlook, 2017–2021

Outdated Data

Code	Indicator	Country Year	Model Year	Source
2.1.3	School life expectancy, years	2015	2016	UNESCO Institute for Statistics
4.2.2	Market capitalization, % GDP	2012	2016	World Bank, World Development Indicators



Output rank	Input rank	Income	Region	Efficiency ratio	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2017 rank
50	94	Lower-middle	NAWA	15 ●	2.9	27.2	9,455.9	59
				Score/Value	Rank		Score/Value	Rank
 Institutions	60.8	67 ◆	 Business sophistication	26.1	88			
1.1 Political environment.....	44.6	83	5.1 Knowledge workers.....	35.1	65			
1.1.1 Political stability & safety*.....	50.7	94	5.1.1 Knowledge-intensive employment, %.....	29.8	46	◆		
1.1.2 Government effectiveness*.....	41.5	77	5.1.2 Firms offering formal training, % firms.....	16.2	82	○		
1.2 Regulatory environment.....	69.1	56 ◆	5.1.3 GERD performed by business, % GDP.....	n/a	n/a			
1.2.1 Regulatory quality*	50.5	57 ◆	5.1.4 GERD financed by business, %	n/a	n/a			
1.2.2 Rule of law*	41.0	68	5.1.5 Females employed w/advanced degrees, %.....	14.5	42			
1.2.3 Cost of redundancy dismissal, salary weeks	13.0	43	5.2 Innovation linkages .....	.211	99			
1.3 Business environment.....	68.7	64 ◆	5.2.1 University/industry research collaboration ^t	37.2	85			
1.3.1 Ease of starting a business*.....	94.5	13 ●◆	5.2.2 State of cluster development ^t	40.7	86			
1.3.2 Ease of resolving insolvency*.....	43.0	86	5.2.3 GERD financed by abroad, % .....	.18	80			
 Human capital & research	15.2	110 ○	5.2.4 JV-strategic alliance deals/bn PPP\$ GDP	n/a	n/a			
2.1 Education.....	26.3	117 ○	5.2.5 Patent families 2+ offices/bn PPP\$ GDP .....	.01	60			
2.1.1 Expenditure on education, % GDP	2.8	107 ○◆	5.3 Knowledge absorption.....	21.9	94			
2.1.2 Government funding/pupil, secondary, % GDP/cap.....	14.5	75	5.3.1 Intellectual property payments, % total trade.....	n/a	n/a			
2.1.3 School life expectancy, years ^d	13.0	76	5.3.2 High-tech net imports, % total trade	5.5	104			
2.1.4 PISA scales in reading, maths & science	n/a	n/a	5.3.3 ICT services imports, % total trade .....	.06	92			
2.1.5 Pupil-teacher ratio, secondary	n/a	n/a	5.3.4 FDI net inflows, % GDP .....	.28	58			
2.2 Tertiary education	17.7	99	5.3.5 Research talent, % in business enterprise	n/a	n/a			
2.2.1 Tertiary enrolment, % gross.....	51.1	51 ◆	 Knowledge & technology outputs	23.5	62			
2.2.2 Graduates in science & engineering, %.....	11.3	90 ○◆	6.1 Knowledge creation.....	24.8	38 ●			
2.2.3 Tertiary inbound mobility, %.....	4.1	51	6.1.1 Patents by origin/bn PPP\$ GDP	5.0	23 ●◆			
2.3 Research & development (R&D).....	1.7	95	6.1.2 PCT patents by origin/bn PPP\$ GDP .....	.02	52			
2.3.1 Researchers, FTE/mn pop	n/a	n/a	6.1.3 Utility models by origin/bn PPP\$ GDP .....	.12	21 ●			
2.3.2 Gross expenditure on R&D, % GDP	0.2	86	6.1.4 Scientific & technical articles/bn PPP\$ GDP.....	25.7	15 ●◆			
2.3.3 Global R&D companies, top 3, mn US\$.....	0.0	40 ○◆	6.1.5 Citable documents H index.....	.98	67			
2.3.4 QS university ranking, average score top 3*	0.0	78 ○◆	6.2 Knowledge impact	23.3	106			
 Infrastructure	36.5	93	6.2.1 Growth rate of PPP\$ GDP/worker, %	(0.6)	93			
3.1 Information & communication technologies (ICTs)	51.2	82	6.2.2 New businesses/th pop. 15–64.....	.17	55			
3.1.1 ICT access*	65.2	65 ◆	6.2.3 Computer software spending, % GDP .....	.01	86			
3.1.2 ICT use*	44.2	72 ◆	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP .....	.11	108 ○			
3.1.3 Government's online service*.....	42.8	96	6.2.5 High- & medium-high-tech manufactures, %	0.0	95 ○◆			
3.1.4 E-participation*	52.5	82	6.3 Knowledge diffusion	22.3	49			
3.2 General infrastructure.....	24.4	113 ○	6.3.1 Intellectual property receipts, % total trade	n/a	n/a			
3.2.1 Electricity output, kWh/cap	2,582.5	70 ◆	6.3.2 High-tech net exports, % total trade .....	.05	79			
3.2.2 Logistics performance*	6.6	120 ○◆	6.3.3 ICT services exports, % total trade .....	.43	18 ●			
3.2.3 Gross capital formation, % GDP	21.0	76	6.3.4 FDI net outflows, % GDP .....	.03	77			
3.3 Ecological sustainability.....	33.9	80	 Creative outputs	35.0	48 ◆			
3.3.1 GDP/unit of energy use	7.6	79	7.1 Intangible assets	44.2	57			
3.3.2 Environmental performance*	62.1	56 ◆	7.1.1 Trademarks by origin/bn PPP\$ GDP	91.2	20 ●			
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP.....	0.3	106	7.1.2 Industrial designs by origin/bn PPP\$ GDP .....	.09	70			
 Market sophistication	43.5	81	7.1.3 ICTs & business model creation ^t	54.8	88			
4.1 Credit	38.5	59	7.1.4 ICTs & organizational model creation ^t	54.3	58			
4.1.1 Ease of getting credit*	70.0	38	7.2 Creative goods & services	29.9	41 ◆			
4.1.2 Domestic credit to private sector, % GDP	48.8	70	7.2.1 Cultural & creative services exports, % total trade .....	.04	32 ◆			
4.1.3 Microfinance gross loans, % GDP	1.6	21 ●	7.2.2 National feature films/mn pop. 15–69	16.6	8 ●◆			
4.2 Investment.....	39.1	75	7.2.3 Entertainment & Media market/th pop. 15–69	n/a	n/a			
4.2.1 Ease of protecting minority investors*	58.3	61	7.2.4 Printing & other media, % manufacturing .....	.17	22 ●			
4.2.2 Market capitalization, % GDP ^d	1.4	86 ○◆	7.2.5 Creative goods exports, % total trade .....	.03	63			
4.2.3 Venture capital deals/bn PPP\$ GDP	n/a	n/a	7.3 Online creativity	21.5	35 ●◆			
4.3 Trade, competition, & market scale	52.9	93	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 .....	.28	66			
4.3.1 Applied tariff rate, weighted mean, %	2.2	52 ◆	7.3.2 Country-code TLDs/th pop. 15–69 .....	.44	54 ◆			
4.3.2 Intensity of local competition ^t .....	.691	63	7.3.3 Wikipedia edits/mn pop. 15–69	102.5	6 ●◆			
4.3.3 Domestic market scale, bn PPP\$	27.2	113 ○◆	7.3.4 Mobile app creation/bn PPP\$ GDP .....	.97	59			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; ^t a survey question.

○ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data, at <http://globalinnovationindex.org>.

Square brackets indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level; see page 75 of this appendix for details.