

GLOBAL INNOVATION INDEX 2018

Turkey

50th Turkey is ranked 50th in the GII 2018, dropping 7 positions from the previous year.

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

Turkey's ranking over time

	GII	Input	Output	Efficiency
2018	50	62	43	25
2017	43	68	36	9
2016	42	59	37	13

- This year Turkey gains 6 positions in innovation inputs, reaching the 62nd position.
- In innovation outputs Turkey exhibits a downward trend, ranking 43rd and dropping from the 36th and 37th position in the past two years.
- Turkey's rank in the Innovation Efficiency Ratio deteriorates this year, ranking 25th, down from the 9th position in 2017. Relative to its GII ranking (50th), Turkey presents a high rank in the Efficiency Ratio, which is partly influenced by the higher ranking in innovation outputs (43rd) compared to inputs (62th).

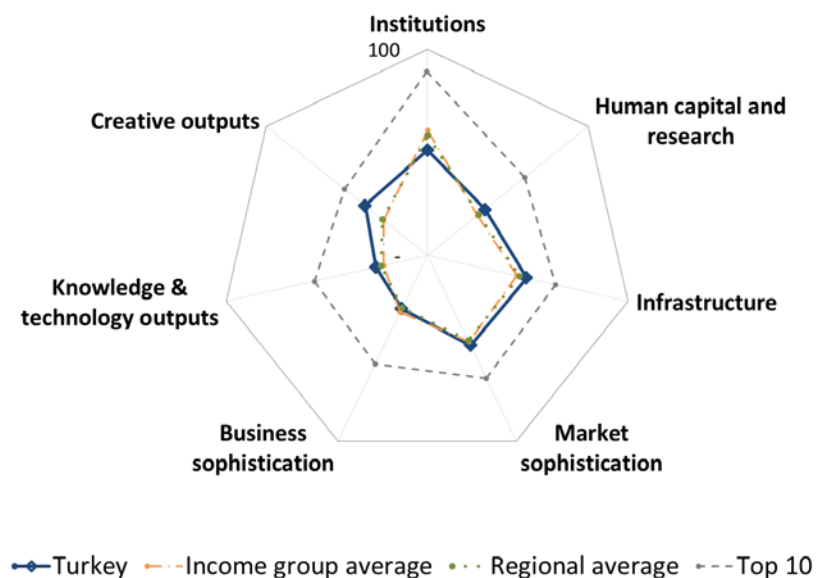
8th Turkey is ranked 8th among the 34 upper-middle-income economies in the GII 2018.

4th Turkey is ranked 4th 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 Turkey to other upper-middle-income countries and the Northern Africa and Western Asia region

Turkey's scores by GII area



Upper-middle-income countries

Turkey has high scores in 5 of the 7 GII areas – **Human Capital & Research, Infrastructure, Market Sophistication, Knowledge & Technology Outputs, and Creative Outputs**, in which it scores above the average of the upper-middle-income group.

Top scores in areas such as *Education, Information & Communication Technologies (ICTs), Trade, competition & market scale, Knowledge impact, 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, Turkey performs above-average in 6 of the 7 GII areas: **Human Capital & Research, Infrastructure, Market Sophistication, Business Sophistication, Knowledge & Technology Outputs, and Creative Outputs**.

Turkey's innovation profile

Strengths

- Turkey's strengths are scattered across various GII areas.
- In **Market Sophistication** (55th), the area *Trade, competition & market scale* (9th) and two of its three indicators – *Intensity of local competition* (8th) and *Domestic market scale* (13th) – are highlighted as strengths.
- In **Human Capital & Research** (49th), Turkey demonstrates strengths in indicators *School life expectancy* (14th) and *Tertiary enrolment*, in which it is number 3 in the world.
- Other GII strengths on the innovation input side are found in the indicator *GDP per unit of energy use* (16th) within **Infrastructure** (52nd). Indicator *High-tech imports* (21st) is a strength within **Business Sophistication** (72nd).
- Among **innovation outputs**, most of the GII strengths for Turkey lie in **Creative Outputs** (39th), the top-ranked GII area for Turkey. In particular, Turkey presents a strong

performance in the area *Intangible assets* (11th) as well as indicators *Trademarks by origin* (14th), *Creative goods exports* (18th), and *Industrial designs by origin* – which positions 1st in the world.

- In **Knowledge & Technology Outputs** (52nd), Turkey performs strongly in the indicator *Computer software spending* (20th).

Weaknesses

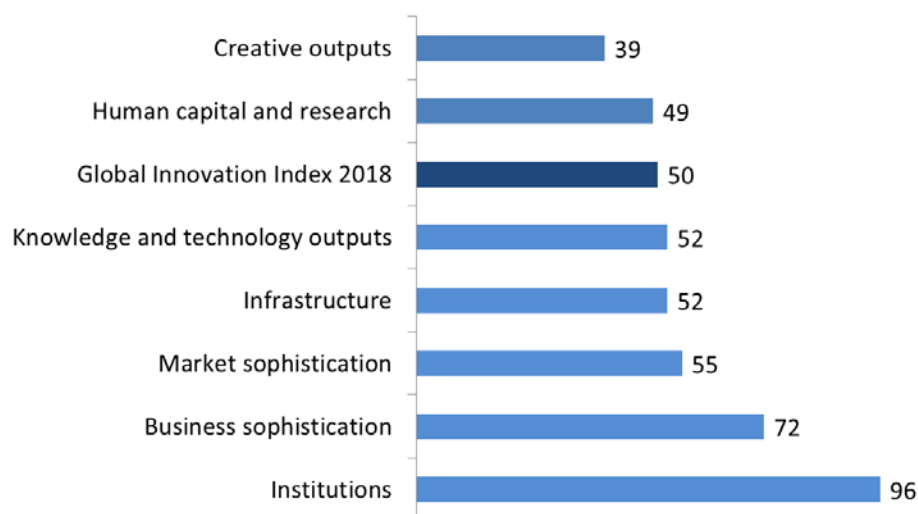
- On the **innovation input** side, three GII weaknesses are exhibited in **Institutions** (96th), where Turkey performs relatively weakly in indicators *Political stability & safety* (124th), *Cost of redundancy dismissal* (111th), and *Ease of resolving insolvency* (112th).
- In **Human Capital & Research** (49th), only one GII weakness is found in the indicator *Government funding per pupil* (82nd).
- Relative weaknesses also appear in other two **innovation input** areas: **Market Sophistication** (55th) and **Business Sophistication** (72nd). In the former, Turkey shows relative weaknesses in indicators *Microfinance gross loans* (77th) and *Venture capital deals* (78th). In the latter, weak indicators are *R&D financed by abroad* (90th) and *ICT services imports* (121st).
- Among **innovation outputs**, Turkey demonstrates relative weaknesses only in two indicators: *ICT services exports* (122nd) within **Knowledge & Technology Outputs** (52nd) and *Cultural & creative services exports* (75th) within **Creative Outputs** (39th).

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

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

Rank 1 is the highest possible in each pillar

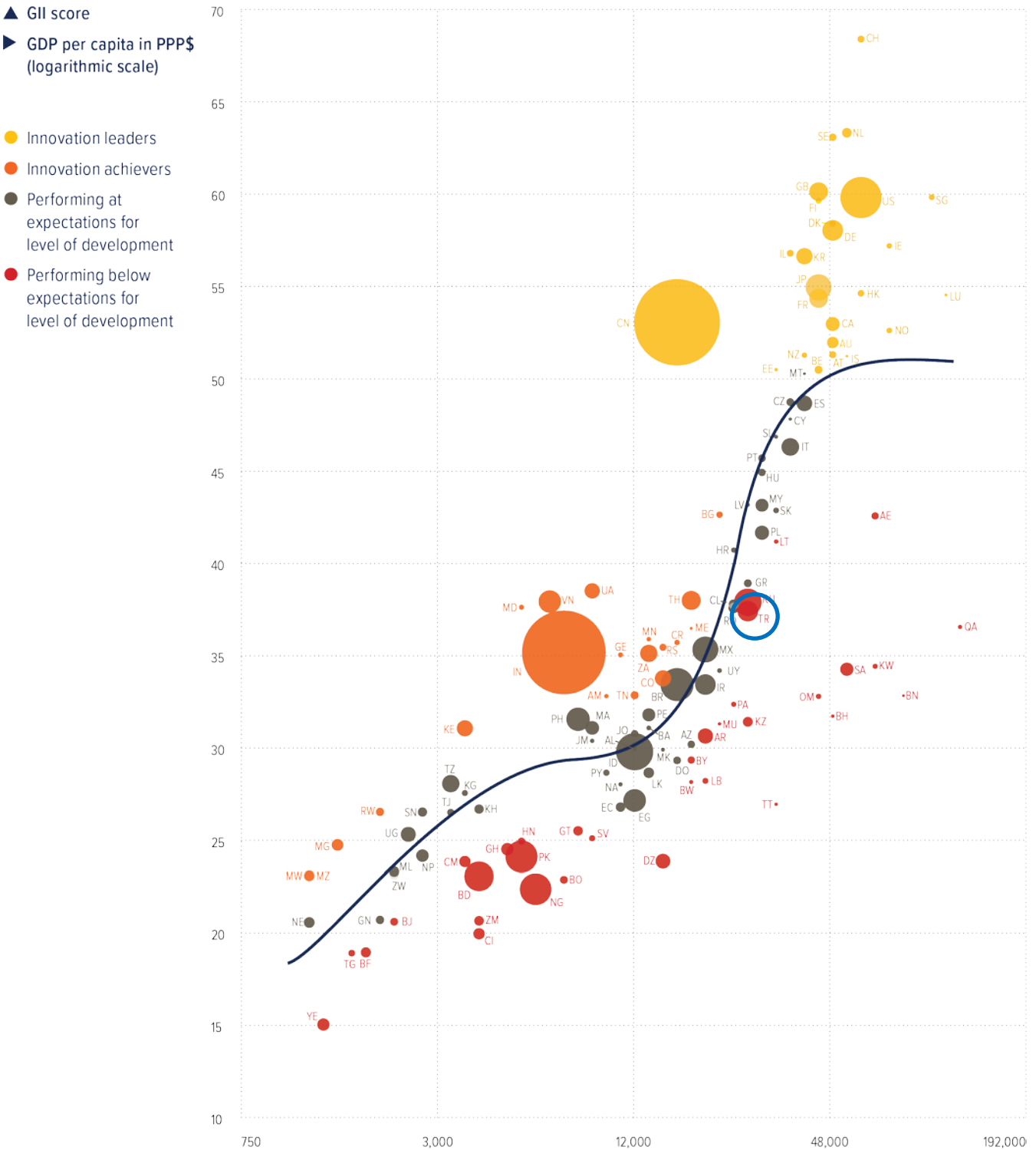
Total number of countries: 126



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, Turkey performs below 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 Turkey that is not available or that is outdated.

Missing Data








Code	Indicator	Country Year	Model Year	Source
6.3.1	Intellectual property receipts, % total trade	n/a	2016	WTO, Trade in Commercial Services

Outdated Data

Code	Indicator	Country Year	Model Year	Source
2.1.3	School life expectancy, years	2015	2016	UNESCO Institute for Statistics (UIS)
2.1.5	Pupil-teacher ratio, secondary	2015	2016	UNESCO Institute for Statistics (UIS)
2.2.1	Tertiary enrolment, % gross	2015	2016	UNESCO Institute for Statistics (UIS)
2.2.2	Graduates in science & engineering, %	2014	2016	UNESCO Institute for Statistics (UIS)
2.2.3	Tertiary inbound mobility, %	2015	2016	UNESCO Institute for Statistics (UIS)
2.3.1	Researchers, FTE/mn pop.	2015	2016	UNESCO Institute for Statistics (UIS)
2.3.2	Gross expenditure on R&D, % GDP	2015	2016	UNESCO Institute for Statistics (UIS)
4.1.3	Microfinance gross loans, % GDP	2015	2016	Microfinance Information Exchange, Mix Market
5.1.3	GERD performed by business, % GDP	2015	2016	UNESCO Institute for Statistics (UIS)
5.3.5	Research talent, % in business enterprise	2015	2016	UNESCO Institute for Statistics (UIS)



Output rank	Input rank	Income	Region	Efficiency ratio	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2017 rank
43	62	Upper-middle	NAWA	25	80.7	2,132.7	26,892.9	43

		Score/Value	Rank			Score/Value	Rank
	Institutions	51.0	96 ◊		Business sophistication	28.7	72
1.1	Political environment.....	37.0	102 ◊	5.1	Knowledge workers.....	33.4	71
1.1.1	Political stability & safety*.....	18.4	124 ◊	5.1.1	Knowledge-intensive employment, %.....	21.0	72
1.1.2	Government effectiveness*.....	46.4	68	5.1.2	Firms offering formal training, % firms.....	28.4	52
1.2	Regulatory environment.....	55.6	97	5.1.3	GERD performed by business, % GDP ^②	0.4	36
1.2.1	Regulatory quality*.....	49.1	60	5.1.4	GERD financed by business, %.....	50.1	19 ◆
1.2.2	Rule of law*.....	39.5	71	5.1.5	Females employed w/advanced degrees, %.....	8.6	70
1.2.3	Cost of redundancy dismissal, salary weeks.....	29.8	111 ◊	5.2	Innovation linkages.....	20.8	102
1.3	Business environment.....	60.4	97	5.2.1	University/industry research collaboration [†]	41.2	63
1.3.1	Ease of starting a business*.....	87.6	66	5.2.2	State of cluster development [†]	47.0	56
1.3.2	Ease of resolving insolvency*.....	33.3	112 ◊	5.2.3	GERD financed by abroad, %.....	1.1	90 ◊
				5.2.4	JV—strategic alliance deals/bn PPP\$ GDP.....	0.0	92
				5.2.5	Patent families 2+ offices/bn PPP\$ GDP.....	0.2	42
	Human capital & research	35.8	49	5.3	Knowledge absorption.....	31.9	57
2.1	Education.....	42.5	82	5.3.1	Intellectual property payments, % total trade.....	0.4	71
2.1.1	Expenditure on education, % GDP.....	4.4	69	5.3.2	High-tech net imports, % total trade.....	12.3	21 ●
2.1.2	Government funding/pupil, secondary, % GDP/cap.....	11.2	82 ◊	5.3.3	ICT services imports, % total trade.....	0.1	121 ◊
2.1.3	School life expectancy, years ^②	17.4	14 ●◆	5.3.4	FDI net inflows, % GDP.....	1.6	88
2.1.4	PISA scales in reading, maths & science.....	424.8	49	5.3.5	Research talent, % in business enterprise ^②	47.6	25 ◆
2.1.5	Pupil-teacher ratio, secondary ^②	18.5	79				
2.2	Tertiary education.....	35.9	49		Knowledge & technology outputs	25.7	52
2.2.1	Tertiary enrolment, % gross ^②	95.4	3 ●◆	6.1	Knowledge creation.....	22.8	41
2.2.2	Graduates in science & engineering, % ^②	20.2	58	6.1.1	Patents by origin/bn PPP\$ GDP.....	3.4	30
2.2.3	Tertiary inbound mobility, % ^②	1.2	78	6.1.2	PCT patents by origin/bn PPP\$ GDP.....	0.6	32
2.3	Research & development (R&D).....	28.9	36 ◆	6.1.3	Utility models by origin/bn PPP\$ GDP.....	1.7	16
2.3.1	Researchers, FTE/mn pop. ^②	1,215.8	46	6.1.4	Scientific & technical articles/bn PPP\$ GDP.....	8.3	59
2.3.2	Gross expenditure on R&D, % GDP ^②	0.9	38	6.1.5	Citable documents H index.....	25.9	35 ◆
2.3.3	Global R&D companies, top 3, mn US\$.....	52.5	27 ◆	6.2	Knowledge impact.....	38.9	53
2.3.4	QS university ranking, average score top 3*.....	28.2	41	6.2.1	Growth rate of PPP\$ GDP/worker, %.....	2.2	33
				6.2.2	New businesses/th pop. 15–64.....	1.2	66
	Infrastructure	49.3	52	6.2.3	Computer software spending, % GDP.....	0.5	20 ●◆
3.1	Information & communication technologies (ICTs).....	58.8	65	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP.....	3.5	73
3.1.1	ICT access*.....	63.0	67	6.2.5	High- & medium-high-tech manufactures, %.....	0.3	41
3.1.2	ICT use*.....	49.2	67	6.3	Knowledge diffusion.....	15.5	90
3.1.3	Government's online service*.....	60.1	64	6.3.1	Intellectual property receipts, % total trade.....	n/a	n/a
3.1.4	E-participation*.....	62.7	59	6.3.2	High-tech net exports, % total trade.....	1.3	63
3.2	General infrastructure.....	48.7	33 ◆	6.3.3	ICT services exports, % total trade.....	0.1	122 ◊
3.2.1	Electricity output, kWh/cap.....	3,493.8	56	6.3.4	FDI net outflows, % GDP.....	0.6	63
3.2.2	Logistics performance*.....	62.9	33 ◆				
3.2.3	Gross capital formation, % GDP.....	29.6	21		Creative outputs	38.7	39 ◆
3.3	Ecological sustainability.....	40.5	54	7.1	Intangible assets.....	60.1	11 ●◆
3.3.1	GDP/unit of energy use.....	13.7	16 ●	7.1.1	Trademarks by origin/bn PPP\$ GDP.....	97.2	14 ●
3.3.2	Environmental performance*.....	53.0	87	7.1.2	Industrial designs by origin/bn PPP\$ GDP.....	19.8	1 ●◆
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP.....	0.9	70	7.1.3	ICTs & business model creation [†]	63.2	53
				7.1.4	ICTs & organizational model creation [†]	50.8	75
	Market sophistication	48.4	55	7.2	Creative goods & services.....	23.5	60
4.1	Credit.....	28.0	95	7.2.1	Cultural & creative services exports, % total trade.....	0.0	75 ◊
4.1.1	Ease of getting credit*.....	55.0	70	7.2.2	National feature films/mn pop. 15–69.....	2.5	58
4.1.2	Domestic credit to private sector, % GDP.....	69.9	45	7.2.3	Entertainment & Media market/th pop. 15–69.....	6.2	43
4.1.3	Microfinance gross loans, % GDP ^②	0.0	77 ◊	7.2.4	Printing & other media, % manufacturing.....	0.9	62
4.2	Investment.....	38.4	77	7.2.5	Creative goods exports, % total trade.....	3.1	18 ●◆
4.2.1	Ease of protecting minority investors*.....	71.7	20	7.3	Online creativity.....	10.9	56
4.2.2	Market capitalization, % GDP.....	21.8	61	7.3.1	Generic top-level domains (TLDs)/th pop. 15–69.....	11.8	36
4.2.3	Venture capital deals/bn PPP\$ GDP.....	0.0	78 ◊	7.3.2	Country-code TLDs/th pop. 15–69.....	2.0	66
4.3	Trade, competition, & market scale.....	78.9	9 ●◆	7.3.3	Wikipedia edits/mn pop. 15–69.....	4.4	85
4.3.1	Applied tariff rate, weighted mean, %.....	2.7	60	7.3.4	Mobile app creation/bn PPP\$ GDP.....	26.8	36 ◆
4.3.2	Intensity of local competition [†]	81.3	8 ●◆				
4.3.3	Domestic market scale, bn PPP\$.....	2,132.7	13 ●◆				

NOTES: ● indicates a strength; ◊ a weakness; ◆ an income group strength; ◊ an income group weakness; * an index; † a survey question.

② 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.