GLOBAL INNOVATION INDEX 2020

TURKEY

51st Turkey ranks 51st among the 131 economies featured in the GII 2020.

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 Turkey 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 Turkey in the GII 2020 is between ranks 42 and 52.

Rankings of Turkey (2018–2020)

	GII	Innovation inputs	Innovation outputs
2020	51	52	53
2019	49	56	49
2018	50	62	43

- Turkey performs better in innovation inputs than innovation outputs in 2020.
- This year Turkey ranks 52nd in innovation inputs, higher than last year and higher compared to 2018.
- As for innovation outputs, Turkey ranks 53rd. This position is lower than last year and lower compared to 2018.

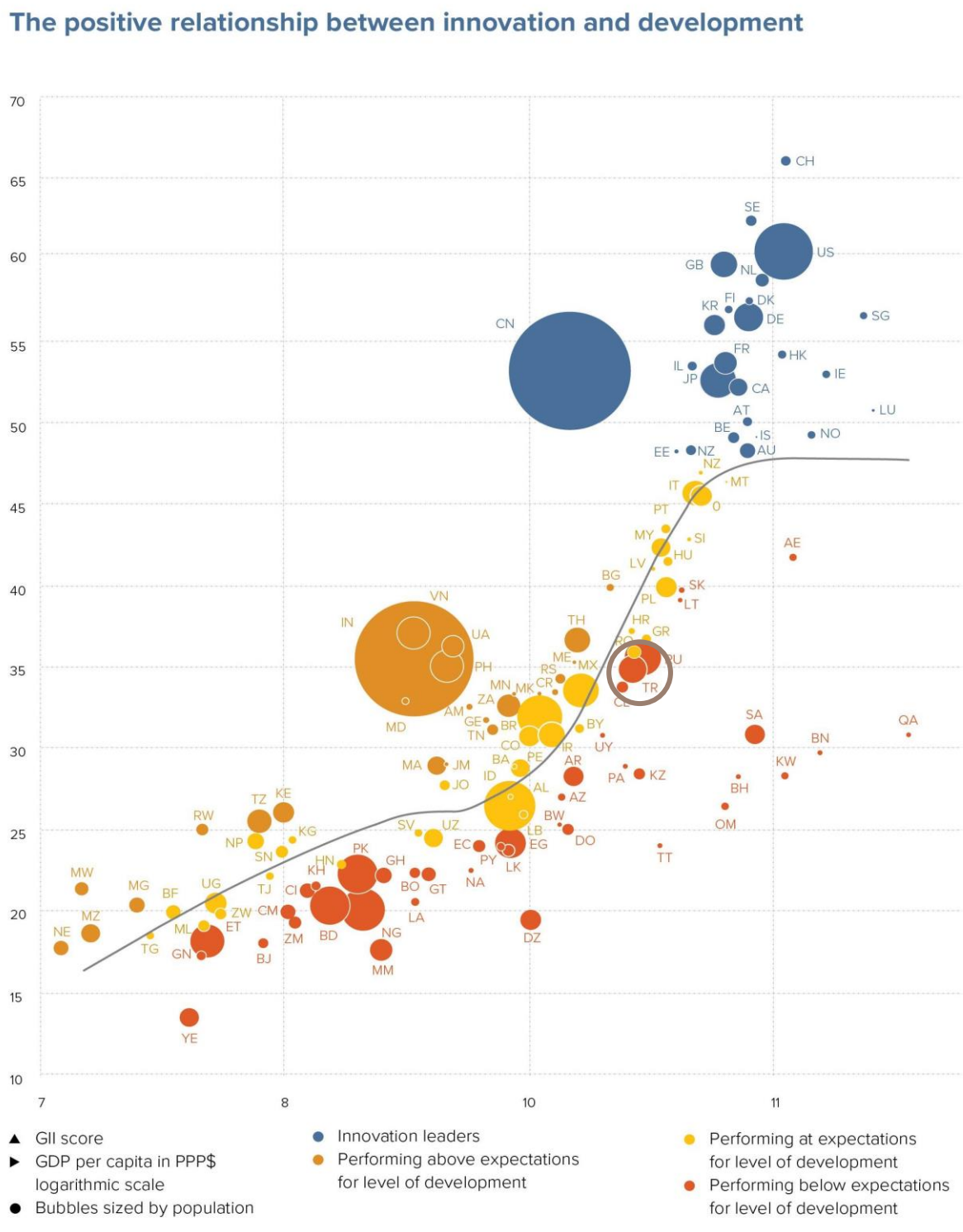
8th Turkey ranks 8th among the 37 upper middle-income group economies.

4th Turkey ranks 4th 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, Turkey's performance is below expectations for its level of development.

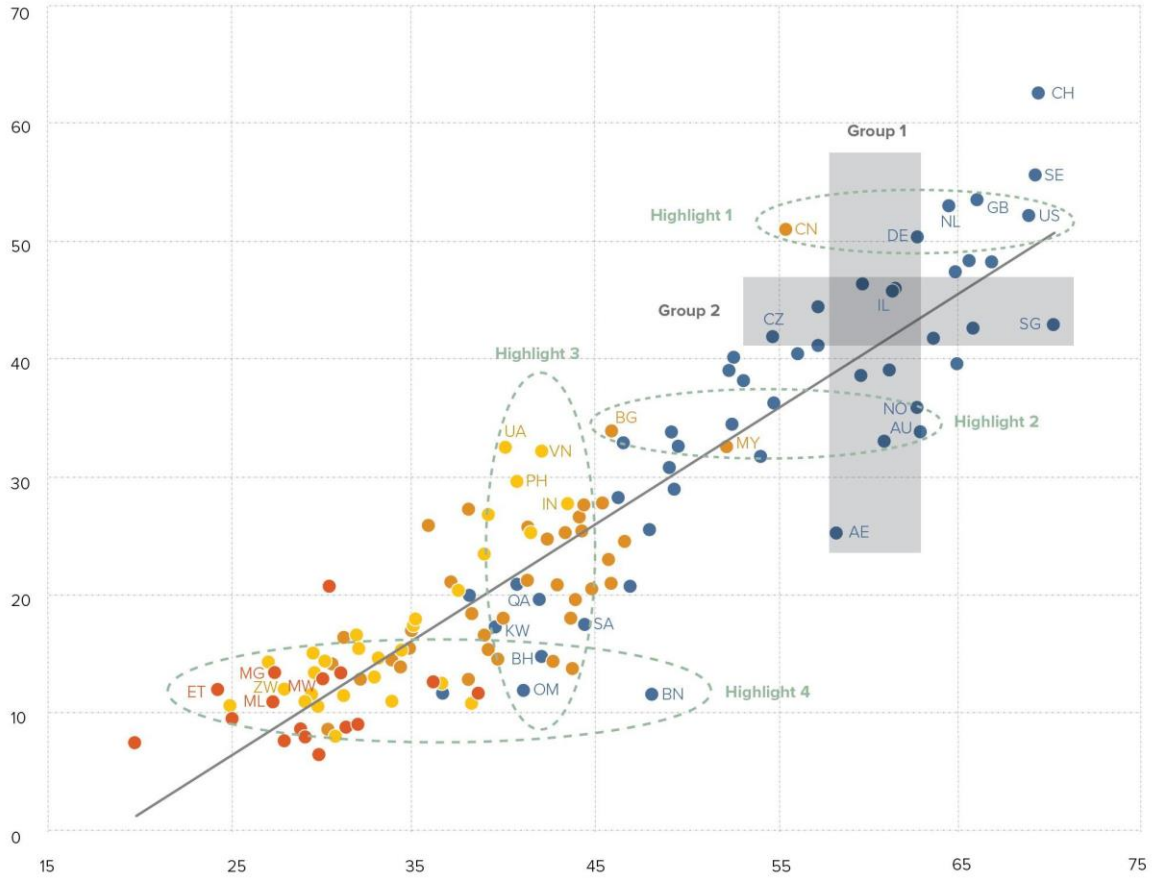


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

Turkey produces less innovation outputs relative to its level of innovation investments.

Innovation input to output performance, 2020



▲ Output score
► Input score

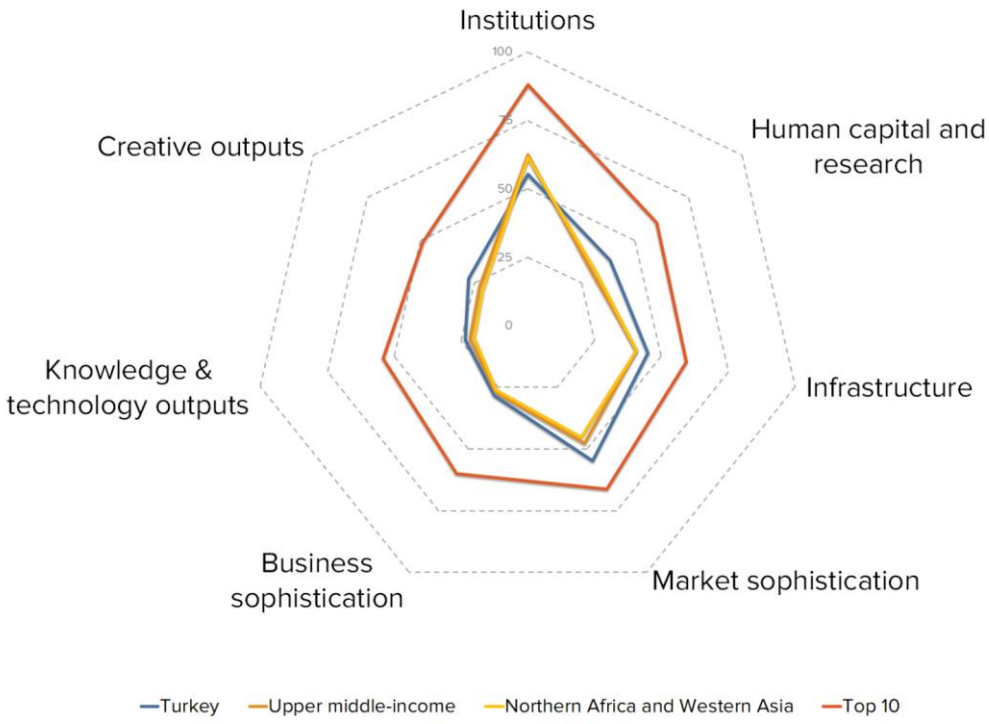
● High income group
● Upper middle-income group
● Lower middle-income group
● Low income group

— Fitted values

AU	Australia	IN	India	NL	Netherlands	CH	Switzerland
BH	Bahrain	IL	Israel	NO	Norway	UA	Ukraine
BN	Brunei Darussalam	KW	Kuwait	OM	Oman	AE	United Arab Emirates
BG	Bulgaria	MG	Madagascar	PH	Philippines	GB	United Kingdom
CN	China	MW	Malawi	QA	Qatar	US	United States of America
CZ	Czech Republic	ML	Mali	SA	Saudi Arabia	VN	Viet Nam
ET	Ethiopia	MY	Malaysia	SG	Singapore	ZW	Zimbabwe
DE	Germany			SE	Sweden		

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

Turkey's scores in the seven GII pillars



Upper middle-income group economies

Turkey has high scores in all GII pillars.

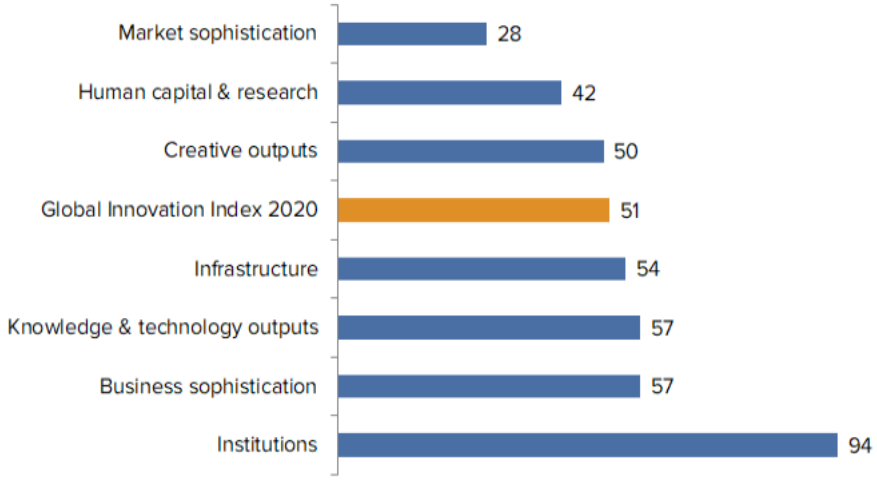
Northern Africa and Western Asia

Compared to other economies in Northern Africa and Western Asia, Turkey performs:

- above average in six out of the seven GII pillars: Human capital & research, Infrastructure, Market sophistication, Business sophistication, Knowledge & technology outputs and Creative outputs; and
- below average in one out of the seven GII pillars: Institutions.

OVERVIEW OF TURKEY RANKINGS IN THE SEVEN GII AREAS

Turkey performs best in Market sophistication and its weakest performance is in Institutions.



*The highest possible ranking in each pillar is 1.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Turkey in the GII 2020.

Strengths

Code	Indicator name	Rank
2.1	Education	7
2.1.3	School life expectancy, years	12
3.3.1	GDP/unit of energy use	16
4.2.1	Ease of protecting minority investors*	21
4.3	Trade, competition, and market scale	7
4.3.2	Intensity of local competition†	6
4.3.3	Domestic market scale, bn PPP$	13
6.2.3	Computer software spending, % GDP	20
7.1.1	Trademarks by origin/bn PPP$ GDP	17
7.1.3	Industrial designs by origin/bn PPP$ GDP	6
7.2.5	Creative goods exports, % total trade	19
7.3.4	Mobile app creation/bn PPP$ GDP	19

Weaknesses

Code	Indicator name	Rank
1.2	Regulatory environment	108
1.2.3	Cost of redundancy dismissal, salary weeks	117
1.3.2	Ease of resolving insolvency*	104
4.1.3	Microfinance gross loans, % GDP	76
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	106
5.3.3	ICT services imports, % total trade	124
6.3.1	Intellectual property receipts, % total trade	90
6.3.3	ICT services exports, % total trade	124
7.1.4	ICTs & organizational model creation†	100
7.2.1	Cultural & creative services exports, % total trade	92
7.3.3	Wikipedia edits/mn pop. 15–69	101

NOTES: * indicates an index; † indicates a survey question. Strengths and weaknesses are listed for pillars and/or sub-pillars where the data minimum coverage (DMC) requirements were not met. For the sake of caution, these ranks are shown in square brackets [ ] in the country profile. This is to ensure that incomplete data coverage does not lead to erroneous conclusions being made about strengths or weaknesses, in particular about strong or weak sub-pillar rankings.

STRENGTHS

GII strengths for Turkey are found in five of the seven GII pillars.

- Human capital & research (42): shows strengths in the sub-pillar Education (7) and in the indicator School life expectancy (12).
- Infrastructure (54): demonstrates strengths in the indicator GDP/unit of energy use (16).
- Market sophistication (28): exhibits strengths in the sub-pillar Trade, competition, and market scale (7) and in the indicators Ease of protecting minority investors (21), Intensity of local competition (6) and Domestic market scale (13).
- Knowledge & technology outputs (57): reveals strengths in the indicator Computer software spending (20).
- Creative outputs (50): displays strengths in the indicators Trademarks by origin (17), Industrial designs by origin (6), Creative goods exports (19) and Mobile app creation (19).

WEAKNESSES

GII weaknesses for Turkey are found in five of the seven GII pillars.

- Institutions (94): exhibits weaknesses in the sub-pillar Regulatory environment (108) and in the indicators Cost of redundancy dismissal (117) and Ease of resolving insolvency (104).
- Market sophistication (28): shows weaknesses in the indicator Microfinance gross loans (76).
- Business sophistication (57): demonstrates weaknesses in the indicators JV–strategic alliance deals (106) and ICT services imports (124).
- Knowledge & technology outputs (57): displays weaknesses in the indicators Intellectual property receipts (90) and ICT services exports (124).
- Creative outputs (50): reveals weaknesses in the indicators ICTs & organizational model creation (100), Cultural & creative services exports (92) and Wikipedia edits (101).

TURKEY

GII 2020 rank

51

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2019 rank
53	52	Upper middle	NAWA	83.4	2,346.6	24,675.5	49

		Score/Value	Rank	
INSTITUTIONS		**55.4**	**94**	
1.1	**Political environment**	**54.4**	**77**	
1.1.1	Political and operational stability*	62.5	92	
1.1.2	Government effectiveness*	50.3	71	
1.2	**Regulatory environment**	**48.2**	**108**	○
1.2.1	Regulatory quality*	40.5	74	
1.2.2	Rule of law*	38.3	82	
1.2.3	Cost of redundancy dismissal, salary weeks	29.8	117	○ ◇
1.3	**Business environment**	**63.6**	**91**	
1.3.1	Ease of starting a business*	88.8	62	
1.3.2	Ease of resolving insolvency*	38.5	104	○ ◇
HUMAN CAPITAL & RESEARCH		**38.4**	**42**	◆
2.1	**Education**	**67.4**	**[7]**	
2.1.1	Expenditure on education, % GDP	n/a	n/a	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	18.0	12	● ◆
2.1.4	PISA scales in reading, maths, & science	462.5	41	
2.1.5	Pupil-teacher ratio, secondary	17.3	84	
2.2	**Tertiary education**	**21.5**	**91**	
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	20.2	73	
2.2.3	Tertiary inbound mobility, %	1.5	80	
2.3	**Research & development (R&D)**	**26.4**	**40**	◆
2.3.1	Researchers, FTE/mn pop.	1,379.4	46	
2.3.2	Gross expenditure on R&D, % GDP	1.0	39	
2.3.3	Global R&D companies, avg. exp. top 3, mn $US	45.9	33	◆
2.3.4	QS university ranking, average score top 3*	23.9	45	
INFRASTRUCTURE		**45.0**	**54**	
3.1	**Information & communication technologies (ICTs)**	**74.5**	**49**	
3.1.1	ICT access*	65.8	66	
3.1.2	ICT use*	57.5	61	
3.1.3	Government's online service*	88.9	27	◆
3.1.4	E-participation*	86.0	37	
3.2	**General infrastructure**	**28.8**	**57**	
3.2.1	Electricity output, kWh/mn pop	3,729.6	54	
3.2.2	Logistics performance*	50.5	46	◆
3.2.3	Gross capital formation, % GDP	25.6	47	
3.3	**Ecological sustainability**	**31.8**	**55**	
3.3.1	GDP/unit of energy use	13.9	16	●
3.3.2	Environmental performance*	42.6	84	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.1	57	
MARKET SOPHISTICATION		**54.7**	**28**	
4.1	**Credit**	**41.8**	**66**	
4.1.1	Ease of getting credit*	75.0	34	
4.1.2	Domestic credit to private sector, % GDP	68.5	46	
4.1.3	Microfinance gross loans, % GDP	0.0	76	○
4.2	**Investment**	**42.9**	**44**	
4.2.1	Ease of protecting minority investors*	76.0	21	●
4.2.2	Market capitalization, % GDP	22.0	54	
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	n/a	
4.3	**Trade, competition, and market scale**	**79.3**	**7**	● ◆
4.3.1	Applied tariff rate, weighted avg., %	2.5	62	
4.3.2	Intensity of local competition+	80.5	6	● ◆
4.3.3	Domestic market scale, bn PPP$	2,346.6	13	● ◆

		Score/Value	Rank	
BUSINESS SOPHISTICATION		**28.2**	**57**	
5.1	**Knowledge workers**	**34.2**	**59**	
5.1.1	Knowledge-intensive employment, %	21.6	73	
5.1.2	Firms offering formal training, %	30.7	48	
5.1.3	GERD performed by business, % GDP	0.5	36	
5.1.4	GERD financed by business, %	49.4	28	
5.1.5	Females employed w/advanced degrees, %	9.3	71	
5.2	**Innovation linkages**	**17.4**	**91**	
5.2.1	University/industry research collaboration+	40.6	70	
5.2.2	State of cluster development+	47.5	64	
5.2.3	GERD financed by abroad, % GDP	0.0	59	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	106	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.2	50	
5.3	**Knowledge absorption**	**33.1**	**48**	
5.3.1	Intellectual property payments, % total trade	0.3	76	
5.3.2	High-tech imports, % total trade	8.2	55	
5.3.3	ICT services imports, % total trade	0.2	124	○ ◇
5.3.4	FDI net inflows, % GDP	1.6	97	
5.3.5	Research talent, % in business enterprise	55.7	19	◆
KNOWLEDGE & TECHNOLOGY OUTPUTS		**23.2**	**57**	
6.1	**Knowledge creation**	**24.9**	**40**	
6.1.1	Patents by origin/bn PPP$ GDP	3.4	30	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.9	28	◆
6.1.3	Utility models by origin/bn PPP$ GDP	1.2	20	
6.1.4	Scientific & technical articles/bn PPP$ GDP	9.5	54	
6.1.5	Citable documents H-index	27.9	35	◆
6.2	**Knowledge impact**	**30.1**	**42**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.6	37	
6.2.2	New businesses/th pop. 15-64	1.6	65	
6.2.3	Computer software spending, % GDP	0.0	20	● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.5	67	
6.2.5	High- and medium-high-tech manufacturing, %	25.8	42	
6.3	**Knowledge diffusion**	**14.7**	**96**	
6.3.1	Intellectual property receipts, % total trade	0.0	90	○
6.3.2	High-tech net exports, % total trade	1.3	64	
6.3.3	ICT services exports, % total trade	0.1	124	○
6.3.4	FDI net outflows, % GDP	0.4	81	
CREATIVE OUTPUTS		**27.7**	**50**	
7.1	**Intangible assets**	**38.8**	**31**	
7.1.1	Trademarks by origin/bn PPP$ GDP	91.8	17	●
7.1.2	Global brand value, top 5,000, % GDP	30.4	44	
7.1.3	Industrial designs by origin/bn PPP$ GDP	15.4	6	● ◆
7.1.4	ICTs & organizational model creation+	44.2	100	○
7.2	**Creative goods and services**	**17.2**	**60**	
7.2.1	Cultural & creative services exports, % total trade	0.0	92	○
7.2.2	National feature films/mn pop. 15-69	2.6	62	
7.2.3	Entertainment & Media market/th pop. 15-69	4.5	48	
7.2.4	Printing and other media, % manufacturing	0.8	73	
7.2.5	Creative goods exports, % total trade	3.0	19	●
7.3	**Online creativity**	**15.8**	**69**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	11.5	36	◆
7.3.2	Country-code TLDs/th pop. 15-69	2.1	69	
7.3.3	Wikipedia edits/mn pop. 15-69	23.8	101	○ ◇
7.3.4	Mobile app creation/bn PPP$ GDP	29.9	19	● ◆

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 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.

DATA AVAILABILITY

The following tables list data that are either missing or outdated for Turkey.

Missing data

Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	n/a	2018	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2016	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	n/a	2017	UNESCO Institute for Statistics
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	2019	Thomson Reuters

Outdated data

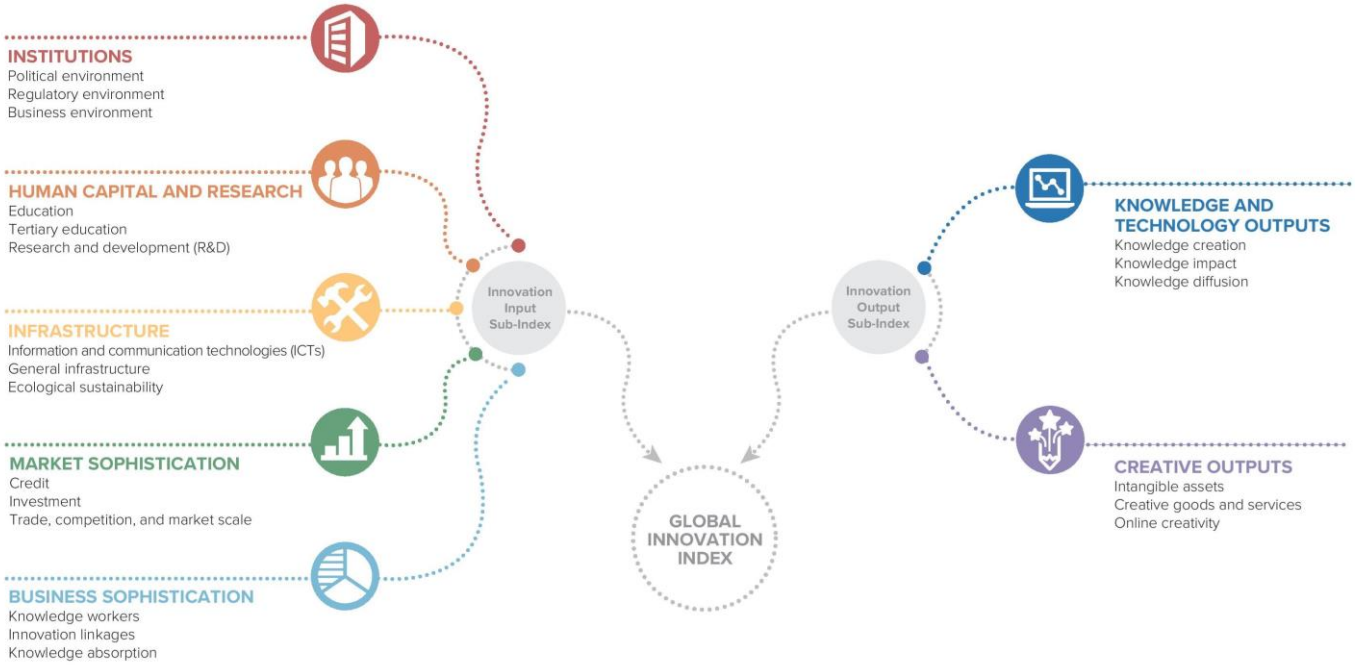
Code	Indicator name	Country year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	2017	2018	UNESCO Institute for Statistics
2.2.2	Graduates in science & engineering, %	2014	2017	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2017	2018	UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators
2.3.2	Gross expenditure on R&D, % GDP	2017	2018	UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators
4.1.3	Microfinance gross loans, % GDP	2015	2018	Microfinance Information Exchange
5.1.3	GERD performed by business, % GDP	2017	2018	UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators
5.3.5	Research talent, % in business enterprise	2017	2018	UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators
7.2.1	Cultural & creative services exports, % total trade	2017	2018	World Trade Organization

ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. In 2020, the GII presents its 13th edition devoted to the theme *Who Will Finance Innovation?*

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.

Framework of the Global Innovation Index 2020



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.