Global Innovation Index 2021

TURKEY

41st Turkey ranks 41st among the 132 economies featured in the GII 2021.

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 2021 is between ranks 41 and 41.

Rankings for Turkey (2019–2021)

	GII	Innovation inputs	Innovation outputs
2021	41	45	41
2020	51	52	53
2019	49	56	49

- Turkey performs better in innovation outputs than innovation inputs in 2021.
- This year Turkey ranks 45th in innovation inputs, higher than both 2020 and 2019.
- As for innovation outputs, Turkey ranks 41st. This position is higher than both 2020 and 2019.

4th Turkey ranks 4th among the 34 upper middle-income group economies.

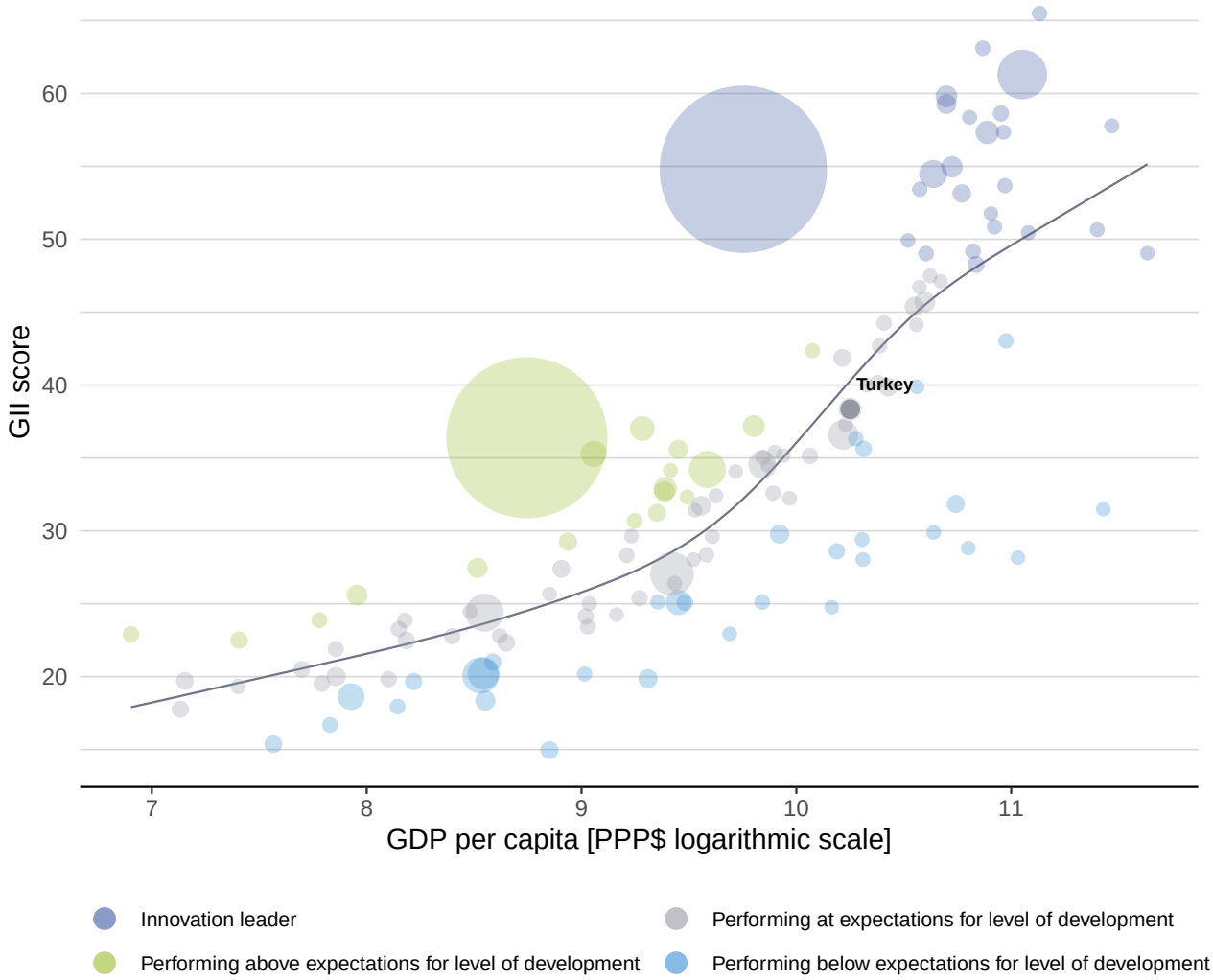
4th Turkey ranks 4th among the 19 economies in Northern Africa and Western Asia.

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 at expectations for its level of development.

The positive relationship between innovation and development

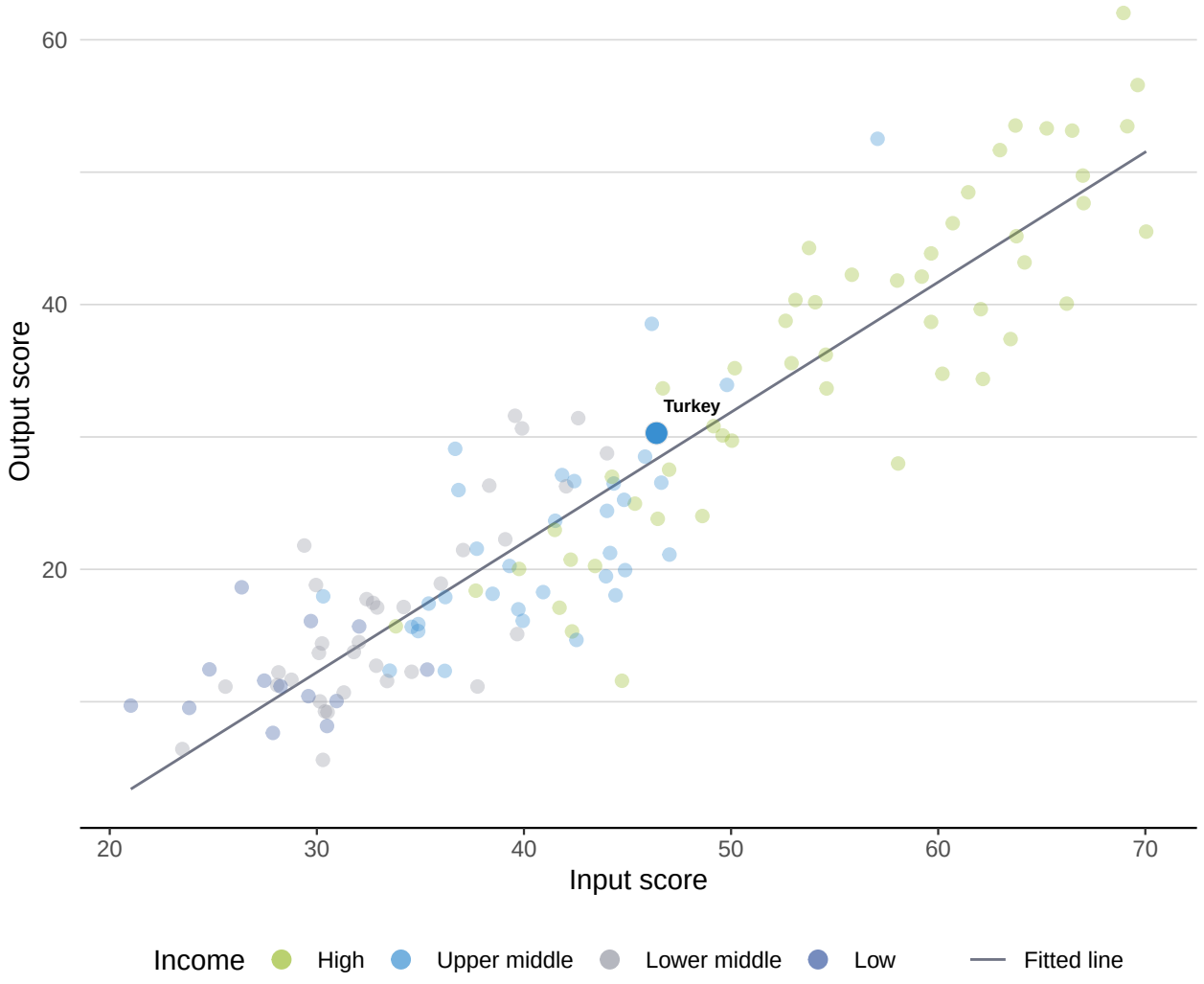


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

Turkey 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 Turkey

Upper middle-income group economies

Turkey performs above the upper middle-income group average in six pillars, namely: Human capital and research; Infrastructure; Market sophistication; Business sophistication; Knowledge and technology outputs; and, Creative outputs.

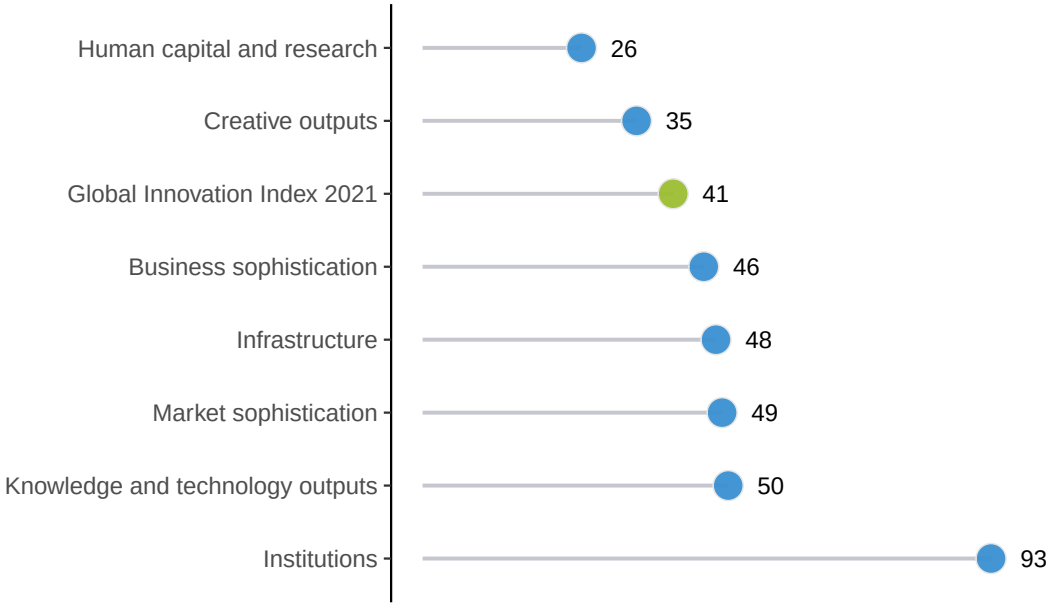
Northern Africa and Western Asia

Turkey performs above the regional average in six pillars, namely: Human capital and research; Infrastructure; Market sophistication; Business sophistication; Knowledge and technology outputs; and, Creative outputs.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2021 AREAS

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

The seven GII pillar ranks for Turkey



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

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Turkey in the GII 2021.

Strengths and weaknesses for Turkey

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
2.1.3	School life expectancy, years	11	1.2	Regulatory environment	109
2.2.1	Tertiary enrolment, % gross	2	1.2.3	Cost of redudancy dismissal	118
3.3.1	GDP/unit of energy use	19	1.3.2	Ease of resolving insolvency	104
4.3	Trade, diversification, and market scale	10	4.1.3	Microfinance gross loans, % GDP	77
4.3.2	Domestic industry diversification	4	4.2	Investment	105
4.3.3	Domestic market scale, bn PPP$	13	4.2.3	Venture capital investors, deals/bn PPP$ GDP	85
5.3.5	Research talent, % in businesses	9	4.2.4	Venture capital recipients, deals/bn PPP$ GDP	83
6.2.1	Labor productivity growth, %	12	5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	115
7.1	Intangible assets	18	5.3.4	FDI net inflows, % GDP	100
7.1.1	Trademarks by origin/bn PPP$ GDP	6	7.1.4	ICTs and organizational model creation	100
7.1.3	Industrial designs by origin/bn PPP$ GDP	5	7.2.3	Entertainment and media market/th pop. 15–69	47
7.2.5	Creative goods exports, % total trade	19	7.2.4	Printing and other media, % manufacturing	75

Turkey

GII 2021 rank
41

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$	GII 2020 rank
41	45	Upper middle	NAWA	84.3	2,381.6	28,294	51

		Score/ Value	Rank	
Institutions		**56.0**	**93**	
1.1	**Political environment**	**55.3**	**75**	
1.1.1	Political and operational stability*	62.5	89	
1.1.2	Government effectiveness*	51.7	70	
1.2	**Regulatory environment**	**49.1**	**109**	○
1.2.1	Regulatory quality*	43.3	72	
1.2.2	Rule of law*	39.3	78	
1.2.3	Cost of redundancy dismissal	29.8	118	○
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 and research		**48.5**	**26**	◆
2.1	**Education**	**73.0**	**[6]**	
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	18.2	11	● ◆
2.1.4	PISA scales in reading, maths and science	462.5	41	
2.1.5	Pupil-teacher ratio, secondary	16.4	80	
2.2	**Tertiary education**	**44.0**	**24**	◆
2.2.1	Tertiary enrolment, % gross	113.2	2	● ◆
2.2.2	Graduates in science and engineering, %	19.4	75	
2.2.3	Tertiary inbound mobility, %	1.7	80	
2.3	**Research and development (R&D)**	**28.4**	**38**	◆
2.3.1	Researchers, FTE/mn pop.	1,624.3	43	
2.3.2	Gross expenditure on R&D, % GDP	1.1	36	◆
2.3.3	Global corporate R&D investors, top 3, mn US$	50.2	29	◆
2.3.4	QS university ranking, top 3*	23.1	45	
Infrastructure		**47.0**	**48**	
3.1	**Information and communication technologies (ICTs)**	**75.4**	**47**	
3.1.1	ICT access*	67.3	66	
3.1.2	ICT use*	59.1	64	
3.1.3	Government's online service*	85.9	22	◆
3.1.4	E-participation*	89.3	23	◆
3.2	**General infrastructure**	**34.4**	**42**	◆
3.2.1	Electricity output, GWh/mn pop.	3,744.2	57	
3.2.2	Logistics performance*	51.0	46	◆
3.2.3	Gross capital formation, % GDP	28.2	26	
3.3	**Ecological sustainability**	**31.2**	**54**	
3.3.1	GDP/unit of energy use	15.8	19	● ◆
3.3.2	Environmental performance*	42.6	84	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.1	66	
Market sophistication		**49.7**	**49**	
4.1	**Credit**	**40.4**	**68**	
4.1.1	Ease of getting credit*	75.0	34	
4.1.2	Domestic credit to private sector, % GDP	65.4	51	
4.1.3	Microfinance gross loans, % GDP	0.0	77	○
4.2	**Investment**	**21.6**	**105**	○
4.2.1	Ease of protecting minority investors*	76.0	21	
4.2.2	Market capitalization, % GDP	23.3	55	
4.2.3	Venture capital investors, deals/bn PPP$ GDP	0.0	85	○
4.2.4	Venture capital recipients, deals/bn PPP$ GDP	0.0	83	○
4.3	**Trade, diversification, and market scale**	**87.0**	**10**	● ◆
4.3.1	Applied tariff rate, weighted avg., %	3.1	63	
4.3.2	Domestic industry diversification	99.2	4	●
4.3.3	Domestic market scale, bn PPP$	2,381.6	13	● ◆

		Score/ Value	Rank	
Business sophistication		**30.8**	**46**	
5.1	**Knowledge workers**	**37.3**	**49**	
5.1.1	Knowledge-intensive employment, %	22.8	69	
5.1.2	Firms offering formal training, %	30.7	50	
5.1.3	GERD performed by business, % GDP	0.7	33	
5.1.4	GERD financed by business, %	56.3	18	◆
5.1.5	Females employed w/advanced degrees, %	10.1	69	
5.2	**Innovation linkages**	**18.4**	**79**	
5.2.1	University-industry R&D collaboration†	43.3	62	
5.2.2	State of cluster development and depth†	49.7	48	
5.2.3	GERD financed by abroad, % GDP	0.0	71	
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	115	○
5.2.5	Patent families/bn PPP$ GDP	0.4	33	◆
5.3	**Knowledge absorption**	**36.8**	**36**	
5.3.1	Intellectual property payments, % total trade	0.8	56	
5.3.2	High-tech imports, % total trade	7.8	62	
5.3.3	ICT services imports, % total trade	0.9	84	
5.3.4	FDI net inflows, % GDP	1.4	100	○
5.3.5	Research talent, % in businesses	61.8	9	● ◆
Knowledge and technology outputs		**25.3**	**50**	
6.1	**Knowledge creation**	**25.6**	**37**	
6.1.1	Patents by origin/bn PPP$ GDP	3.4	24	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.7	31	
6.1.3	Utility models by origin/bn PPP$ GDP	1.2	20	
6.1.4	Scientific and technical articles/bn PPP$ GDP	16.0	52	
6.1.5	Citable documents H-index	28.3	35	◆
6.2	**Knowledge impact**	**36.0**	**38**	
6.2.1	Labor productivity growth, %	3.6	12	● ◆
6.2.2	New businesses/th pop. 15–64	1.6	65	
6.2.3	Software spending, % GDP	0.5	20	◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.3	70	
6.2.5	High-tech manufacturing, %	23.5	55	
6.3	**Knowledge diffusion**	**14.3**	**73**	
6.3.1	Intellectual property receipts, % total trade	0.0	76	
6.3.2	Production and export complexity	58.7	40	
6.3.3	High-tech exports, % total trade	1.8	61	
6.3.4	ICT services exports, % total trade	0.7	94	
Creative outputs		**35.3**	**35**	◆
7.1	**Intangible assets**	**50.2**	**18**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP	100.6	6	● ◆
7.1.2	Global brand value, top 5,000, % GDP	27.9	45	
7.1.3	Industrial designs by origin/bn PPP$ GDP	15.9	5	● ◆
7.1.4	ICTs and organizational model creation†	44.2	100	○
7.2	**Creative goods and services**	**16.7**	**61**	
7.2.1	Cultural and creative services exports, % total trade	0.1	82	
7.2.2	National feature films/mn pop. 15–69	2.6	62	
7.2.3	Entertainment and media market/th pop. 15–69	5.0	47	○
7.2.4	Printing and other media, % manufacturing	0.7	75	○
7.2.5	Creative goods exports, % total trade	3.1	19	●
7.3	**Online creativity**	**23.9**	**50**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	11.4	36	◆
7.3.2	Country-code TLDs/th pop. 15–69	2.2	68	
7.3.3	Wikipedia edits/mn pop. 15–69	52.8	61	
7.3.4	Mobile app creation/bn PPP$ GDP	29.0	18	◆

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 IV 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 for Turkey

Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	n/a	2017	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2017	UNESCO Institute for Statistics

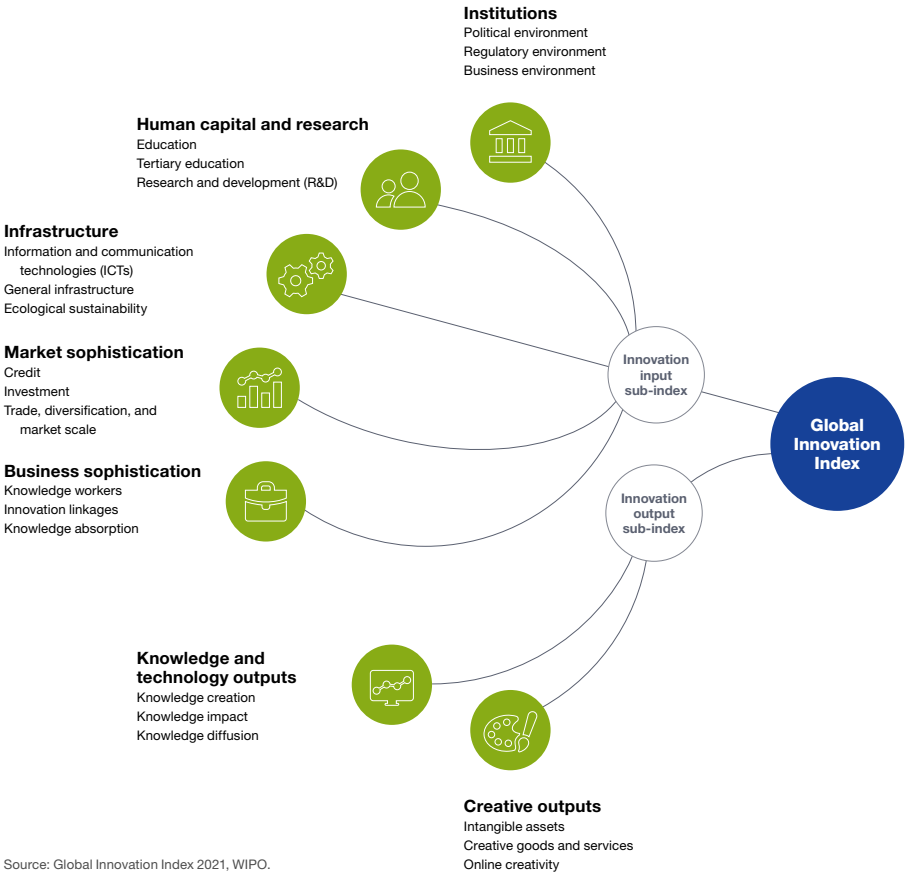
Outdated data for Turkey

Code	Indicator name	Economy year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	2018	2019	UNESCO Institute for Statistics
4.1.3	Microfinance gross loans, % GDP	2015	2018	Microfinance Information Exchange

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 2021, WIPO.

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.