



47.7



Emerging Innovators 50.0

Change over time: -0.5

Turkey	Performance relative to EU in 2022	Performance change 2015-2022	Performance change 2021-2022
SUMMARY INNOVATION INDEX	47.7	-0.5	1.5
Human resources	46.5	5.1	0.0
Doctorate graduates	25.8	11.4	0.0
Population with tertiary education	69.4	0.0	0.0
Lifelong learning	44.4	1.1	0.0
Attractive research systems	39.2	13.8	3.5
International scientific co-publications	10.3	10.2	4.0
Most cited publications	61.5	14.8	3.9
Foreign doctorate students	33.0	15.0	2.2
Digitalisation	30.7	0.0	0.0
Broadband penetration	33.3	0.0	0.0
People with above basic overall digital skills	27.3	0.0	0.0
Finance and support	66.1	28.9	10.7
R&D expenditures in the public sector	39.4	-6.5	0.0
Venture capital expenditures	N/A	N/A	N/A
Government support for business R&D	110.0	73.9	24.1
Firm investments	47.8	-33.3	0.7
R&D expenditure in the business sector	44.6	24.8	2.3
Non-R&D Innovation expenditures	61.5	-122.0	0.0
Innovation expenditures per employee	39.8	0.0	0.0
Use of information technologies	22.8	-13.0	-9.8
Enterprises providing ICT training	43.8	-25.0	-18.8
Employed ICT specialists	0.0	0.0	0.0
Innovators	58.4	-38.3	-1.9
Product innovators (SMEs)	64.1	-18.2	-8.2
Business process innovators (SMEs)	53.5	-59.6	4.8
Linkages	65.5	-18.4	-15.7
Innovative SMEs collaborating with others	42.1	-6.7	0.0
Public-private co-publications	12.7	10.2	4.4
Job-to-job mobility of HRST	106.3	-41.2	-38.2
Intellectual assets	27.5	6.6	1.8
PCT patent applications	53.0	15.6	3.7
Trademark applications	18.2	6.5	1.1
Design applications	2.5	-3.8	0.1
Employment impacts	20.1	-29.0	0.0
Employment in knowledge-intensive activities	0.0	0.0	0.0
Employment in innovative enterprises	36.1	-55.7	0.0
Sales impacts	82.5	31.9	17.6
Medium and high-tech goods exports	112.8	49.1	29.0
Knowledge-intensive services exports	59.3	39.9	20.0
Sales of innovative products	74.8	0.0	0.0
Environmental sustainability	44.6	5.9	-6.7
Resource productivity	69.4	27.9	0.0
Air emissions by fine particulate matter	N/A	N/A	N/A
Environment-related technologies	34.8	-7.7	-12.8

The second column shows performance relative to that of the EU in 2022. Colours next to the column show matching colour codes: dark green: above 125% of the performance of the EU in 2022; light green: between 100% and 125%; yellow: between 70% and 100%; orange: below 70%. Normalised performance uses the data after a possible imputation of missing data and transformation of the data. The next columns show performance change over time between 2015 and 2022 and between 2021 and 2022, with scores relative to those of the EU in 2015. Positive performance changes are shown in green, negative performance changes in red.

TURKEY is an **Emerging Innovator** with performance at 47.7% of the EU average. Performance is below the average of the Emerging Innovators (50.0%). Performance is decreasing (-0.5%-points) and is lower than that of the EU (9.9%-points). The country's performance gap to the EU is becoming larger.

Relative strengths

- Medium and high-tech goods exports
- Government support for business R&D
- Job-to-job mobility of HRST
- Sales of innovative products
- Resource productivity

Relative weaknesses

- Employed ICT specialists
- Design applications
- International scientific co-publications
- Public-private co-publications
- Trademark applications

Strong increases since 2015

- Government support for business R&D
- Medium and high-tech goods exports
- Knowledge-intensive services exports

Strong decreases since 2015

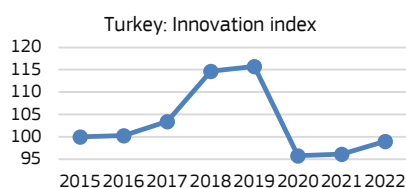
- Non-R&D Innovation expenditures
- Business process innovators
- Employment in innovative enterprises

Strong increases since 2021

- Medium and high-tech goods exports
- Government support for business R&D
- Knowledge-intensive services exports

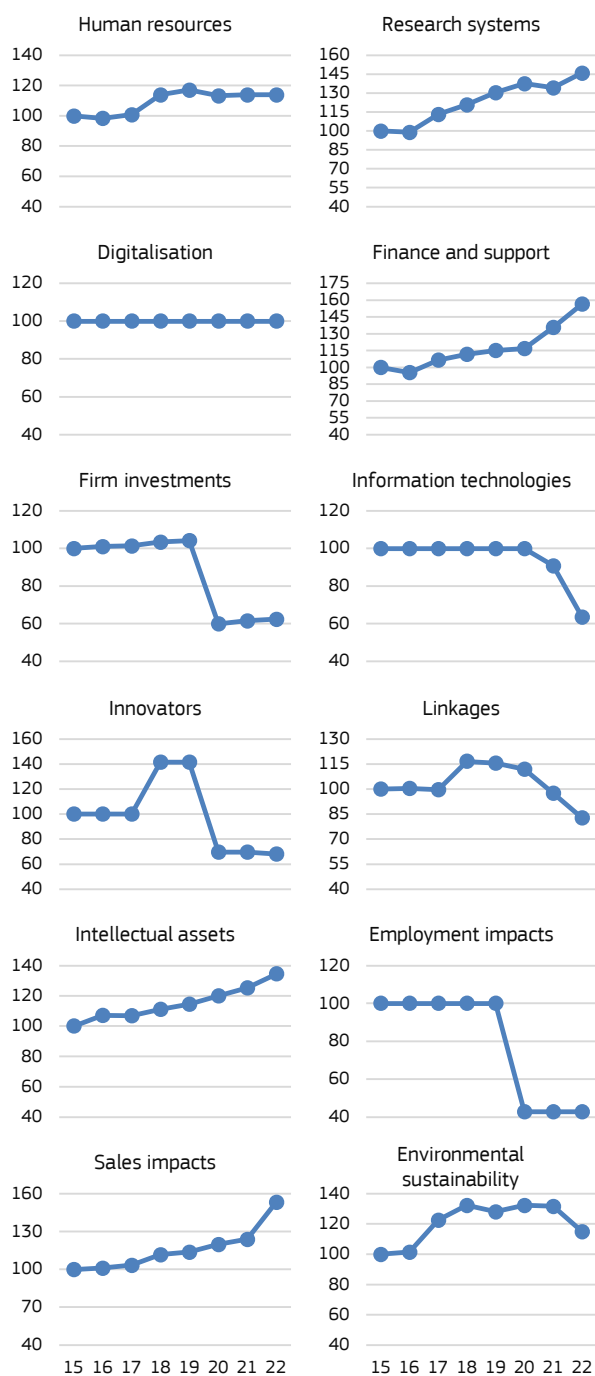
Strong decreases since 2021

- Job-to-job mobility of HRST
- Enterprises providing ICT training
- Environment-related technologies



The graph on the left shows the evolution of **innovation performance over time** against the performance of the country in 2015. Innovation performance increased strongly between 2015 and 2018, more slowly in 2019, and declined strongly in 2020. Despite performance improvements in 2021 and 2022, overall performance change between 2015 and 2022 was negative.

The graphs below show the evolution of innovation performance in the different **innovation dimensions** against the performance of the country in 2015. Performance increased strongest for Research systems, Finance and support and Sales impacts. Performance did not change for Digitalisation and declined for Firm investments, Innovators, Linkages and Employment impacts.



Structural differences with the EU are shown below:

- Turkey has lower per capita income but a faster growing economy. Manufacturing takes up a larger share of the economy.
- Enterprise births and entrepreneurial activity add positively to the innovation climate, top R&D spenders add negatively.
- Turkey has a higher share of In-house product innovators with market novelties and a higher share of non-innovators with potential to innovate.
- Government procurement are at par with the EU average and ease of starting a business and entrepreneurial training is below the EU average as drivers of research and innovation.
- Climate change related indicators show that Turkey has a higher greenhouse gas emissions intensity of energy consumption.

	TR	EU
Performance and structure of the economy		
GDP per capita (PPS)	18,900	31,200
Average annual GDP growth (%)	0.1	-0.4
Employment share Manufacturing (NACE C) (%)	18.7	16.4
of which High and Medium high-tech (%)	20.1	38.0
Employment share Services (NACE G-N) (%)	34.3	41.1
of which Knowledge-intensive services (%)	20.2	35.8
Turnover share SMEs (%)	n/a	34.8
Turnover share large enterprises (%)	n/a	48.2
Foreign-controlled enterprises – share of value added (%)	n/a	11.7
Business and entrepreneurship		
Enterprise births (10+ employees) (%)	3.1	1.0
Total Entrepreneurial Activity (TEA) (%)	15.7	7.3
FDI net inflows (% GDP)	n/a	1.0
Top R&D spending enterprises per 10 mln. population	0.7	18.3
Buyer sophistication (1 to 7 best)	3.5	3.7
Innovation profiles		
In-house product innovators with market novelties	11.9	10.7
In-house product innovators without market novelties	7.7	12.3
In-house business process innovators	8.6	11.0
Innovators that do not develop innovations themselves	1.7	11.6
Innovation active non-innovators	6.1	3.3
Non-innovators with potential to innovate	36.0	19.9
Non-innovators without disposition to innovate	28.1	31.3
Governance and policy framework		
Ease of starting a business (0 to 100 best)	74.3	76.5
Basic school entrepreneurial education and training	2.1	3.5
Govt. procurement of advanced tech. products	3.5	3.5
Rule of law (-2.5 to 2.5 best)	-0.3	1.1
Climate change indicators		
Circular material use rate	n/a	12.2
Greenhouse gas emissions intensity of energy consumption	88.8	82.8
Eco-Innovation Index	n/a	100.0
Demography		
Population size	82.9	447.0
Average annual population growth (%)	1.0	0.1
Population density	106.2	108.8

Performance is measured relative to that of the country in 2015 (=100).