Global Innovation Index 2022

GREECE

44th Greece ranks 44th among the 132 economies featured in the GII 2022.

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 Greece 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 Greece in the GII 2022 is between ranks 43 and 46.

Rankings for Greece (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	43	40	52
2021	47	39	60
2022	44	44	49

- Greece performs better in innovation inputs than innovation outputs in 2022.
- This year Greece ranks 44th in innovation inputs, lower than both 2021 and 2020.
- As for innovation outputs, Greece ranks 49th. This position is higher than both 2021 and 2020.

38th Greece ranks 38th among the 48 high-income group economies.

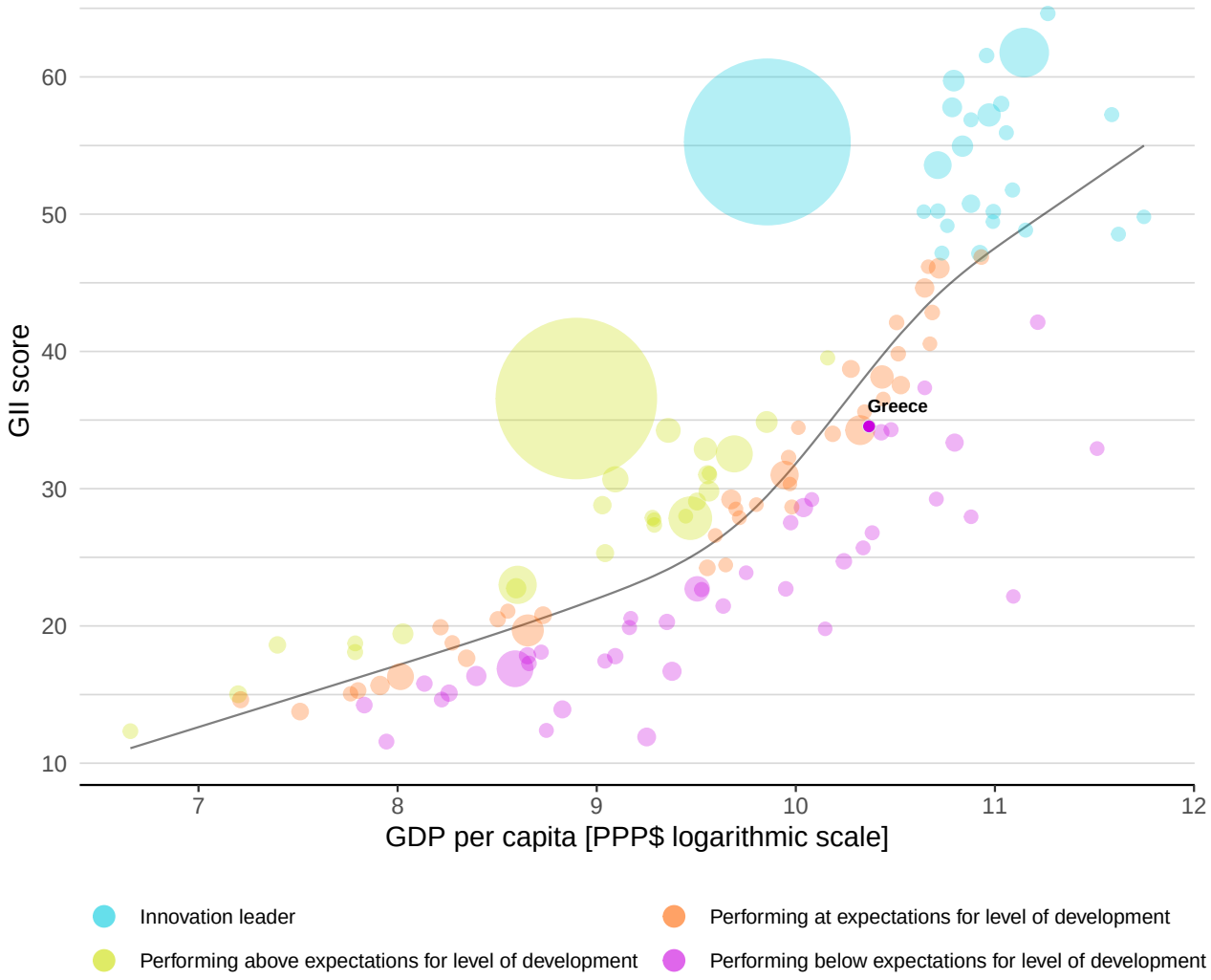
28th Greece ranks 28th among the 39 economies in Europe.

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, Greece's performance is below expectations for its level of development.

The positive relationship between innovation and development

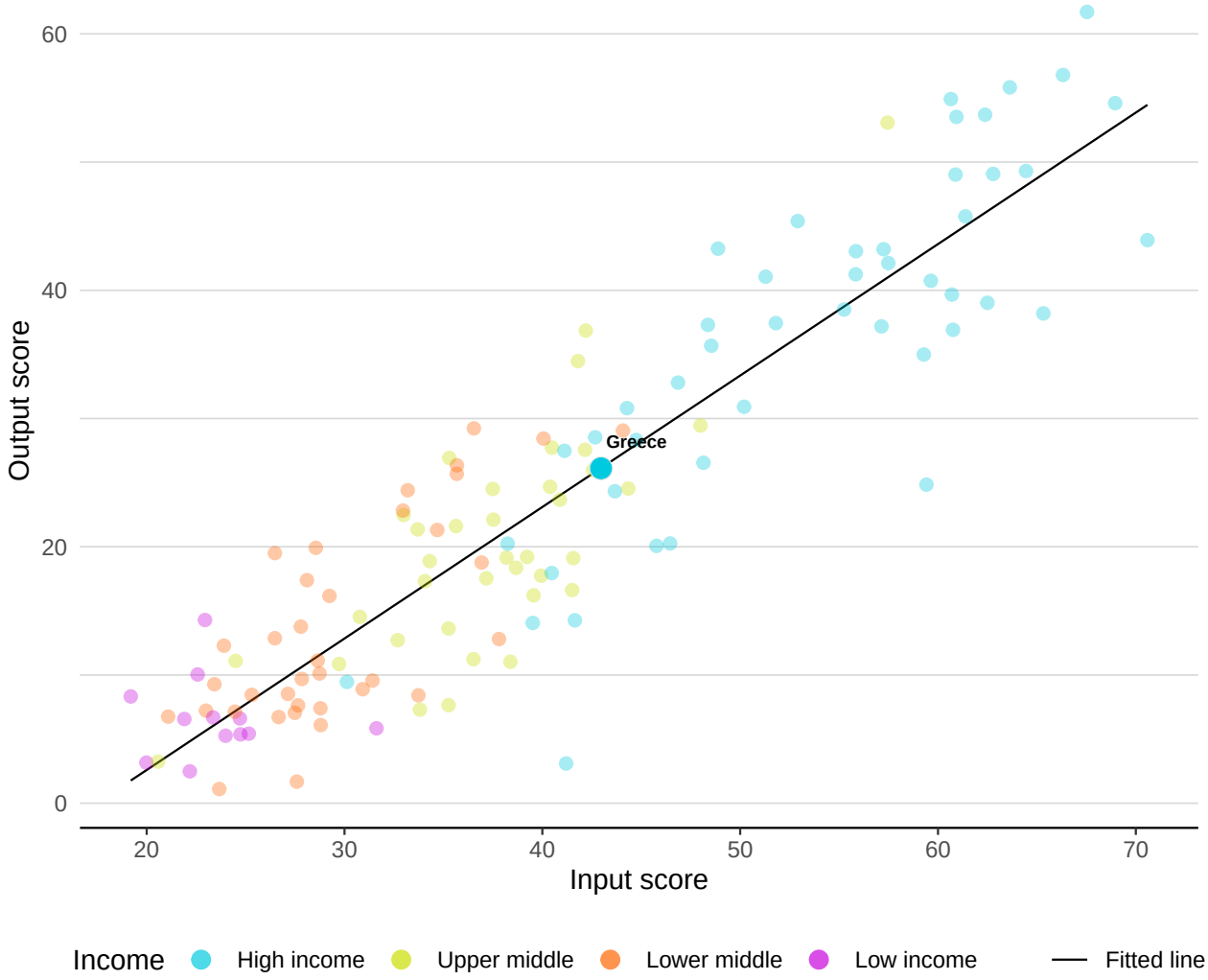


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

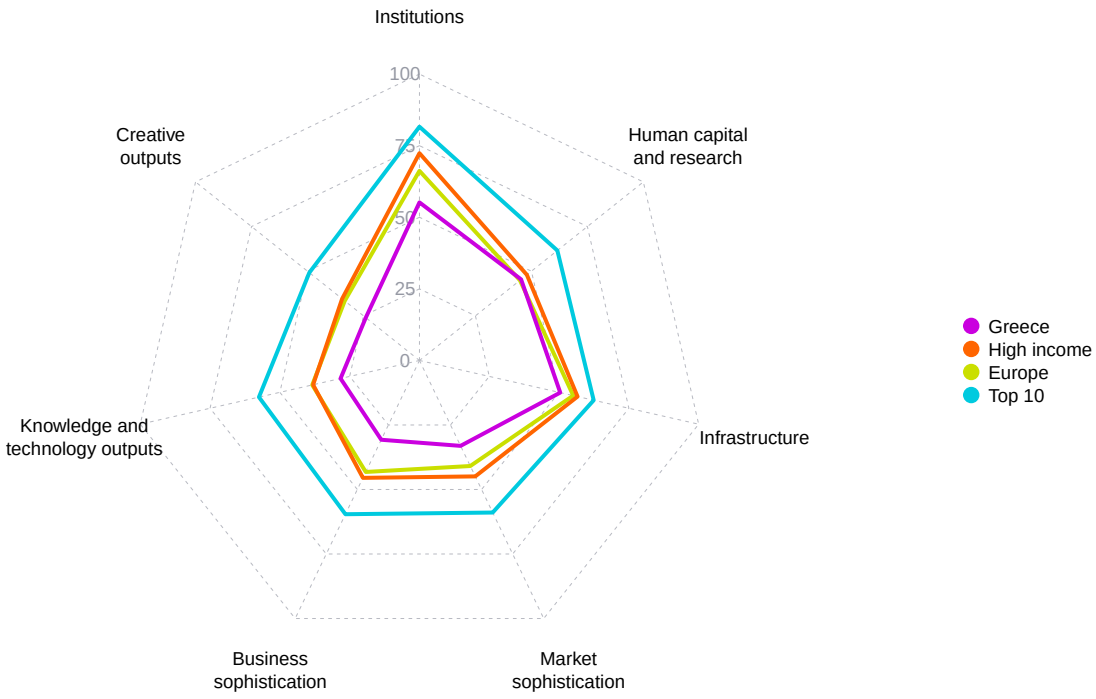
Greece produces less innovation outputs relative to its level of innovation investments.

Innovation input to output performance



BENCHMARKING AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND EUROPE

The seven GII pillar scores for Greece



High-income group economies

Greece performs below the high-income group average in all GII pillars.

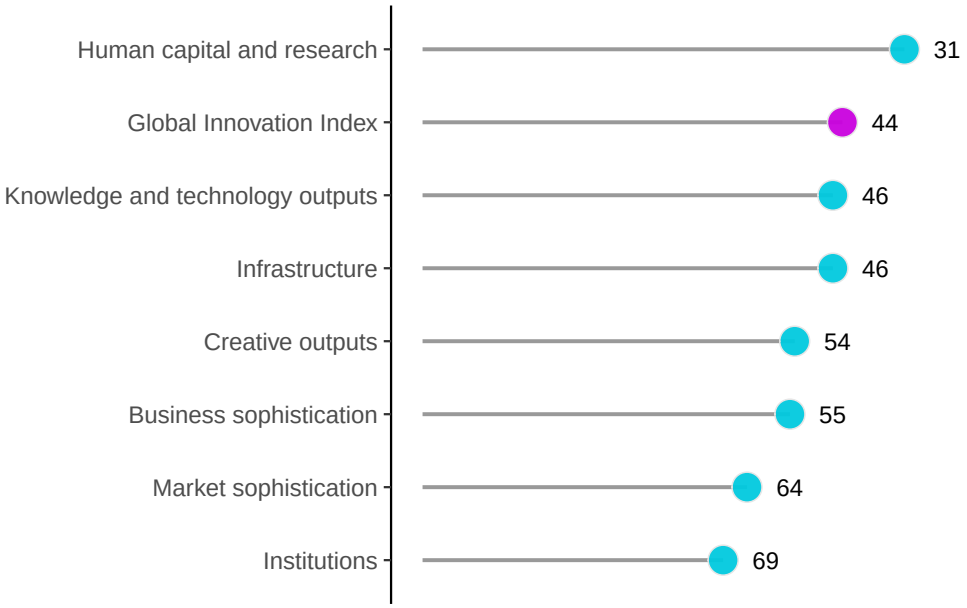
Europe

Greece performs above the regional average in Human capital and research.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

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

The seven GII pillar ranks for Greece



Note: The highest possible ranking in each pillar is 1.

The full WIPO Intellectual Property Statistics profile for Greece can be found at:

https://www.wipo.int/ipstats/en/statistics/country_profile/profile.jsp?code=GR.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the indicator strengths and weaknesses of Greece in the GII 2022.

Strengths and weaknesses for Greece

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
2.1.3	School life expectancy, years	3	1.3.2	Entrepreneurship policies and culture	59
2.1.5	Pupil-teacher ratio, secondary	16	2.1.1	Expenditure on education, % GDP	93
2.2.1	Tertiary enrolment, % gross	1	2.3.3	Global corporate R&D investors, top 3, mn USD	38
3.3.2	Environmental performance	28	3.2.3	Gross capital formation, % GDP	120
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	19	4.2.3	Venture capital recipients, deals/bn PPP$ GDP	90
5.2.3	GERD financed by abroad, % GDP	19	5.1.2	Firms offering formal training, %	75
6.1.4	Scientific and technical articles/bn PPP$ GDP	18	5.2.1	University-industry R&D collaboration	112
6.1.5	Citable documents H-index	29	5.2.2	State of cluster development and depth	118
6.2.3	Software spending, % GDP	7	6.1.3	Utility models by origin/bn PPP$ GDP	70
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	10	6.2.1	Labor productivity growth, %	92

GII 2022 rank

Greece

44

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
49	44	High	EUR	10.4	339.7	31,821

		Score/ Value	Rank	
Institutions		**55.2**	**69**	◇
1.1	**Political environment**	66.0	49	◇
1.1.1	Political and operational stability*	72.7	46	
1.1.2	Government effectiveness*	59.3	44	◇
1.2	**Regulatory environment**	70.5	47	
1.2.1	Regulatory quality*	58.7	44	◇
1.2.2	Rule of law*	54.4	49	◇
1.2.3	Cost of redundancy dismissal	15.9	67	
1.3	**Business environment**	29.1	112 ○	◇
1.3.1	Policies for doing business†	41.1	92	◇
1.3.2	Entrepreneurship policies and culture*	17.1	59 ○	◇
Human capital and research		**45.4**	**31**	
2.1	**Education**	59.9	38	
2.1.1	Expenditure on education, % GDP 🕘	3.6	93 ○	◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	21.6	41	
2.1.3	School life expectancy, years	20.0	3 ●	◆
2.1.4	PISA scales in reading, maths and science	453.5	43	
2.1.5	Pupil-teacher ratio, secondary	8.6	16 ●	
2.2	**Tertiary education**	56.6	6 ●	◆
2.2.1	Tertiary enrolment, % gross	148.5	1 ●	◆
2.2.2	Graduates in science and engineering, % 🕘	27.3	30	
2.2.3	Tertiary inbound mobility, %	3.5	63	
2.3	**Research and development (R&D)**	19.7	40	
2.3.1	Researchers, FTE/mn pop.	4,010.4	26	
2.3.2	Gross expenditure on R&D, % GDP	1.5	27	
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○	◇
2.3.4	QS university ranking, top 3*	22.4	45	
Infrastructure		**50.4**	**46**	◇
3.1	**Information and communication technologies (ICTs)**	78.4	51	
3.1.1	ICT access*	89.3	52	
3.1.2	ICT use*	75.0	42	
3.1.3	Government's online service*	70.6	65	◇
3.1.4	E-participation*	78.6	50	
3.2	**General infrastructure**	29.6	63	◇
3.2.1	Electricity output, GWh/mn pop.	4,316.5	48	
3.2.2	Logistics performance*	53.5	41	
3.2.3	Gross capital formation, % GDP	14.2	120 ○	◇
3.3	**Ecological sustainability**	43.3	27 ●	
3.3.1	GDP/unit of energy use	14.2	30	
3.3.2	Environmental performance*	56.2	28 ●	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	5.6	19 ●	
Market sophistication		**33.1**	**64**	
4.1	**Credit**	32.1	46	
4.1.1	Finance for startups and scaleups*	33.8	51	◇
4.1.2	Domestic credit to private sector, % GDP	82.3	40	
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	
4.2	**Investment**	5.0	76	◇
4.2.1	Market capitalization, % GDP	23.8	57	
4.2.2	Venture capital investors, deals/bn PPP$ GDP	0.1	43	
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	0.0	90 ○	
4.2.4	Venture capital received, value, % GDP	0.0	63	
4.3	**Trade, diversification, and market scale**	62.2	45	
4.3.1	Applied tariff rate, weighted avg., %	1.5	20	
4.3.2	Domestic industry diversification	88.7	48	
4.3.3	Domestic market scale, bn PPP$	339.7	54	

		Score/ Value	Rank	
Business sophistication		**30.7**	**55**	◇
5.1	**Knowledge workers**	39.6	48	
5.1.1	Knowledge-intensive employment, %	31.7	46	◇
5.1.2	Firms offering formal training, % 🕘	21.6	75 ○	◇
5.1.3	GERD performed by business, % GDP	0.7	34	
5.1.4	GERD financed by business, %	40.2	43	
5.1.5	Females employed w/advanced degrees, %	19.7	34	
5.2	**Innovation linkages**	25.1	55	◇
5.2.1	University-industry R&D collaboration†	32.0	112 ○	◇
5.2.2	State of cluster development and depth†	34.7	118 ○	◇
5.2.3	GERD financed by abroad, % GDP	0.2	19 ●	
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	53	
5.2.5	Patent families/bn PPP$ GDP	0.4	33	
5.3	**Knowledge absorption**	27.5	78	◇
5.3.1	Intellectual property payments, % total trade	0.4	72	
5.3.2	High-tech imports, % total trade	7.1	91	
5.3.3	ICT services imports, % total trade	1.4	71	
5.3.4	FDI net inflows, % GDP	2.0	74	
5.3.5	Research talent, % in businesses	27.6	45	
Knowledge and technology outputs		**28.3**	**46**	
6.1	**Knowledge creation**	22.8	42	
6.1.1	Patents by origin/bn PPP$ GDP	1.7	42	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.3	43	
6.1.3	Utility models by origin/bn PPP$ GDP	0.0	70 ○	◇
6.1.4	Scientific and technical articles/bn PPP$ GDP	42.8	18 ●	
6.1.5	Citable documents H-index	33.8	29 ●	
6.2	**Knowledge impact**	37.7	31	
6.2.1	Labor productivity growth, %	−0.1	92 ○	
6.2.2	New businesses/th pop. 15–64	1.8	64	
6.2.3	Software spending, % GDP	0.6	7 ●	◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	22.3	10 ●	◆
6.2.5	High-tech manufacturing, %	18.1	66	◇
6.3	**Knowledge diffusion**	24.3	62	
6.3.1	Intellectual property receipts, % total trade	0.1	58	◇
6.3.2	Production and export complexity	44.8	50	
6.3.3	High-tech exports, % total trade	3.1	48	
6.3.4	ICT services exports, % total trade	1.7	71	
Creative outputs		**24.0**	**54**	
7.1	**Intangible assets**	31.0	58	
7.1.1	Intangible asset intensity, top 15, %	49.7	52	
7.1.2	Trademarks by origin/bn PPP$ GDP	n/a	n/a	
7.1.3	Global brand value, top 5,000, % GDP	5.7	67	◇
7.1.4	Industrial designs by origin/bn PPP$ GDP	3.7	32	
7.2	**Creative goods and services**	21.0	55	
7.2.1	Cultural and creative services exports, % total trade	0.7	39	
7.2.2	National feature films/mn pop. 15–69	4.8	26	
7.2.3	Entertainment and media market/th pop. 15–69	22.5	27	
7.2.4	Printing and other media, % manufacturing	1.1	45	
7.2.5	Creative goods exports, % total trade	1.5	36	
7.3	**Online creativity**	12.9	40	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	13.2	34	
7.3.2	Country-code TLDs/th pop. 15–69	20.5	30	
7.3.3	GitHub commit pushes received/mn pop. 15–69	14.1	38	
7.3.4	Mobile app creation/bn PPP$ GDP	4.1	61	

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 appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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 indicators that are either missing or outdated for Greece.

Missing data for Greece

Code	Indicator name	Economy year	Model year	Source
4.1.3	Loans from microfinance institutions, % GDP	n/a	2020	International Monetary Fund, Financial Access Survey (FAS)
7.1.2	Trademarks by origin/bn PPP$ GDP	n/a	2020	World Intellectual Property Organization

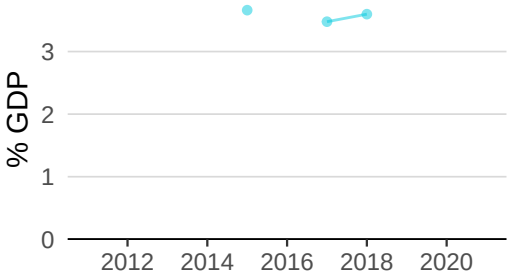
Outdated data for Greece

Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	2018	2020	UNESCO Institute for Statistics
2.2.2	Graduates in science and engineering, %	2019	2020	UNESCO Institute for Statistics
5.1.2	Firms offering formal training, %	2018	2019	World Bank Enterprise Surveys

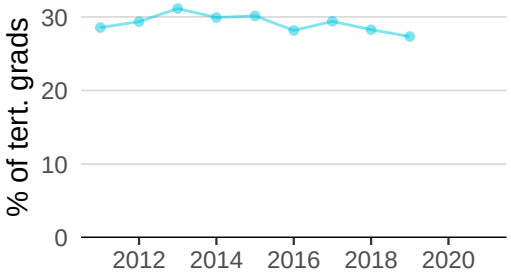
GREECE'S INNOVATION SYSTEM

As far as practicable, the plots below present unscaled indicator data.

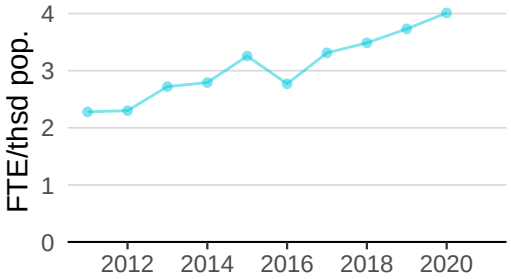
Innovation inputs



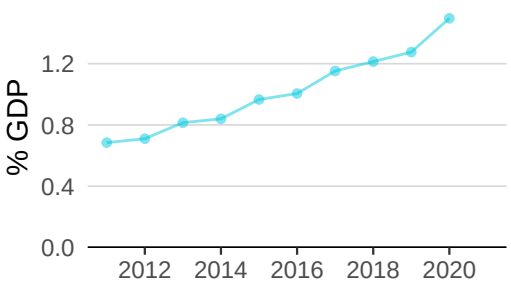
2.1.1 Expenditure on education was equal to 3.6% GDP in 2018–up by 3 percentage points from the year prior–and equivalent to an indicator rank of 93.



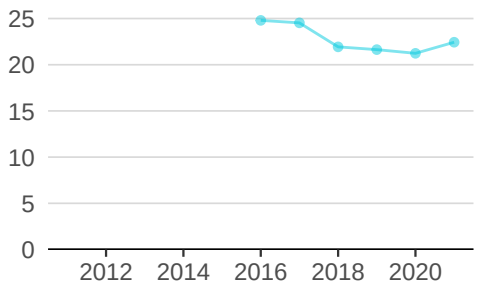
2.2.2 Graduates in science and engineering was equal to 27.3% of tert. grads in 2019–down by 3 percentage points from the year prior–and equivalent to an indicator rank of 30.



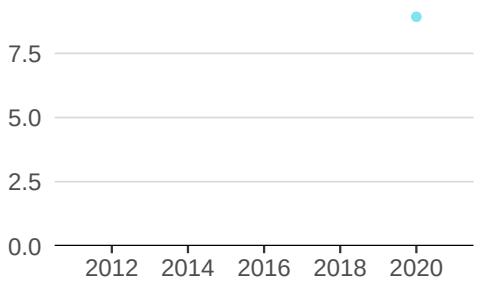
2.3.1 Researchers was equal to 4.0 FTE/thsd pop. in 2020–up by 7 percentage points from the year prior–and equivalent to an indicator rank of 26.



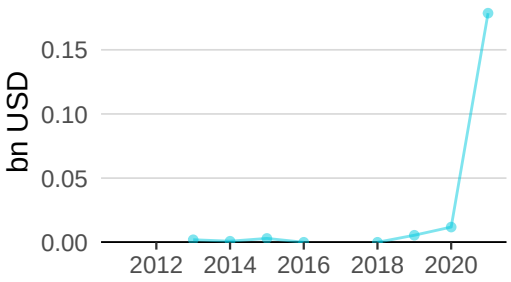
2.3.2 Gross expenditure on R&D was equal to 1.5% GDP in 2020–up by 17 percentage points from the year prior–and equivalent to an indicator rank of 27.



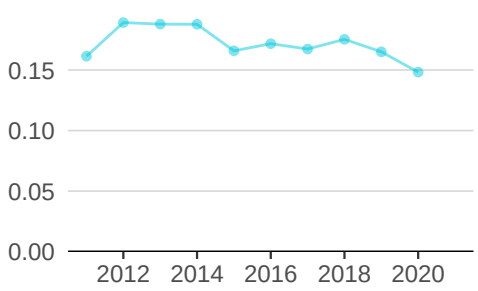
2.3.4 QS university ranking was equal to 22.4 in 2021–up by 6 percentage points from the year prior–and equivalent to an indicator rank of 45.



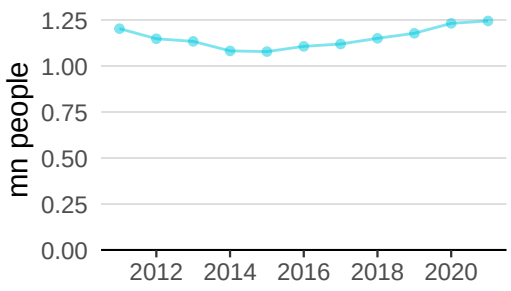
3.1.1 ICT access was equal to 8.9 in 2020 and equivalent to an indicator rank of 52.



4.2.4 Venture capital received was equal to 0.2 bn USD in 2021–up by 1408 percentage points from the year prior–and equivalent to an indicator rank of 63.

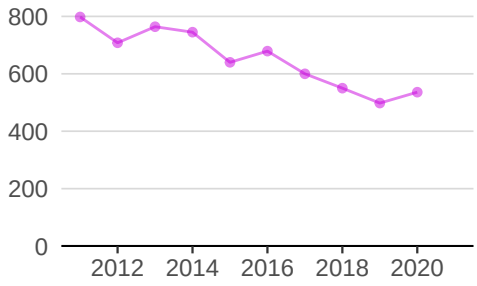


4.3.2 Domestic industry diversification was equal to 0.1 in 2020–down by 10 percentage points from the year prior–and equivalent to an indicator rank of 48.

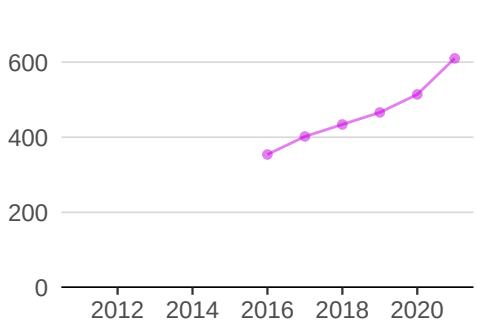


5.1.1 Knowledge-intensive employment was equal to 1.2 mn people in 2021–up by 1 percentage point from the year prior–and equivalent to an indicator rank of 46.

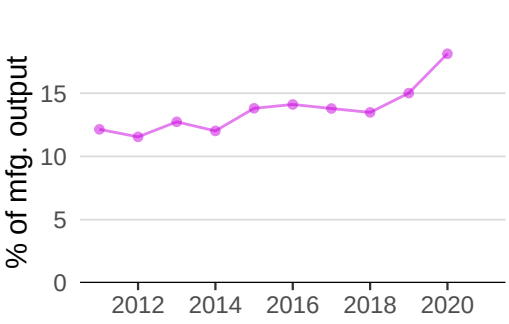
Innovation outputs



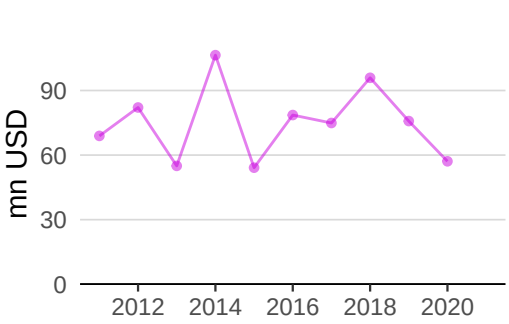
6.1.1 Patents by origin was equal to 536.0 in 2020–up by 8 percentage points from the year prior–and equivalent to an indicator rank of 42.



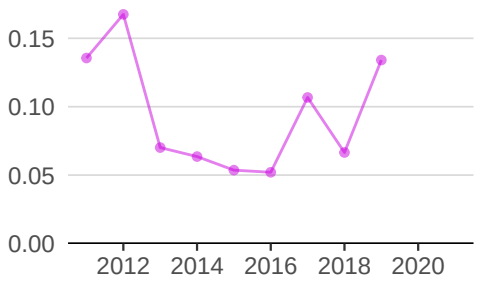
6.1.5 Citable documents H-index was equal to 610.0 in 2021–up by 19 percentage points from the year prior–and equivalent to an indicator rank of 29.



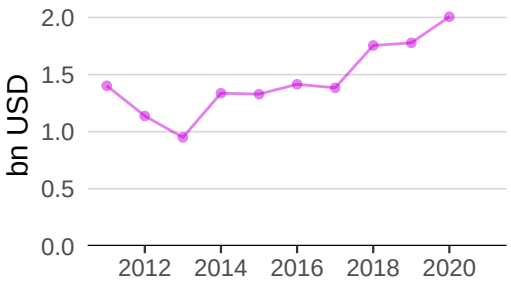
6.2.5 High-tech manufacturing was equal to 18.1% of mfg. output in 2020–up by 21 percentage points from the year prior–and equivalent to an indicator rank of 66.



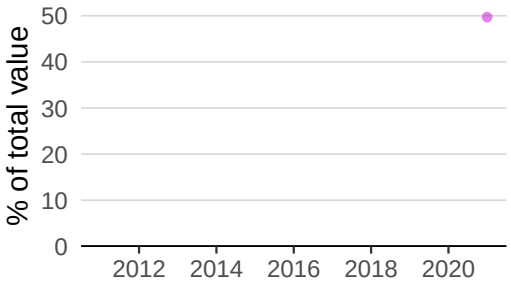
6.3.1 Intellectual property receipts was equal to 57.1 mn USD in 2020–down by 25 percentage points from the year prior–and equivalent to an indicator rank of 58.



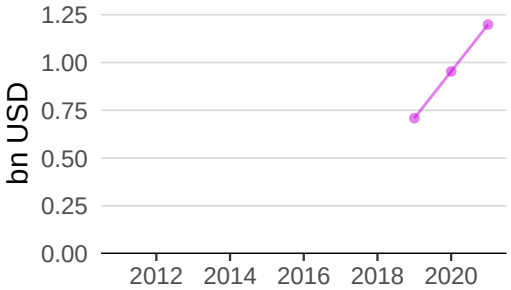
6.3.2 Production and export complexity was equal to 0.1 in 2019–up by 102 percentage points from the year prior–and equivalent to an indicator rank of 50.



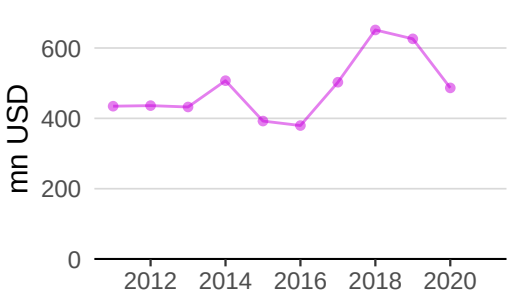
6.3.3 High-tech exports was equal to 2.0 bn USD in 2020–up by 13 percentage points from the year prior–and equivalent to an indicator rank of 48.



7.1.1 Intangible asset intensity was equal to 49.7% of total value in 2021 and equivalent to an indicator rank of 52.



7.1.3 Global brand value was equal to 1.2 bn USD in 2021–up by 26 percentage points from the year prior–and equivalent to an indicator rank of 67.



7.2.1 Cultural and creative services exports was equal to 486.6 mn USD in 2020–down by 22 percentage points from the year prior–and equivalent to an indicator rank of 39.

GREECE'S INNOVATION TOP PERFORMERS

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank

No observations

Source: European Commission's Joint Research Centre (https://iri.jrc.ec.europa.eu/scoreboard/2021-eu-industrial-rd-investment-scoreboard).

2.3.4 QS university ranking

University	Score	Rank
NATIONAL TECHNICAL UNIVERSITY OF ATHENS	27.3	421=
ARISTOTLE UNIVERSITY OF THESSALONIKI	21.8	551-560
NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS	18.2	651-700

Source: QS Quacquarelli Symonds Ltd (https://www.topuniversities.com/university-rankings/world-university-rankings/2022).
Note: QS Quacquarelli Symonds Ltd annually assesses over 1,200 universities across the globe and scores them between [0,100]. Ranks can represent a single value "x", a tie "x=" or a range "x-y".

7.1.1 Intangible asset intensity, top 15

Firm	Rank
HELLENIC TELECOMMUN ORGANIZA	1
MYTILINEOS	2
TERNA ENERGY	3

Source: Brand Finance (https://brandirectory.com/reports/gift-2021).
Note: Brand Finance only provides within economy ranks.

7.1.3 Global brand value, top 5,000

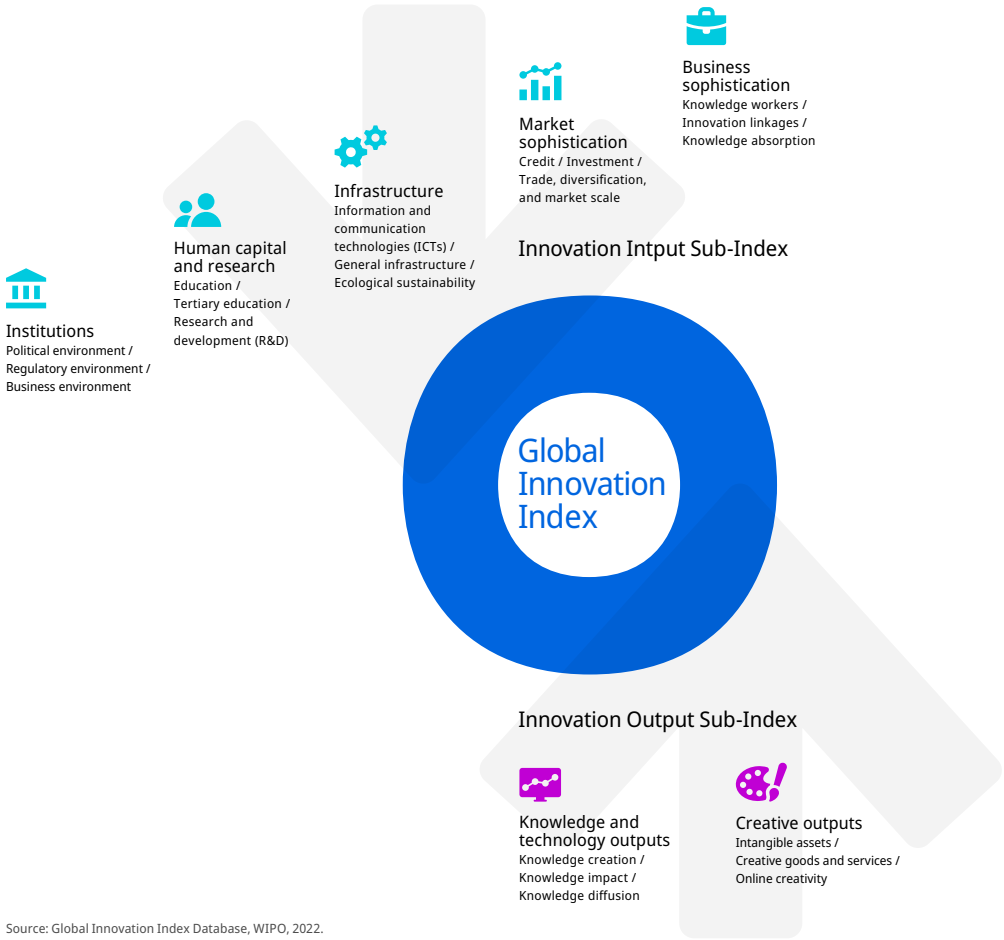
Brand	Industry	Rank
OTE	Telecoms	1
COSMOTE GROUP	Telecoms	2
ALFA BETA VASSILOPOULOS	Retail	3

Source: Brand Finance (https://brandirectory.com).
Note: Rank corresponds to within economy ranks.

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 Database, WIPO, 2022.

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.