



PORTUGAL

32nd Portugal ranks 32nd 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 Portugal 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 Portugal in the GII 2022 is between ranks 30 and 32.

Rankings for Portugal (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	31	32	29
2021	31	32	30
2022	32	32	31

- Portugal performs better in innovation outputs than innovation inputs in 2022.
- This year Portugal ranks 32nd in innovation inputs, the same as both 2021 and 2020.
- As for innovation outputs, Portugal ranks 31st. This position is lower than both 2021 and 2020.

31st Portugal ranks 31st among the 48 high-income group economies.

20th Portugal ranks 20th among the 39 economies in Europe.

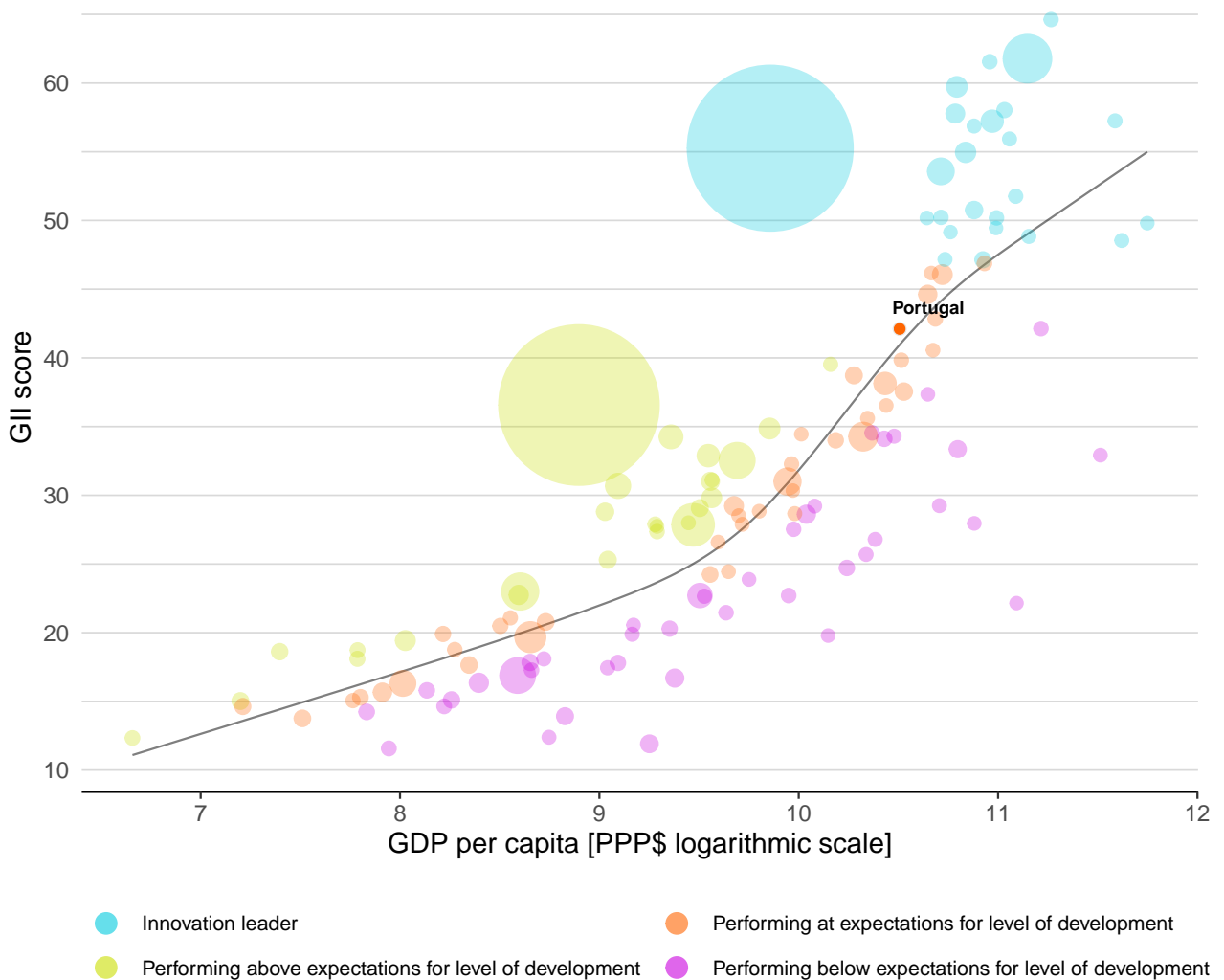


EXPECTED VS. OBSERVED INNOVATION PERFORMANCE

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, Portugal's performance is at expectations for its level of development.

The positive relationship between innovation and development



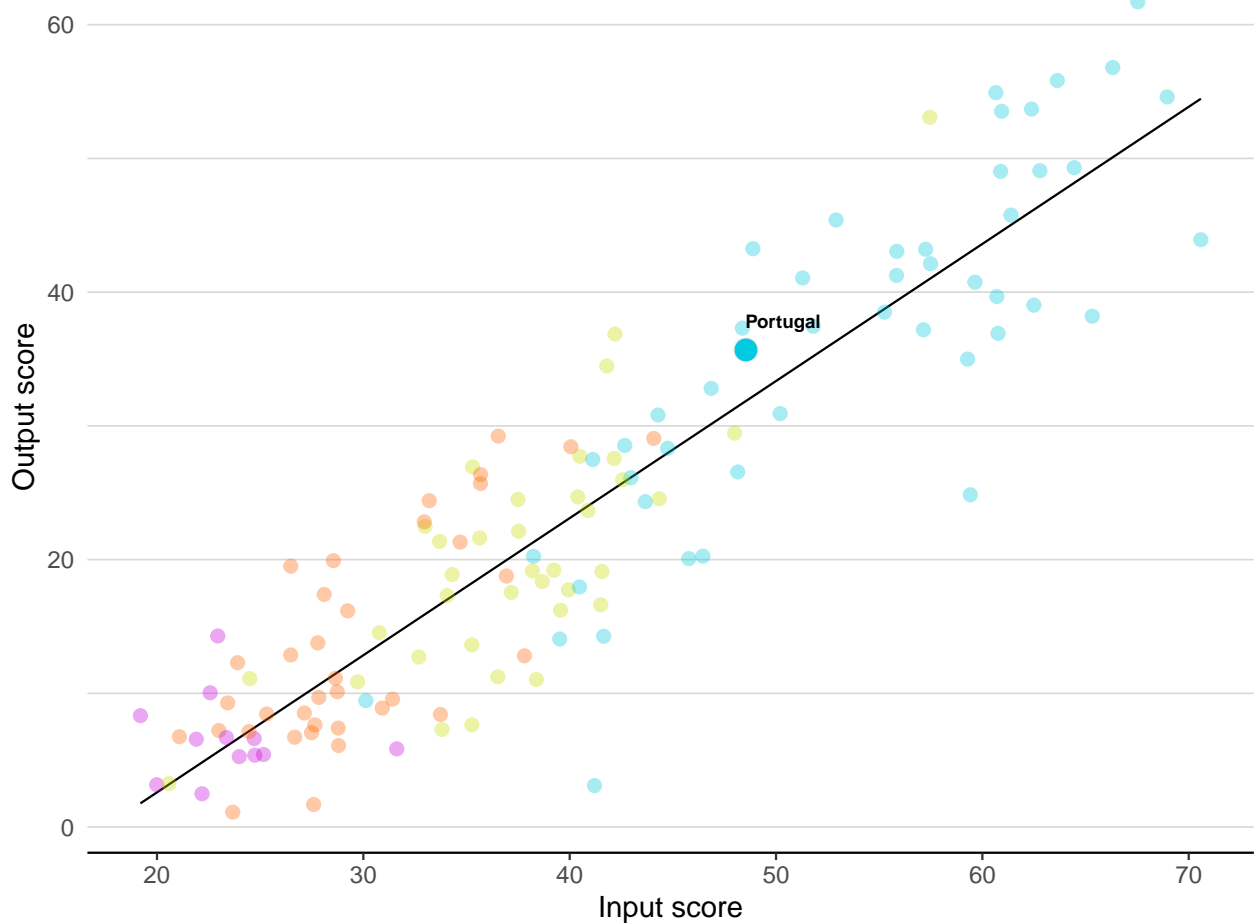


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

Portugal produces more innovation outputs relative to its level of innovation investments.

Innovation input to output performance



Income ● High income ● Upper middle ● Lower middle ● Low income — Fitted line



BENCHMARKING AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND EUROPE

The seven GII pillar scores for Portugal



High-income group economies

Portugal performs above the high-income group average in two pillars, namely: Human capital and research; and, Creative outputs.

Europe

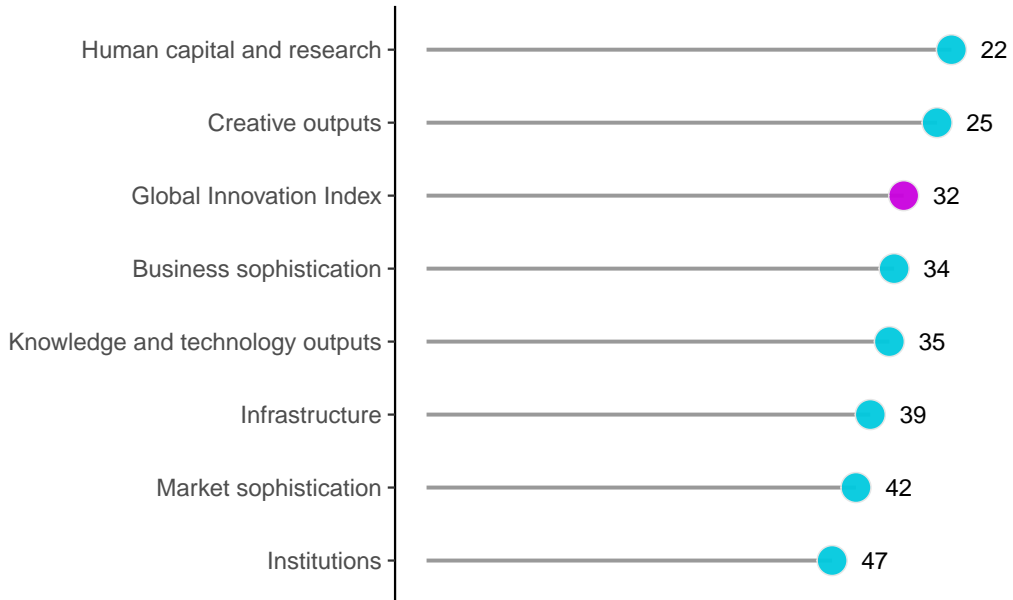
Portugal performs above the regional average in two pillars, namely: Human capital and research; and, Creative outputs.



OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

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

The seven GII pillar ranks for Portugal



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

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

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



INNOVATION STRENGTHS AND WEAKNESSES

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








Strengths and weaknesses for Portugal

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
2.1.2	Government funding/pupil, secondary, % GDP/cap	15	1.2.3	Cost of redundancy dismissal	69
2.1.3	School life expectancy, years	19	1.3.1	Policies for doing business	64
2.3.1	Researchers, FTE/mn pop.	15	1.3.2	Entrepreneurship policies and culture	62
3.3.1	GDP/unit of energy use	20	3.2.3	Gross capital formation, % GDP	95
4.3.2	Domestic industry diversification	1	4.2.1	Market capitalization, % GDP	48
6.1.4	Scientific and technical articles/bn PPP\$ GDP	9	4.2.4	Venture capital received, value, % GDP	64
6.2.3	Software spending, % GDP	6	5.1.2	Firms offering formal training, %	58
7.1.2	Trademarks by origin/bn PPP\$ GDP	14	6.1.3	Utility models by origin/bn PPP\$ GDP	54
7.1.4	Industrial designs by origin/bn PPP\$ GDP	15	6.2.1	Labor productivity growth, %	96
7.3.2	Country-code TLDs/th pop. 15–69	14	7.1.1	Intangible asset intensity, top 15, %	47

Portugal

32

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
31	32	High	EUR	10.2	376.1	36,543

	Score/Value	Rank		Score/Value	Rank
 Institutions	62.5	47	 Business sophistication	38.6	34
1.1 Political environment	77.7	25	5.1 Knowledge workers	50.1	30
1.1.1 Political and operational stability*	83.6	16	5.1.1 Knowledge-intensive employment, %	42.7	26
1.1.2 Government effectiveness*	71.7	31	5.1.2 Firms offering formal training, %	29.0	58 ○
1.2 Regulatory environment	76.7	34	5.1.3 GERD performed by business, % GDP	0.9	24
1.2.1 Regulatory quality*	65.7	38	5.1.4 GERD financed by business, %	52.2	26
1.2.2 Rule of law*	76.8	23	5.1.5 Females employed w/advanced degrees, %	21.1	28
1.2.3 Cost of redundancy dismissal	17.0	69 ○	5.2 Innovation linkages	30.6	38
1.3 Business environment	33.0	102 ○ ◇	5.2.1 University-industry R&D collaboration†	55.5	30
1.3.1 Policies for doing business†	49.5	64 ○	5.2.2 State of cluster development and depth†	53.1	41
1.3.2 Entrepreneurship policies and culture*	○ 16.5	62 ○ ◇	5.2.3 GERD financed by abroad, % GDP	0.1	34
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	57
			5.2.5 Patent families/bn PPP\$ GDP	0.6	30
 Human capital and research	49.4	22	5.3 Knowledge absorption	35.2	49
2.1 Education	63.7	18 ●	5.3.1 Intellectual property payments, % total trade	0.9	46
2.1.1 Expenditure on education, % GDP	○ 4.7	53	5.3.2 High-tech imports, % total trade	9.4	48
2.1.2 Government funding/pupil, secondary, % GDP/cap	27.4	15 ● ◆	5.3.3 ICT services imports, % total trade	1.5	65
2.1.3 School life expectancy, years	16.9	19 ●	5.3.4 FDI net inflows, % GDP	3.2	40
2.1.4 PISA scales in reading, maths and science	492.0	26	5.3.5 Research talent, % in businesses	41.3	33
2.1.5 Pupil-teacher ratio, secondary	9.2	21	 Knowledge and technology outputs	33.3	35
2.2 Tertiary education	44.0	27	6.1 Knowledge creation	29.4	31
2.2.1 Tertiary enrolment, % gross	67.9	39	6.1.1 Patents by origin/bn PPP\$ GDP	2.7	27
2.2.2 Graduates in science and engineering, %	27.8	28	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.7	30
2.2.3 Tertiary inbound mobility, %	9.7	27	6.1.3 Utility models by origin/bn PPP\$ GDP	0.2	54 ○
2.3 Research and development (R&D)	40.3	27	6.1.4 Scientific and technical articles/bn PPP\$ GDP	53.4	9 ● ◆
2.3.1 Researchers, FTE/mn pop.	5,214.8	15 ●	6.1.5 Citable documents H-index	33.1	30
2.3.2 Gross expenditure on R&D, % GDP	1.6	24	6.2 Knowledge impact	39.5	27
2.3.3 Global corporate R&D investors, top 3, mn USD	45.4	34	6.2.1 Labor productivity growth, %	-0.3	96 ○
2.3.4 QS university ranking, top 3*	30.9	40	6.2.2 New businesses/th pop. 15-64	5.5	27
			6.2.3 Software spending, % GDP	0.6	6 ● ◆
 Infrastructure	53.4	39	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	13.6	22
3.1 Information and communication technologies (ICTs)	82.4	36	6.2.5 High-tech manufacturing, %	30.5	42
3.1.1 ICT access*	90.7	40	6.3 Knowledge diffusion	30.9	49
3.1.2 ICT use*	73.2	47 ○	6.3.1 Intellectual property receipts, % total trade	0.1	49
3.1.3 Government's online service*	83.5	35	6.3.2 Production and export complexity	56.5	38
3.1.4 E-participation*	82.1	41	6.3.3 High-tech exports, % total trade	3.9	44
3.2 General infrastructure	41.1	37	6.3.4 ICT services exports, % total trade	3.0	46
3.2.1 Electricity output, GWh/mn pop.	5,070.9	42	 Creative outputs	38.1	25
3.2.2 Logistics performance*	74.0	23	7.1 Intangible assets	51.2	19 ●
3.2.3 Gross capital formation, % GDP	19.6	95 ○	7.1.1 Intangible asset intensity, top 15, %	55.2	47 ○
3.3 Ecological sustainability	36.8	38	7.1.2 Trademarks by origin/bn PPP\$ GDP	97.7	14 ● ◆
3.3.1 GDP/unit of energy use	15.7	20 ●	7.1.3 Global brand value, top 5,000, % GDP	44.7	37
3.3.2 Environmental performance*	50.4	41	7.1.4 Industrial designs by origin/bn PPP\$ GDP	7.1	15 ●
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	2.5	34	7.2 Creative goods and services	23.6	51
			7.2.1 Cultural and creative services exports, % total trade	0.7	41
 Market sophistication	38.8	42	7.2.2 National feature films/mn pop. 15-69	5.1	22
4.1 Credit	40.1	29	7.2.3 Entertainment and media market/th pop. 15-69	32.4	22
4.1.1 Finance for startups and scaleups*	○ 42.4	34	7.2.4 Printing and other media, % manufacturing	1.1	41
4.1.2 Domestic credit to private sector, % GDP	101.2	26	7.2.5 Creative goods exports, % total trade	1.6	35
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	26.5	28
4.2 Investment	10.1	57 ○	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	19.6	29
4.2.1 Market capitalization, % GDP	○ 29.1	48 ○	7.3.2 Country-code TLDs/th pop. 15-69	59.6	14 ●
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.1	33	7.3.3 GitHub commit pushes received/mn pop. 15-69	19.2	34
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	38	7.3.4 Mobile app creation/bn PPP\$ GDP	7.4	50
4.2.4 Venture capital received, value, % GDP	0.0	64 ○			
4.3 Trade, diversification, and market scale	66.2	27			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	100.0	1 ●			
4.3.3 Domestic market scale, bn PPP\$	376.1	51			

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 Portugal.

Missing data for Portugal

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)

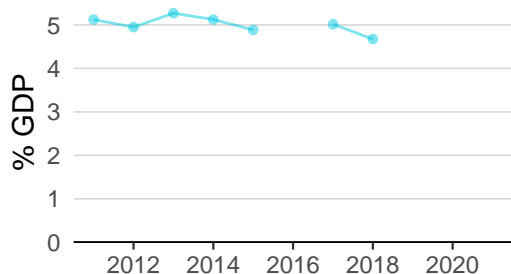
Outdated data for Portugal

Code	Indicator name	Economy year	Model year	Source
1.3.2	Entrepreneurship policies and culture	2019	2021	Global Entrepreneurship Monitor
2.1.1	Expenditure on education, % GDP	2018	2020	UNESCO Institute for Statistics
4.1.1	Finance for startups and scaleups	2019	2021	Global Entrepreneurship Monitor
4.2.1	Market capitalization, % GDP	2018	2020	World Federation of Exchanges

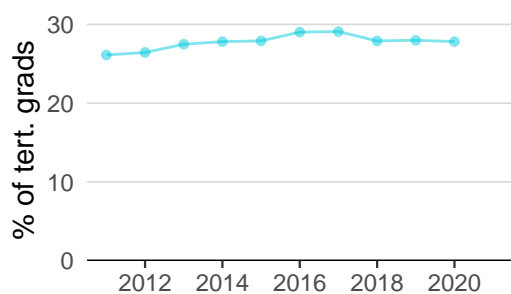
PORTUGAL'S INNOVATION SYSTEM

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

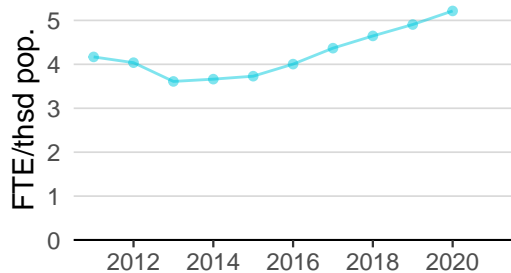
Innovation inputs



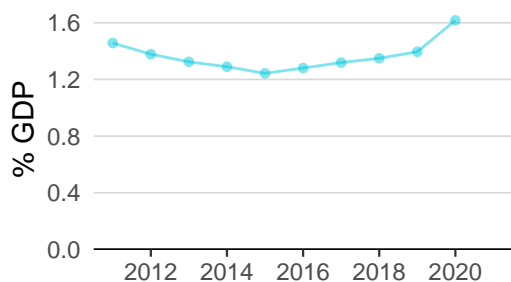
2.1.1 Expenditure on education was equal to 4.7% GDP in 2018—down by 7 percentage points from the year prior—and equivalent to an indicator rank of 53.



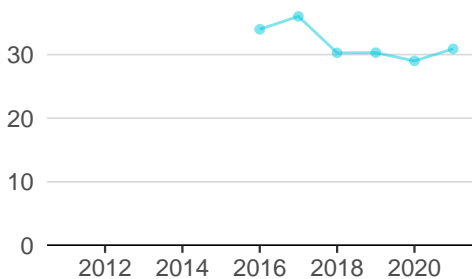
2.2.2 Graduates in science and engineering was equal to 27.8% of tert. grads in 2020—down by 1 percentage point from the year prior—and equivalent to an indicator rank of 28.



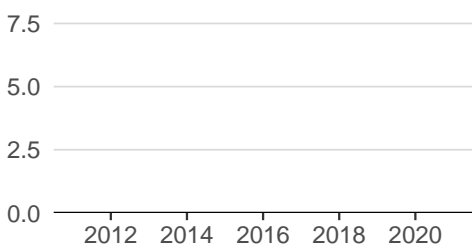
2.3.1 Researchers was equal to 5.2 FTE/thsd pop. in 2020—up by 6 percentage points from the year prior—and equivalent to an indicator rank of 15.



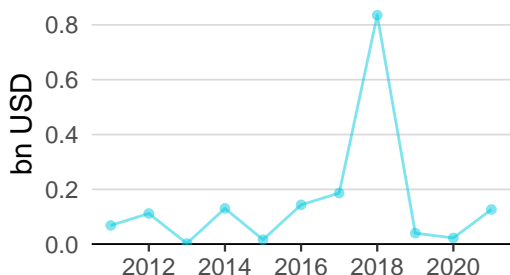
2.3.2 Gross expenditure on R&D was equal to 1.6% GDP in 2020—up by 16 percentage points from the year prior—and equivalent to an indicator rank of 24.



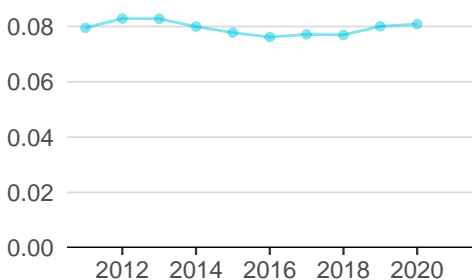
2.3.4 QS university ranking was equal to 30.9 in 2021—up by 7 percentage points from the year prior—and equivalent to an indicator rank of 40.



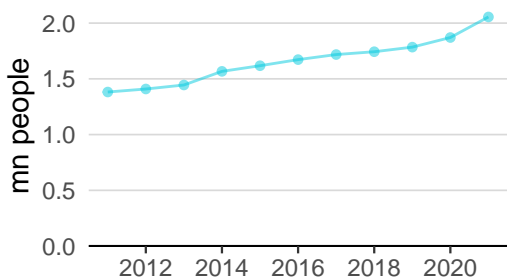
3.1.1 ICT access was equal to 9.1 in 2020 and equivalent to an indicator rank of 40.



4.2.4 Venture capital received was equal to 0.1 bn USD in 2021—up by 450 percentage points from the year prior—and equivalent to an indicator rank of 64.

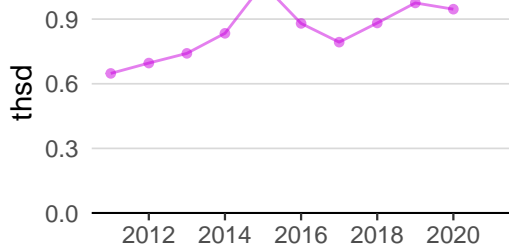


4.3.2 Domestic industry diversification was equal to 0.1 in 2020—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 1.

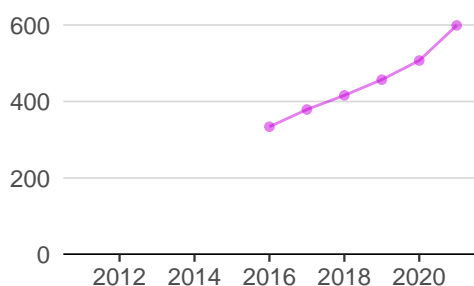


5.1.1 Knowledge-intensive employment was equal to 2.1 mn people in 2021—up by 10 percentage points from the year prior—and equivalent to an indicator rank of 26.

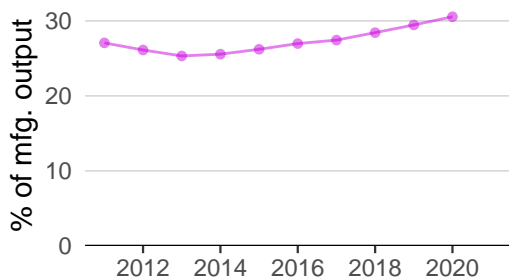
Innovation outputs



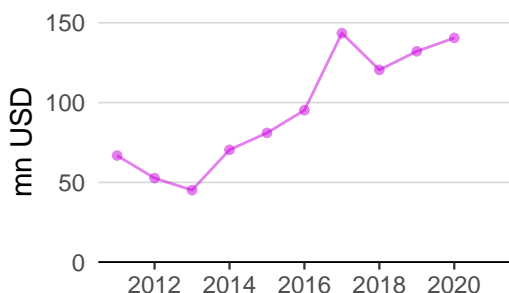
6.1.1 Patents by origin was equal to 0.9 thsd in 2020—down by 3 percentage points from the year prior—and equivalent to an indicator rank of 27.



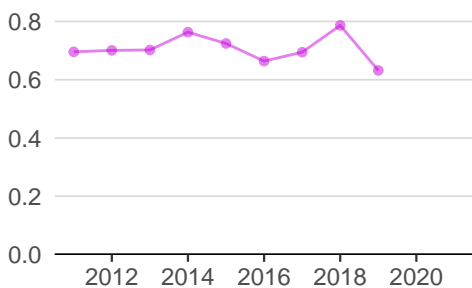
6.1.5 Citable documents H-index was equal to 599.0 in 2021—up by 18 percentage points from the year prior—and equivalent to an indicator rank of 30.



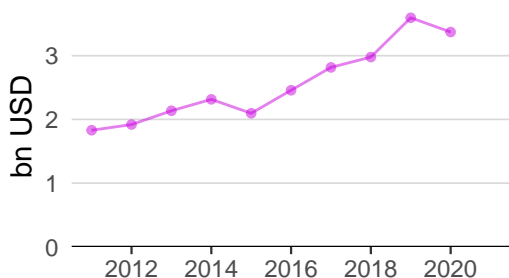
6.2.5 High-tech manufacturing was equal to 30.5% of mfg. output in 2020—up by 4 percentage points from the year prior—and equivalent to an indicator rank of 42.



6.3.1 Intellectual property receipts was equal to 140.5 mn USD in 2020—up by 6 percentage points from the year prior—and equivalent to an indicator rank of 49.



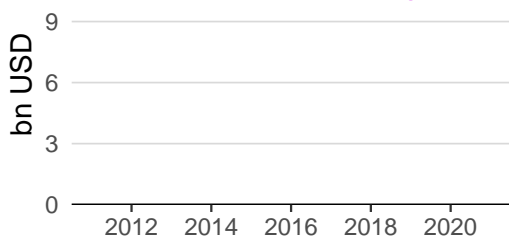
6.3.2 Production and export complexity was equal to 0.6 in 2019—down by 20 percentage points from the year prior—and equivalent to an indicator rank of 38.



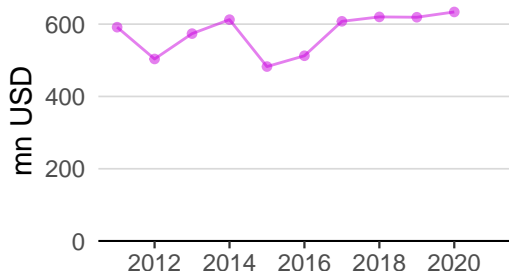
6.3.3 High-tech exports was equal to 3.4 bn USD in 2020—down by 6 percentage points from the year prior—and equivalent to an indicator rank of 44.



7.1.1 Intangible asset intensity was equal to 55.2% of total value in 2021 and equivalent to an indicator rank of 47.



7.1.3 Global brand value was equal to 11.3 bn USD in 2021—effectively unchanged from the year prior—and equivalent to an indicator rank of 37.



7.2.1 Cultural and creative services exports was equal to 633.7 mn USD in 2020—up by 2 percentage points from the year prior—and equivalent to an indicator rank of 41.

PORTUGAL'S INNOVATION TOP PERFORMERS

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank
		[mn EUR]	[%]	[%]	
ENERGIAS DE PORTUGAL	Electricity	111	-31.5	0.9	1,079
BIAL	Pharmaceuticals & Biotechnology	47	3.4	14.2	2,103

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

Note: European Commission's Joint Research Centre ranks the top 2,500 firms by R&D investment annually.

2.3.4 QS university ranking

University	Score	Rank
UNIVERSITY OF PORTO	34.9	295=
UNIVERSITY OF LISBON	31.0	356=
UNIVERSIDADE NOVA DE LISBOA	26.8	431=

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
EDP-ENERGIAS DE PORTUGAL	1
JERONIMO MARTINS	2
GALP ENERGIA	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
EDP	Utilities	1
GALP ENERGIA	Oil & Gas	2
PINGO DOCE	Retail	3

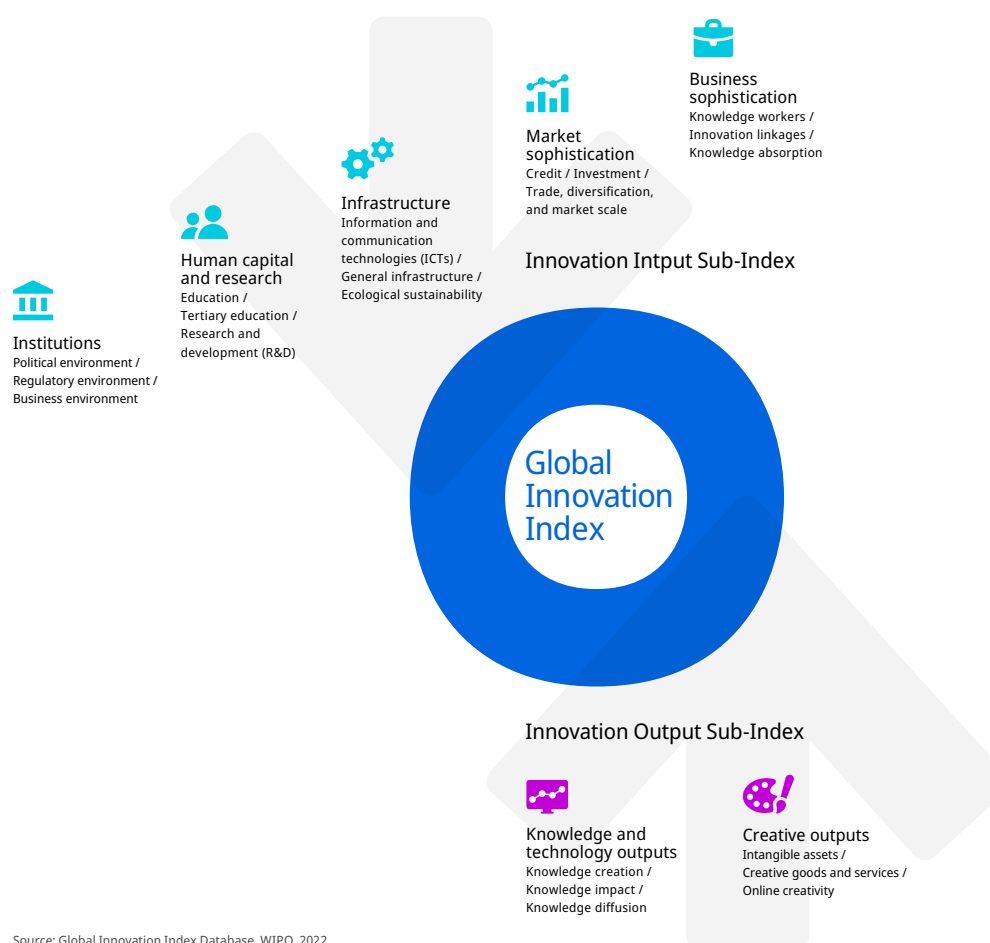
Source: Brand Finance (<https://brandirectory.com>).

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.



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.