

Global Innovation Index 2023

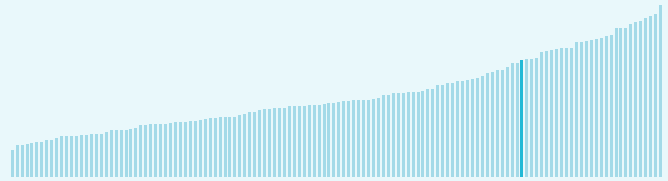


The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities.**

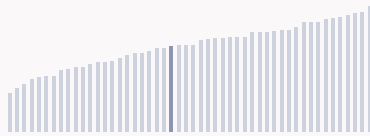
Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation.**

Spain ranking in the Global Innovation Index 2023

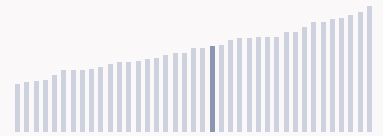
> Spain ranks **29th** among the 132 economies featured in the GII 2023.



> Spain ranks **28th** among the 50 high-income group economies.



> Spain ranks **18th** among the 39 economies in Europe.



> Spain GII Ranking (2020-2023)

The table shows the rankings of Spain over the past four years. 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 Spain in the GII 2023 is between ranks 28 and 30.

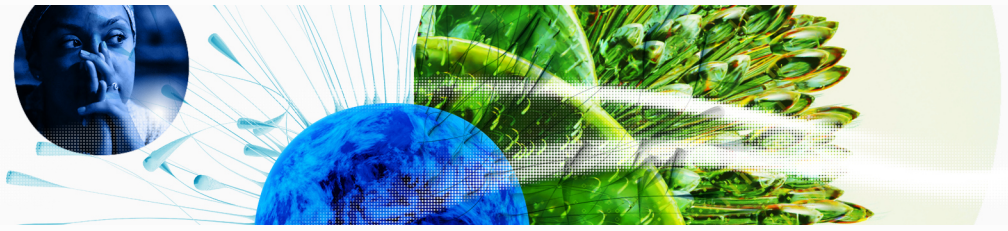
	GII Position	Innovation Inputs	Innovation Outputs
2020	30th	27th	27th
2021	30th	28th	29th
2022	29th	28th	26th
2023	29th	28th	26th

Spain performs better in innovation outputs than innovation inputs in 2023.

This year Spain ranks **28th** in innovation inputs. This position is the same as last year.

Spain ranks **26th** in innovation outputs. This position is the same as last year.

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→ Expected vs. observed innovation performance

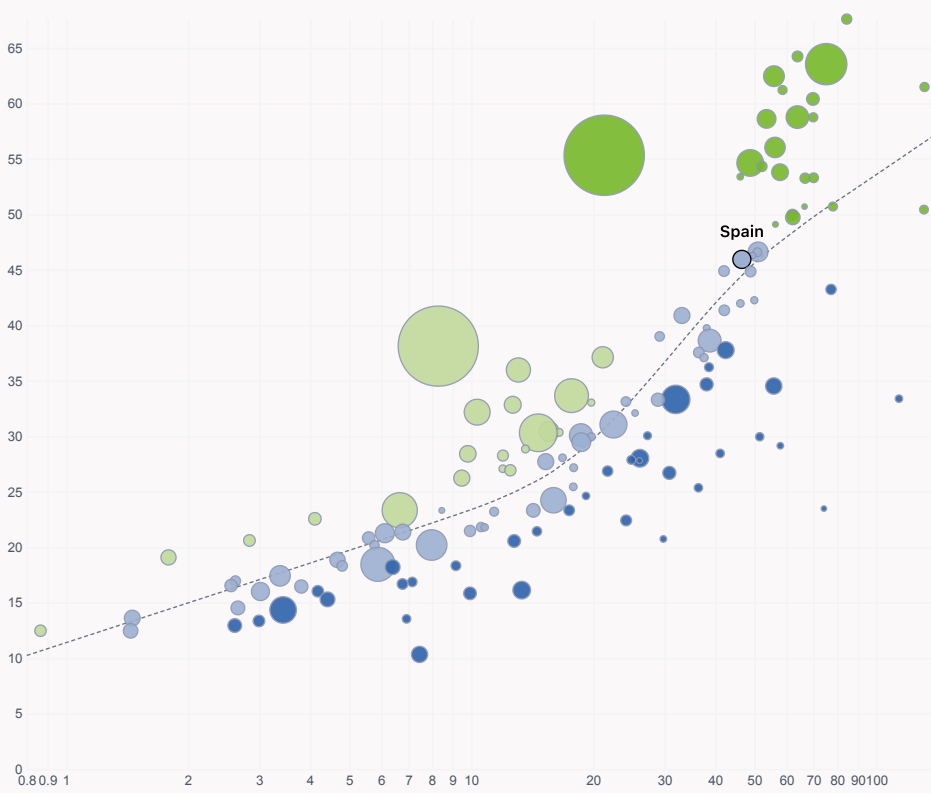
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected and those below are performing below expectations.



> Relative to GDP, Spain's performance is at expectations for its level of development.

> Innovation overperformers relative to their economic development

↑ **GII Score**



- Innovation leader
- Performing above expectations for level of development
- Performing at expectations for level of development
- Performing below expectations for level of development

Size legend (Population)



→ GDP per capita, PPP logarithmic scale (thousands of \$)

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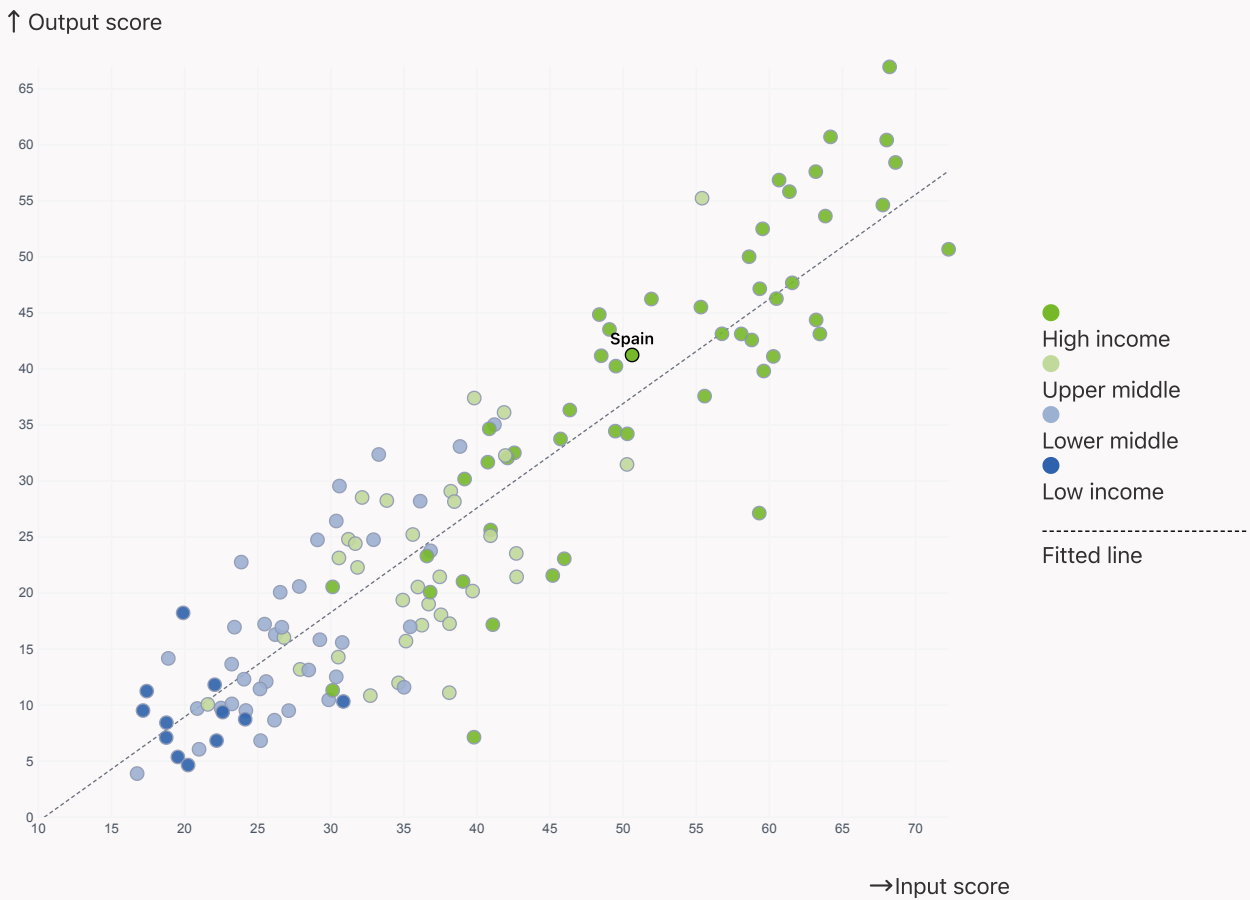
→ Effectively translating innovation investments into innovation outputs

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.

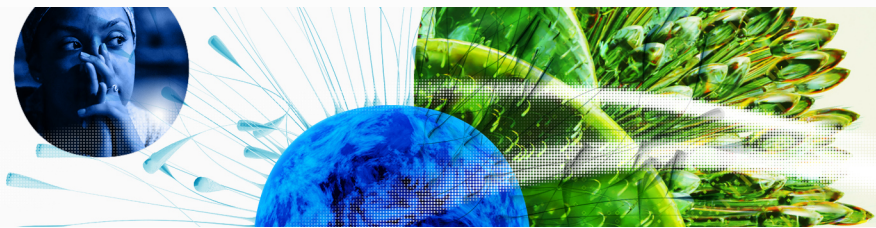


> Spain produces more innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs

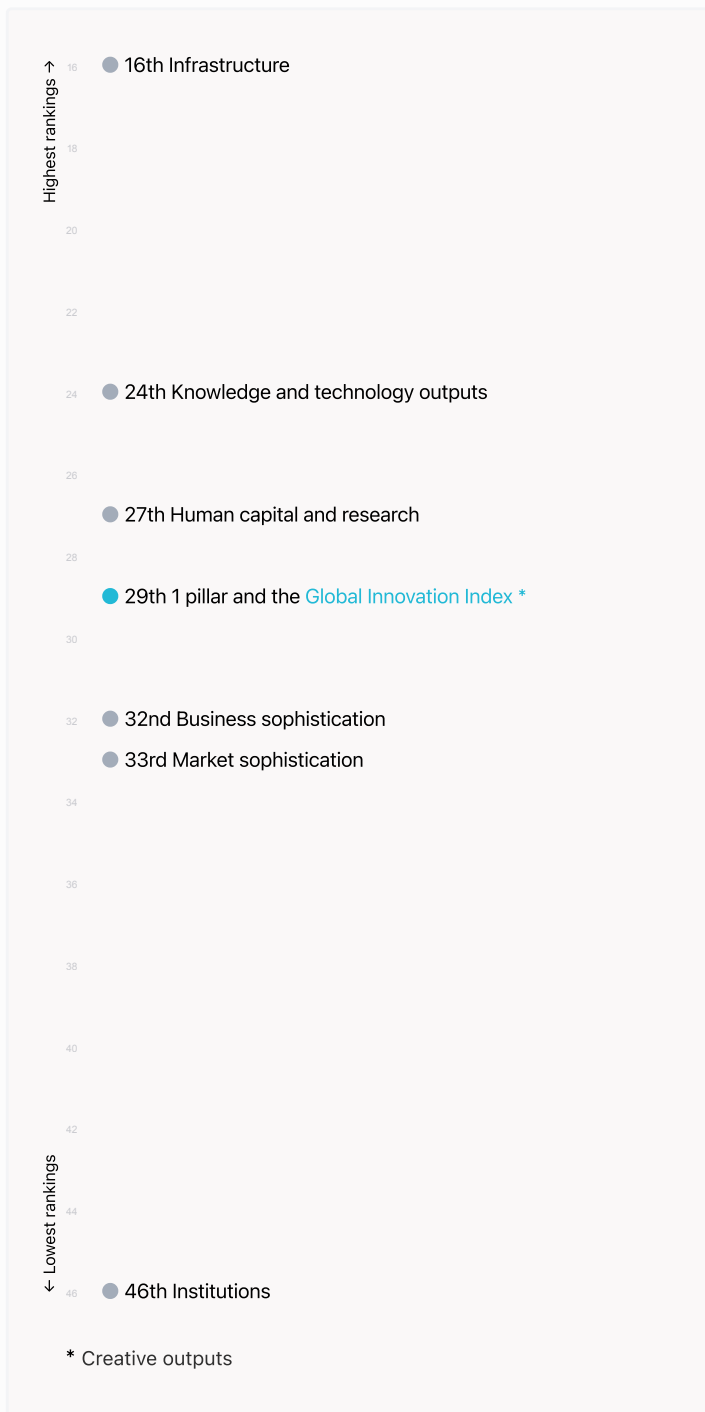


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→ Overview of Spain's rankings in the seven areas of the GII in 2023

The chart shows the ranking for each of the seven areas that the GII comprises. The strongest areas for Spain are those that rank above the GII (shown in blue) and the weakest are those that rank below.



> Highest rankings



Spain ranks highest in Infrastructure (16th), Knowledge and technology outputs (24th), Human capital and research (27th) and Creative outputs (29th).

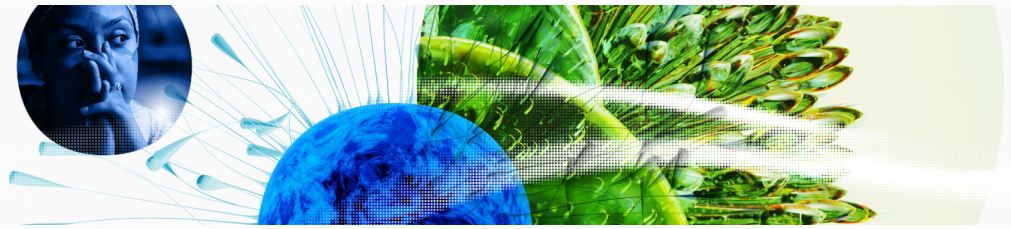
> Lowest rankings



Spain ranks lowest in Institutions (46th), Market sophistication (33rd) and Business sophistication (32nd).

The full WIPO Intellectual Property Statistics profile for Spain can be found on [this link](#).

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→ Benchmark of Spain against other country groupings for each of the seven areas of the GII Index

The charts show the relative position of Spain (blue bar) against other country groupings (grey bars), for each of the seven areas of the GII Index.

> High-Income economies

Spain performs below the high-income group average in Business sophistication, Market sophistication, Human capital and research, Institutions.

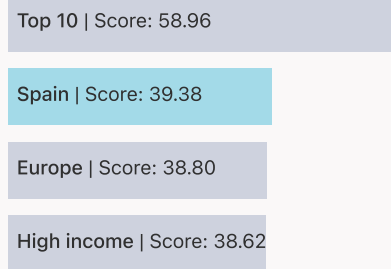


> Europe

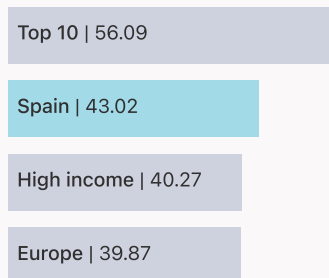
Spain performs above the regional average in Knowledge and technology outputs, Creative outputs, Market sophistication, Human capital and research, Infrastructure.



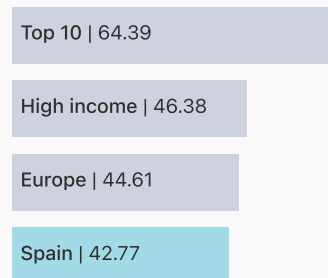
Knowledge and technology outputs



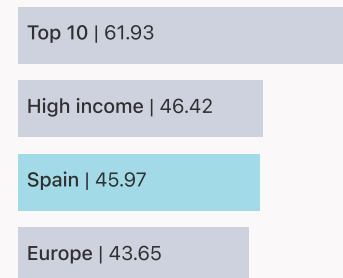
Creative outputs



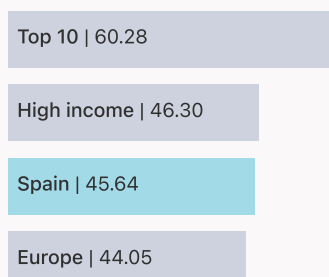
Business sophistication



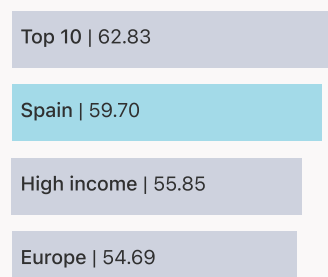
Market sophistication



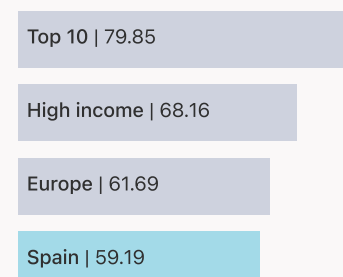
Human capital and research



Infrastructure



Institutions





→ Innovation strengths and weaknesses in Spain

The table below gives an overview of the indicator strengths and weaknesses of Spain in the GII 2023.



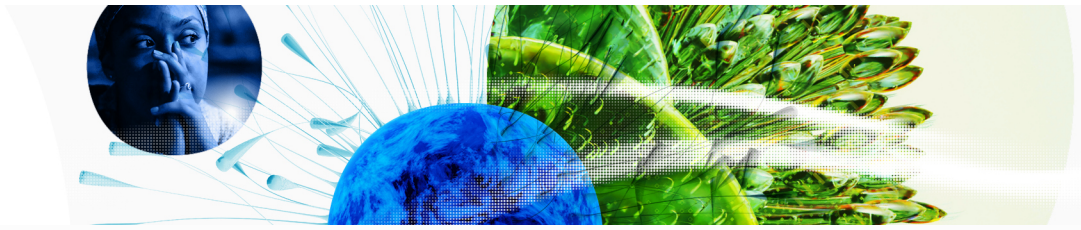
> Spain's main innovation strengths are **Tertiary enrolment, % gross** (rank 6), **National feature films/mn pop. 15-69** (rank 8) and **ISO 14001 environment/bn PPP\$ GDP** (rank 11).

Strengths

Weaknesses

Rank	Code	Indicator name	Rank	Code	Indicator name
6	2.2.1	Tertiary enrolment, % gross	107	6.2.1	Labor productivity growth, %
8	7.2.2	National feature films/mn pop. 15-69	91	1.3.1	Policies for doing business
11	3.3.3	ISO 14001 environment/bn PPP\$ GDP	75	1.2.3	Cost of redundancy dismissal
12	6.1.5	Citable documents H-index	74	3.2.3	Gross capital formation, % GDP
12	6.2.3	Software spending, % GDP	70	5.2.1	University-industry R&D collaboration
13	5.1.2	Firms offering formal training, %	65	2.2.2	Graduates in science and engineering, %
14	7.1.4	Industrial designs by origin/bn PPP\$ GDP	63	2.1.1	Expenditure on education, % GDP
14	2.1.3	School life expectancy, years	58	2.1.2	Government funding/pupil, secondary, % GDP/cap
15	2.3.3	Global corporate R&D investors, top 3, mn US\$	57	2.2.3	Tertiary inbound mobility, %
16	4.3.3	Domestic market scale, bn PPP\$	45	4.1.1	Finance for startups and scaleups

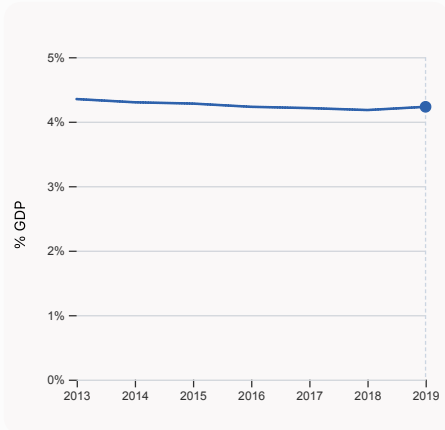
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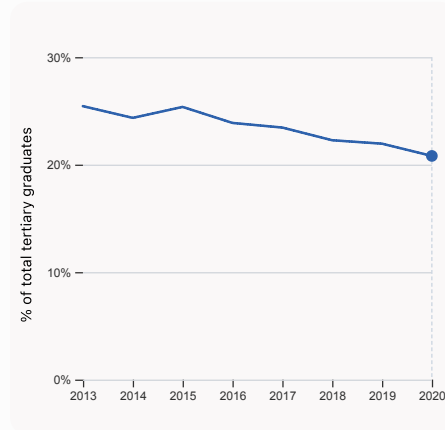
→ Spain's innovation system

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

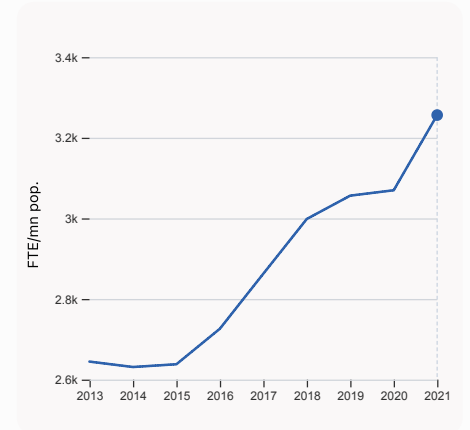
> Innovation inputs in Spain



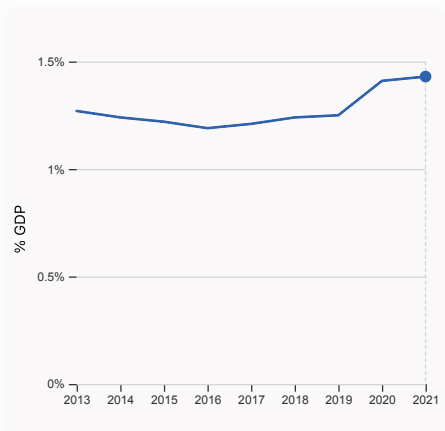
2.1.1 Expenditure on education, % GDP
was equal to 4.23% GDP in 2019, up by 0.05 percentage points from the year prior – and equivalent to an indicator rank of 63.



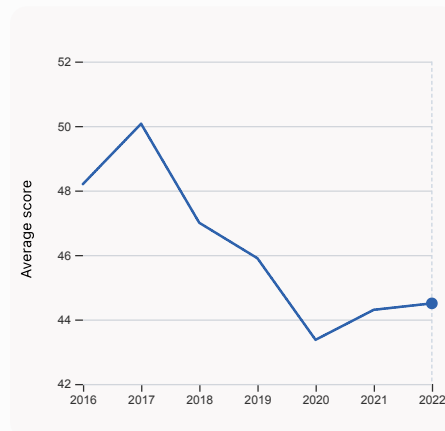
2.2.2 Graduates in science and engineering, %
was equal to 20.81% of total tertiary graduates in 2020, down by 1.14 percentage points from the year prior – and equivalent to an indicator rank of 65.



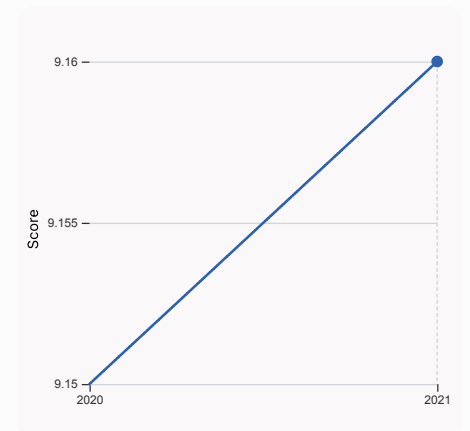
2.3.1 Researchers, FTE/mn pop.
was equal to 3,256.28 FTE/mn pop. in 2021, up by 6.075% from the year prior – and equivalent to an indicator rank of 30.



2.3.2 Gross expenditure on R&D, % GDP
was equal to 1.43% GDP in 2021, up by 0.02 percentage points from the year prior – and equivalent to an indicator rank of 30.

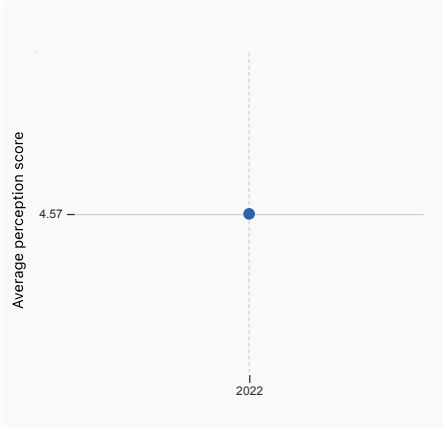
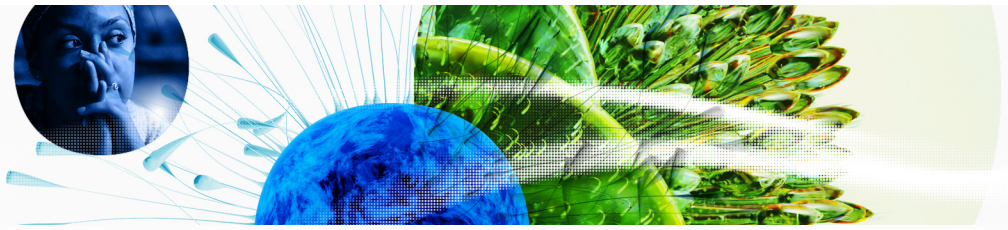


2.3.4 QS university ranking, top 3
was equal to an average score of 44.5 for the top 3 universities in 2022, up by 0.45% from the year prior – and equivalent to an indicator rank of 25.

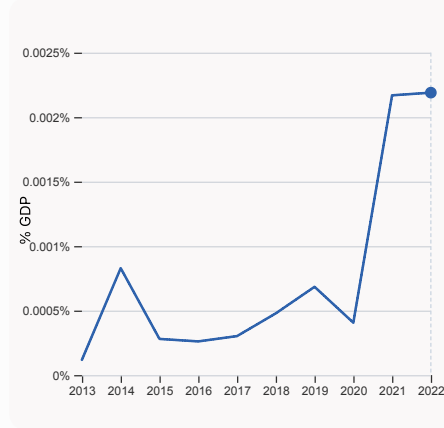


3.1.1 ICT access
was equal to a score of 9.16 in 2021, up by 0.11% from the year prior – and equivalent to an indicator rank of 38.

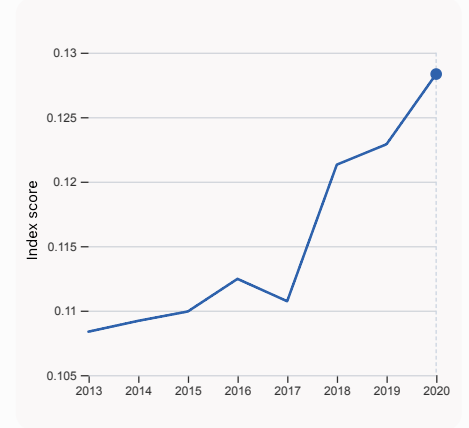
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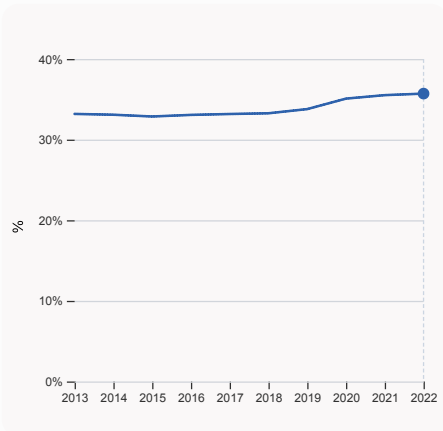
4.1.1 Finance for startups and scaleups was equal to an average perception score of 4.57 in 2022, equivalent to an indicator rank of 45.



4.2.4 VC received, value, % GDP was equal to 0.00219% GDP in 2022, up by 0.000021 percentage points from the year prior – and equivalent to an indicator rank of 37.



4.3.2 Domestic industry diversification was equal to an index score of 0.128 in 2020, up by 4.43% from the year prior – and equivalent to an indicator rank of 38.

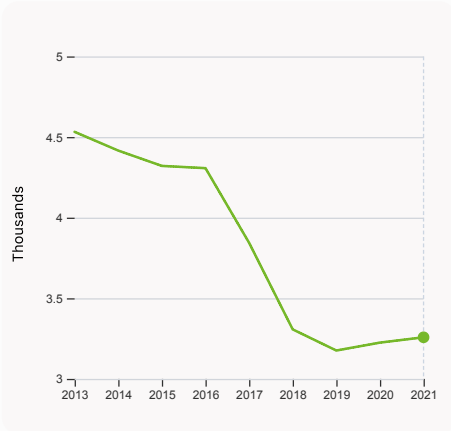


5.1.1 Knowledge-intensive employment, % was equal to 35.71% in 2022, up by 0.19 percentage points from the year prior – and equivalent to an indicator rank of 39.

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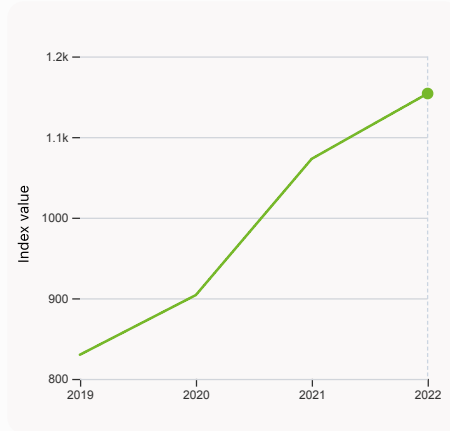


> Innovation outputs in Spain



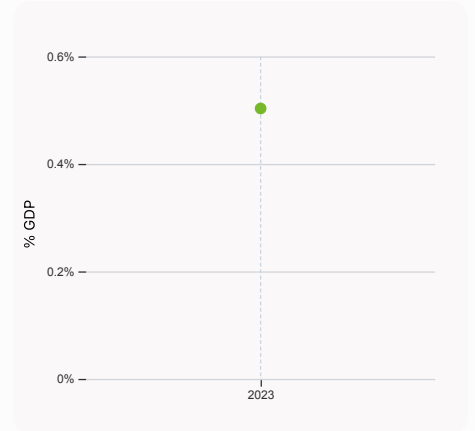
6.1.1 Patents by origin

was equal to 3.26 Thousands in 2021, up by 1.023% from the year prior – and equivalent to an indicator rank of 42.



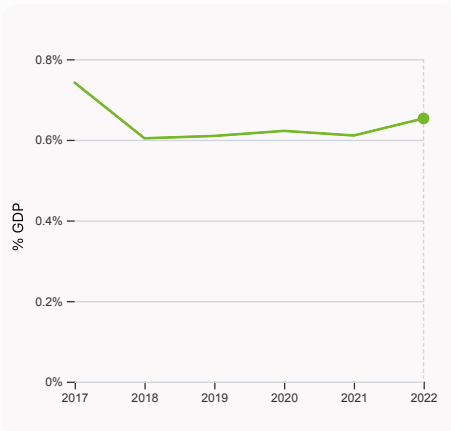
6.1.5 Citable documents H-index

was equal to an index value of 1,154 in 2022, up by 7.55% from the year prior – and equivalent to an indicator rank of 12.



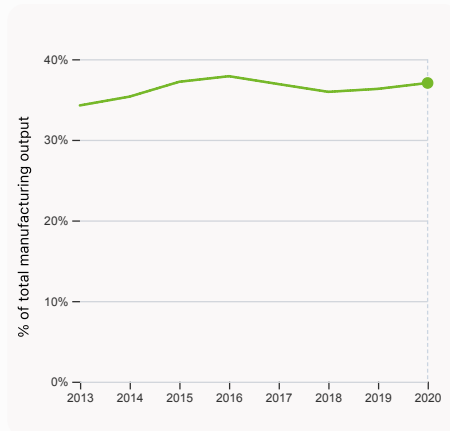
6.2.2 Unicorn valuation, % GDP

was equal to 0.503 % GDP in 2023 – and equivalent to an indicator rank of 39.



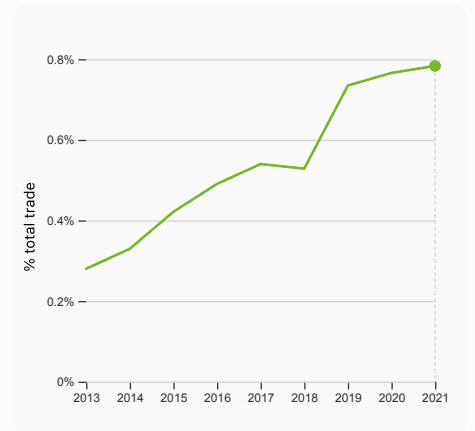
6.2.3 Software spending, % GDP

was equal to 0.653% GDP in 2022, up by 0.042 percentage points from the year prior – and equivalent to an indicator rank of 12.



6.2.4 High-tech manufacturing, %

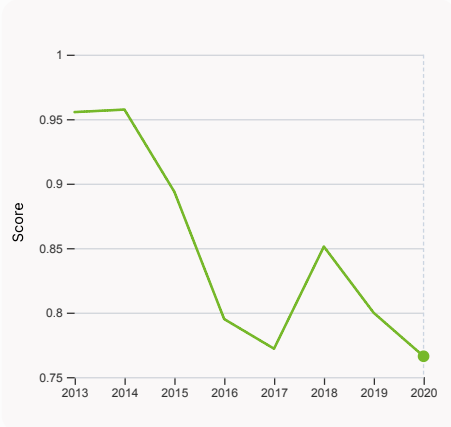
was equal to 37.05% of total manufacturing output in 2020, up by 0.73 percentage points from the year prior – and equivalent to an indicator rank of 31.



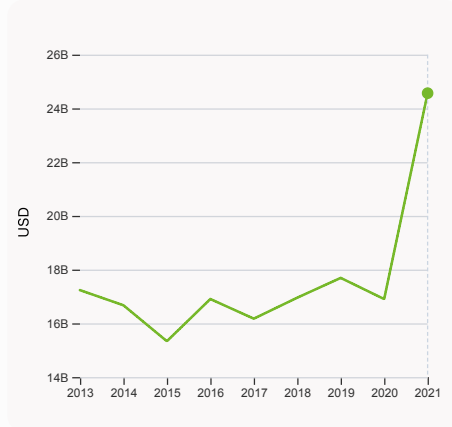
6.3.1 Intellectual property receipts, % total trade

was equal to 0.783% total trade in 2021, up by 0.017 percentage points from the year prior – and equivalent to an indicator rank of 24.

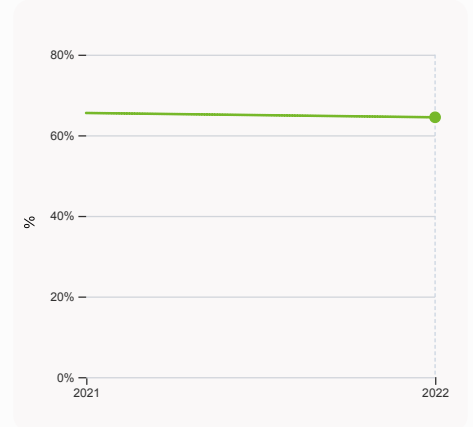
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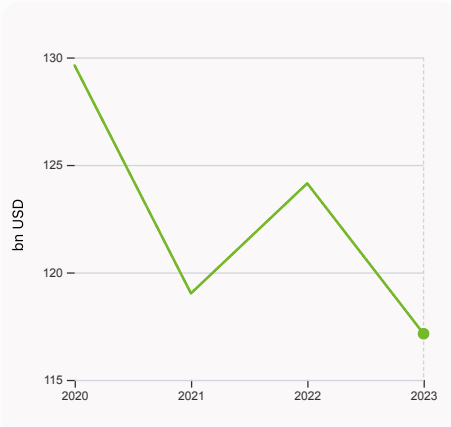
6.3.2 Production and export complexity was equal to a score of 0.766 in 2020, down by 4.21% from the year prior – and equivalent to an indicator rank of 33.



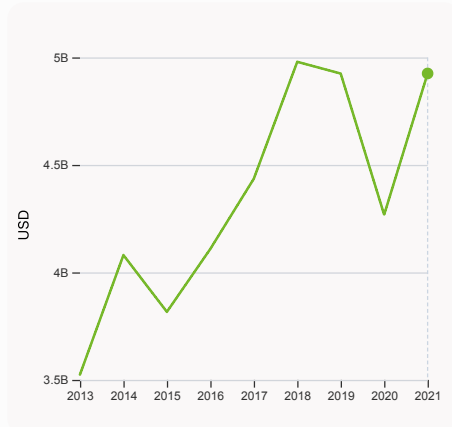
6.3.3 High-tech exports was equal to 24,566,206,872 USD in 2021, up by 45.33% from the year prior – and equivalent to an indicator rank of 37.



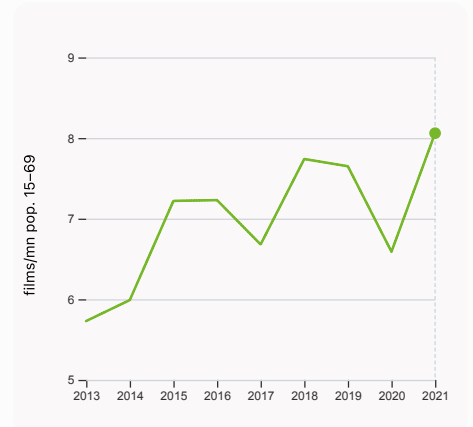
7.1.1 Intangible asset intensity, top 15, % was equal to 64.46% in 2022, down by 1.07 percentage points from the year prior – and equivalent to an indicator rank of 29.



7.1.3 Global brand value, top 5,000 was equal to 117.147 bn USD in 2023, down by 5.63% from the year prior – and equivalent to an indicator rank of 24.

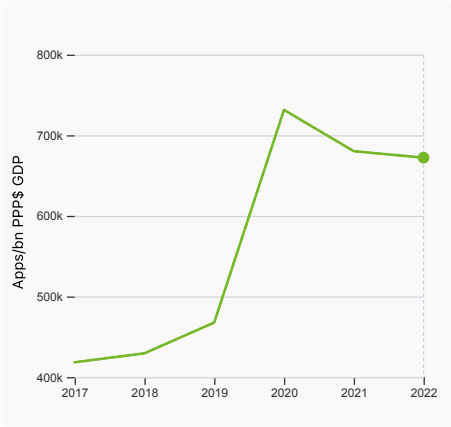
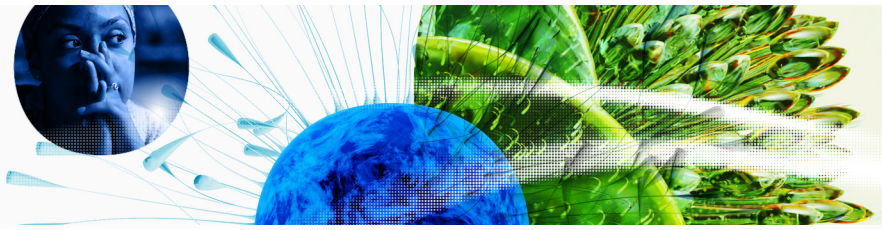


7.2.1 Cultural and creative services exports was equal to 4,925,403,000 USD in 2021, up by 15.39% from the year prior – and equivalent to an indicator rank of 28.



7.2.2 National feature films/mn pop. 15-69 was equal to 8.06 films/mn pop. 15-69 in 2021, up by 22.31% from the year prior – and equivalent to an indicator rank of 8.

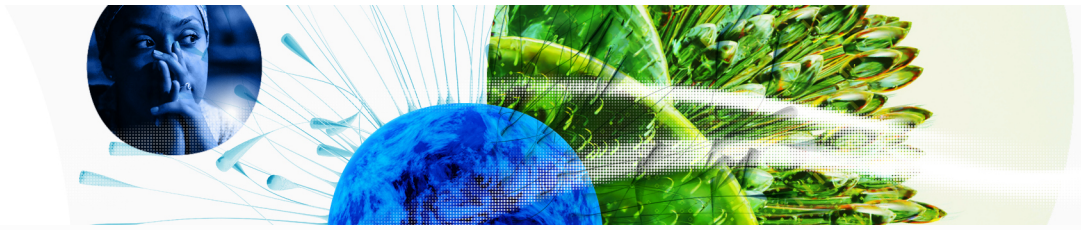
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7.3.4 Mobile app creation/bn PPP\$ GDP

was equal to 672,218.09 Apps/bn PPP\$ GDP in 2022, down by 1.18% from the year prior – and equivalent to an indicator rank of 33.

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→ Spain's innovation top performers

> 2.3.3 Global corporate R&D investors from Spain

Rank	Firm	Industry	R&D	R&D Growth	R&D Intensity
			[mn EUR]	[%]	[%]
146	BANCO SANTANDER	Banks	1,325	18	3
233	TELEFONICA	Fixed Line Telecommunications	835	-13	2
249	AMADEUS	Software & Computer Services	765	-11	29
532	IBERDROLA	Electricity	337	15	1

Source: European Commission's Joint Research Centre (<https://iri.jrc.ec.europa.eu/scoreboard/2022-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 of Spain's top universities

Rank	University	Score
178	UNIVERSITAT AUTONOMA DE BARCELONA	45.80
184	UNIVERSITAT DE BARCELONA	45.50
215	UNIVERSIDAD AUTONOMA DE MADRID	42.20

Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2023>).

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".

> 6.2.2 Top Unicorn Companies in Spain

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	JOBANDTALENT	Internet software & services	Madrid	2
2	CABIFY	Auto & transportation	Madrid	1
3	TRAVELPERK	Travel	Barcelona	1

Source: CBInsights, Tracker – The Complete List of Unicorn Companies: <https://www.cbinsights.com/research-unicorn-companies>



> 7.1.1 Top 15 intangible-asset intensive companies in Spain

Rank	Firm	Intensity, %
1	INDUSTRIA DE DISEÑO TEXTIL SA	71.78
2	IBERDROLA SA	29.99
3	TELEFONICA SA	48.35

Source: Brand Finance (<https://brandirectory.com/reports/gifit-2022>).
Note: Brand Finance only provides within economy ranks.

> 7.1.3 Top 5,000 companies in Spain with highest global brand value

Rank	Brand	Industry	Brand Value, mn USD
1	SANTANDER	Banking	16,923.9
2	ZARA	Apparel	11,049.1
3	MOVISTAR	Telecoms	7,638.4

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

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GII 2023 rank

29

Spain

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
26	28	High	EUR	47.6	2,216.0	46,551.2
Score / Value Rank				Score / Value Rank		
Institutions 59.2 46				Business sophistication 42.8 32		
1.1 Institutional environment 62.3 38				5.1 Knowledge workers 56.6 23		
1.1.1 Operational stability for businesses* 61.8 41				5.1.1 Knowledge-intensive employment, % 35.7 39		
1.1.2 Government effectiveness* 62.9 33				5.1.2 Firms offering formal training, % 55.2 13 ●◆		
1.2 Regulatory environment 72.8 38				5.1.3 GERD performed by business, % GDP 0.8 30		
1.2.1 Regulatory quality* 63.1 40				5.1.4 GERD financed by business, % 49.2 33		
1.2.2 Rule of law* 65.4 33				5.1.5 Females employed w/advanced degrees, % 24.9 20		
1.2.3 Cost of redundancy dismissal 17.4 75 ○				5.2 Innovation linkages 29.4 41		
1.3 Business environment 42.4 77 ○				5.2.1 University-industry R&D collaboration+ 42.0 70 ○		
1.3.1 Policies for doing business* 38.1 91 ○◇				5.2.2 State of cluster development+ 64.1 32		
1.3.2 Entrepreneurship policies and culture* 46.6 39				5.2.3 GERD financed by abroad, % GDP 0.1 34		
Human capital and research 45.6 27				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP 0.0 35		
2.1 Education 58.0 47				5.2.5 Patent families/bn PPP\$ GDP 0.5 31		
2.1.1 Expenditure on education, % GDP ● 4.2 63 ○				5.3 Knowledge absorption 42.3 38		
2.1.2 Government funding/pupil, secondary, % GDP/cap 19.1 58 ○				5.3.1 Intellectual property payments, % total trade 1.3 26		
2.1.3 School life expectancy, years 18.1 14 ●◆				5.3.2 High-tech imports, % total trade 8.5 57		
2.1.4 PISA scales in reading, maths and science 482.3 29				5.3.3 ICT services imports, % total trade 2.2 31		
2.1.5 Pupil-teacher ratio, secondary 11.2 44				5.3.4 FDI net inflows, % GDP 2.6 61		
2.2 Tertiary education 35.6 46				5.3.5 Research talent, % in businesses 39.2 35		
2.2.1 Tertiary enrolment, % gross 96.0 6 ●◆				Knowledge and technology outputs 39.4 24		
2.2.2 Graduates in science and engineering, % 20.8 65 ○				6.1 Knowledge creation 38.6 25		
2.2.3 Tertiary inbound mobility, % 3.8 57 ○				6.1.1 Patents by origin/bn PPP\$ GDP 1.6 42		
2.3 Research and development (R&D) 43.3 24				6.1.2 PCT patents by origin/bn PPP\$ GDP 0.7 28		
2.3.1 Researchers, FTE/mn pop. 3,256.3 30				6.1.3 Utility models by origin/bn PPP\$ GDP 1.5 13 ◆		
2.3.2 Gross expenditure on R&D, % GDP 1.4 30				6.1.4 Scientific and technical articles/bn PPP\$ GDP n/a n/a		
2.3.3 Global corporate R&D investors, top 3, mn US\$ 68.8 15 ●◆				6.1.5 Citable documents H-index 61.8 12 ●◆		
2.3.4 QS university ranking, top 3* 45.1 25				6.2 Knowledge impact 39.3 32		
Infrastructure 59.7 16 ●◆				6.2.1 Labor productivity growth, % -0.5 107 ○◇		
3.1 Information and communication technologies (ICTs) 84.0 24				6.2.2 Unicorn valuation, % GDP 0.5 39		
3.1.1 ICT access* 87.6 38				6.2.3 Software spending, % GDP 0.7 12 ●◆		
3.1.2 ICT use* 90.1 21				6.2.4 High-tech manufacturing, % 37.1 31		
3.1.3 Government's online service* 84.1 25				6.3 Knowledge diffusion 40.3 34		
3.1.4 E-participation* 74.4 25				6.3.1 Intellectual property receipts, % total trade 0.8 24		
3.2 General infrastructure 42.9 29				6.3.2 Production and export complexity 68.6 33		
3.2.1 Electricity output, GWh/mn pop. 5,724.2 35				6.3.3 High-tech exports, % total trade 5.1 37		
3.2.2 Logistics performance* 81.8 13				6.3.4 ICT services exports, % total trade 3.0 43		
3.2.3 Gross capital formation, % GDP 22.7 74 ○				6.3.5 ISO 9001 quality/bn PPP\$ GDP 15.9 18		
3.3 Ecological sustainability 52.2 19				Creative outputs 43.0 29		
3.3.1 GDP/unit of energy use 14.6 28				7.1 Intangible assets 52.4 20		
3.3.2 Environmental performance* 63.9 27				7.1.1 Intangible asset intensity, top 15, % 64.5 29		
3.3.3 ISO 14001 environment/bn PPP\$ GDP 7.2 11 ●◆				7.1.2 Trademarks by origin/bn PPP\$ GDP 49.4 47		
Market sophistication 46.0 33				7.1.3 Global brand value, top 5,000 8.2 24		
4.1 Credit 45.5 34				7.1.4 Industrial designs by origin/bn PPP\$ GDP 7.7 14 ●◆		
4.1.1 Finance for startups and scaleups+ 50.1 45 ○				7.2 Creative goods and services 28.0 34		
4.1.2 Domestic credit to private sector, % GDP 108.9 23				7.2.1 Cultural and creative services exports, % total trade 1.0 28		
4.1.3 Loans from microfinance institutions, % GDP n/a n/a				7.2.2 National feature films/mn pop. 15-69 8.1 8 ●◆		
4.2 Investment 15.3 45				7.2.3 Entertainment and media market/th pop. 15-69 29.8 24		
4.2.1 Market capitalization, % GDP 55.8 32				7.2.4 Creative goods exports, % total trade 0.8 51		
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP 0.1 41				7.3 Online creativity 39.4 30		
4.2.3 VC recipients, deals/bn PPP\$ GDP 0.1 39				7.3.1 Generic top-level domains (TLDs)/th pop. 15-69 32.2 22		
4.2.4 VC received, value, % GDP 0.0 37				7.3.2 Country-code TLDs/th pop. 15-69 17.4 31		
4.3 Trade, diversification, and market scale 77.1 14 ●◆				7.3.3 GitHub commits/mn pop. 15-69 33.9 32		
4.3.1 Applied tariff rate, weighted avg., % 1.5 20				7.3.4 Mobile app creation/bn PPP\$ GDP 73.9 33		
4.3.2 Domestic industry diversification 93.3 38						
4.3.3 Domestic market scale, bn PPP\$ 2,216.0 16 ●◆						

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/gii-ranking>. 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 Spain.



> Spain has missing data for one indicator and outdated data for one indicator.

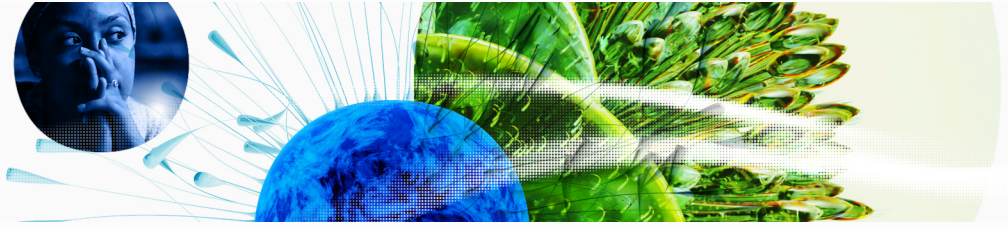
> Missing data for Spain

Code	Indicator name	Economy Year	Model Year	Source
4.1.3	Loans from microfinance institutions, % GDP	n/a	2021	International Monetary Fund, Financial Access Survey (FAS)

> Outdated data for Spain

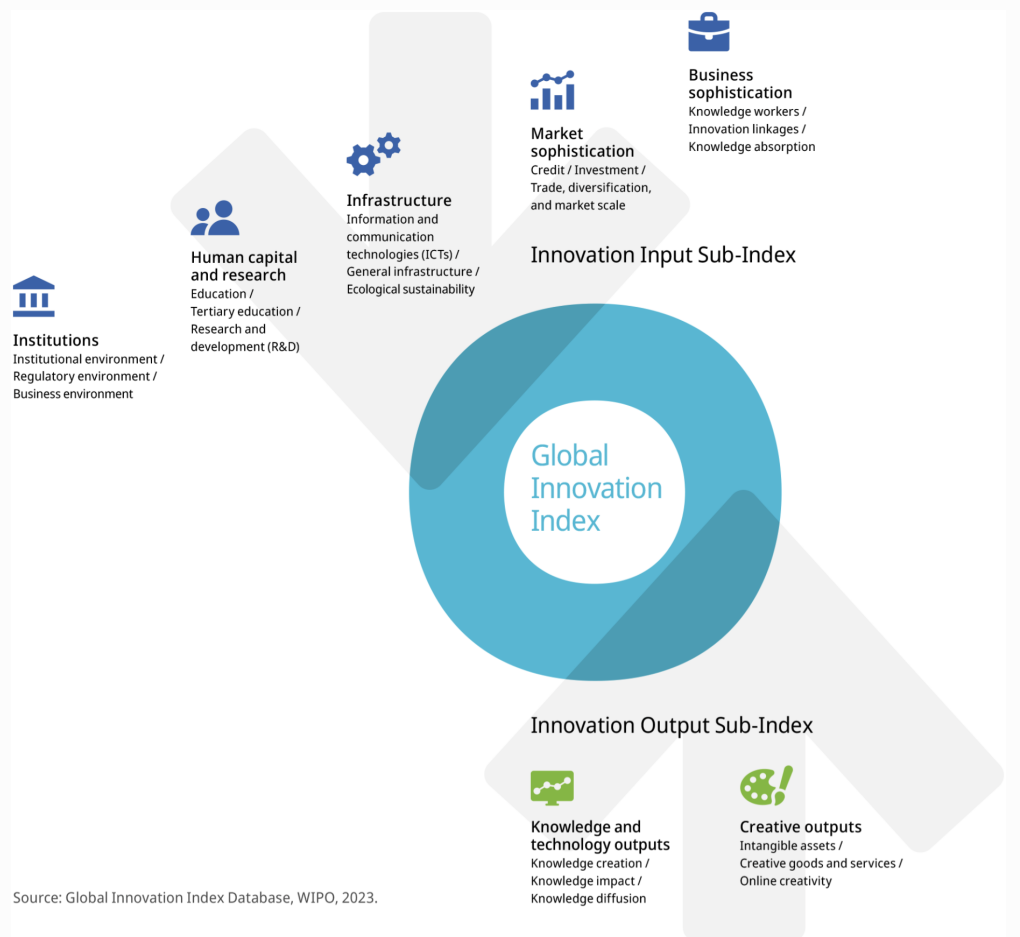
Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	2019	2021	UNESCO Institute for Statistics

Global Innovation Index 2023



→ 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.