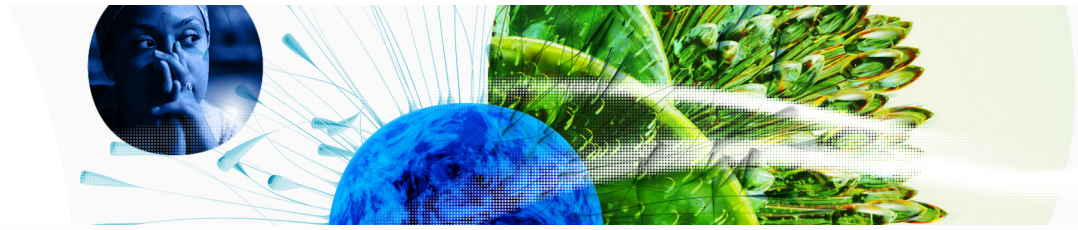
Global Innovation Index 2023



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**.

United Kingdom ranking in the Global Innovation Index 2023

> United Kingdom ranks 4th among the 132 economies featured in the GII 2023.

> United Kingdom ranks 4th among the 50 high-income group economies.

> United Kingdom ranks 3rd among the 39 economies in Europe.

> United Kingdom GII Ranking (2020-2023)

The table shows the rankings of United Kingdom 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 United Kingdom in the GII 2023 is between ranks 3 and 6.

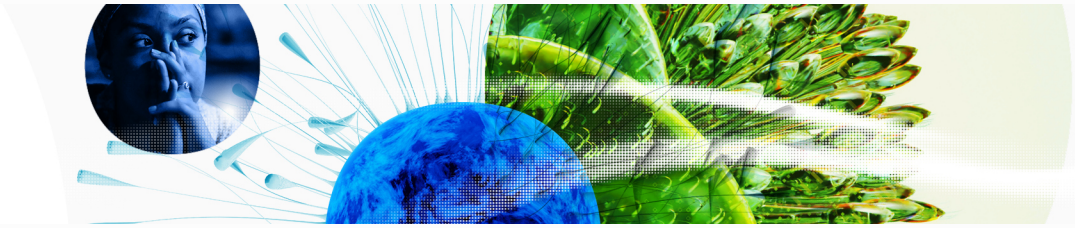
	GII Position	Innovation Inputs	Innovation Outputs
2020	4th	6th	3rd
2021	4th	7th	6th
2022	4th	7th	3rd
2023	4th	6th	2nd

United Kingdom performs better in innovation outputs than innovation inputs in 2023.

This year **United Kingdom ranks 6th in innovation inputs.** This position is higher than last year.

United Kingdom ranks 2nd in innovation outputs. This position is higher than last year.

Global Innovation Index 2023

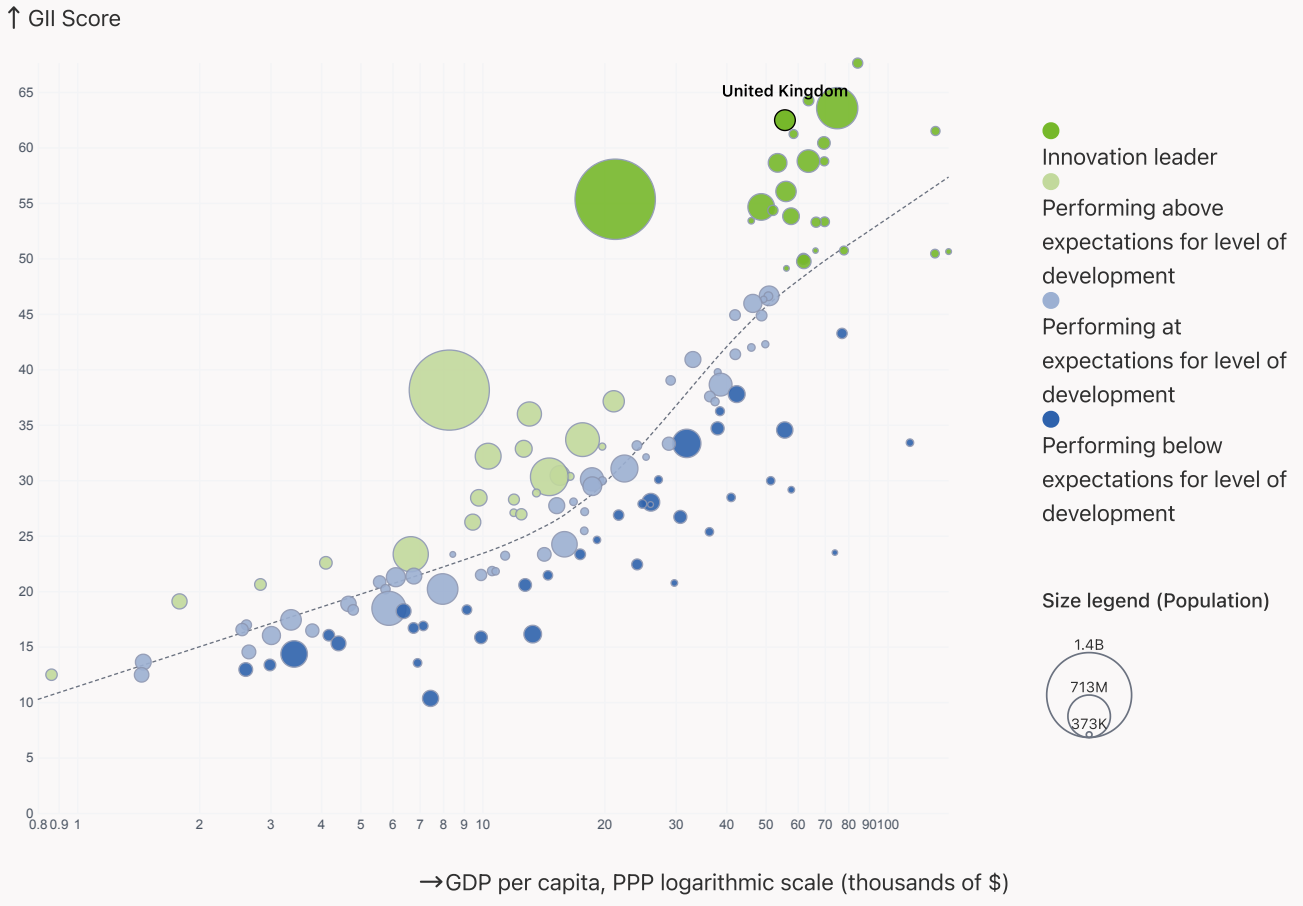


→ Expected vs. observed innovation performance

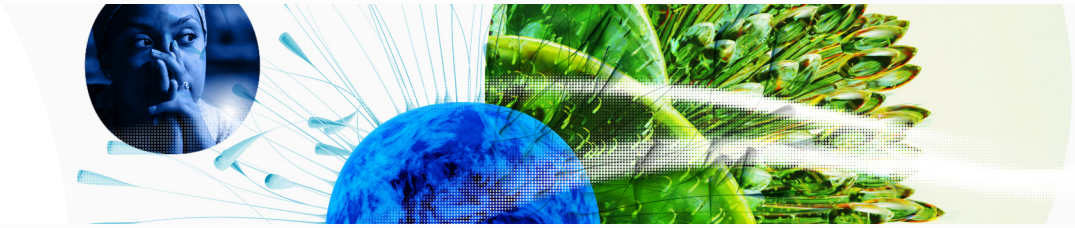
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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

> United Kingdom is an innovation leader, ranking in the top 25 of the GII.

> Innovation overperformers relative to their economic development



Global Innovation Index 2023

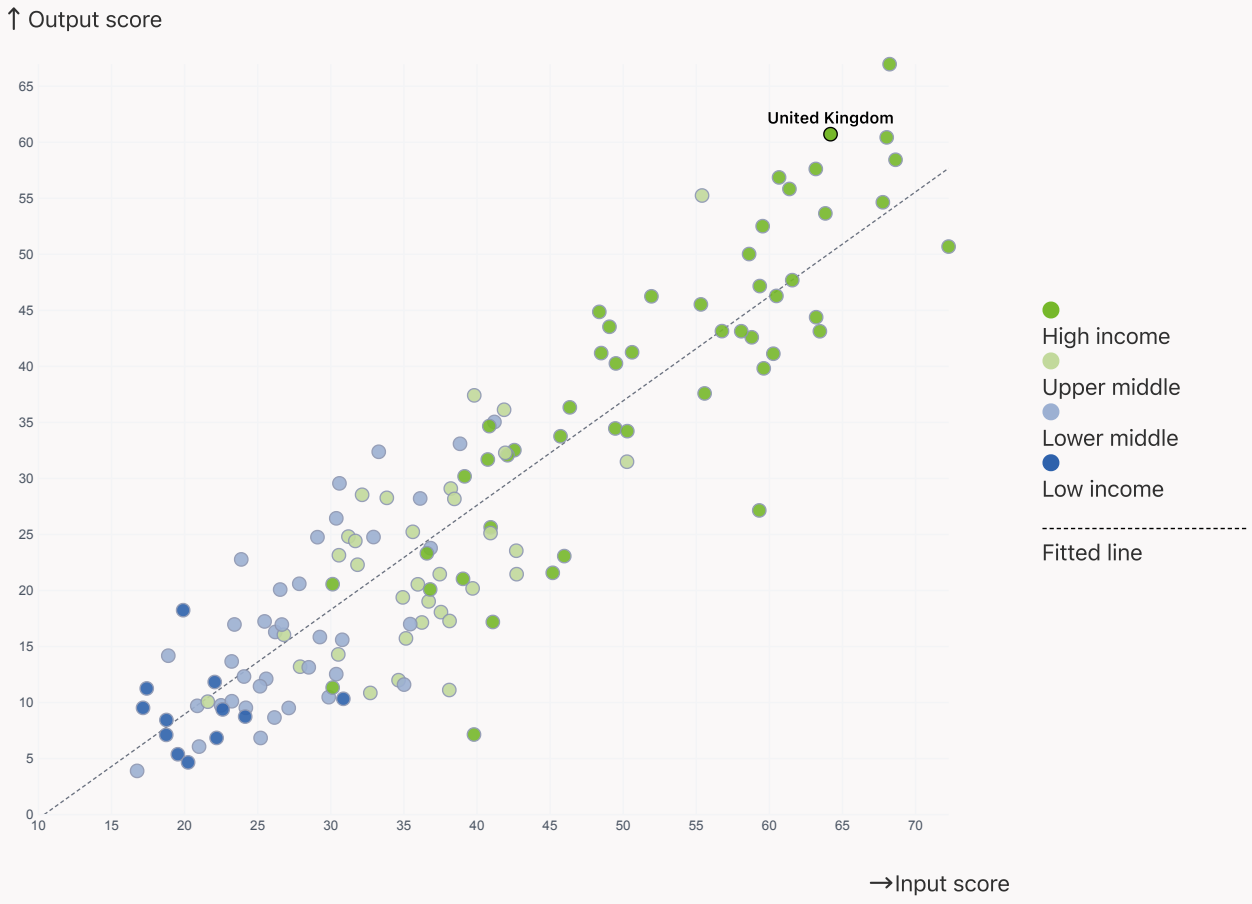


→ Effectively translating innovation investments into innovation outputs

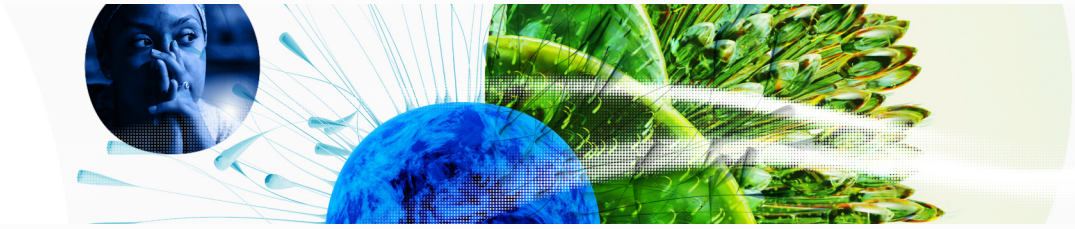
The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

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

> Relationship between innovation inputs and outputs

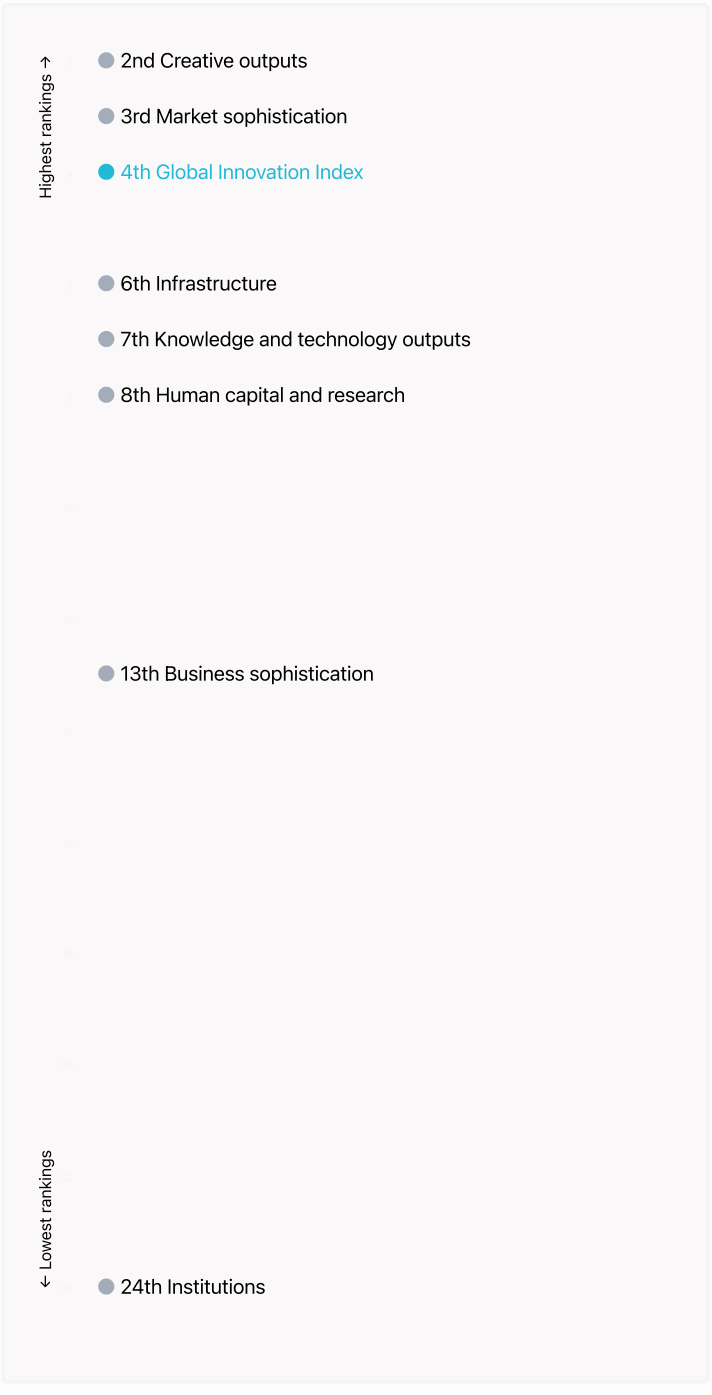


Global Innovation Index 2023



→ Overview of United Kingdom'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 United Kingdom are those that rank above the GII (shown in blue) and the weakest are those that rank below.



> Highest rankings

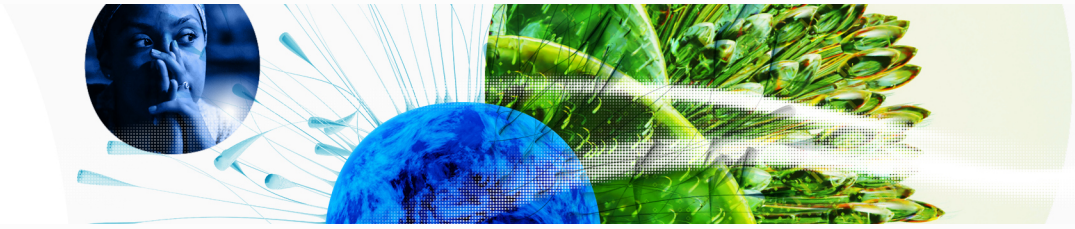
United Kingdom ranks highest in Creative outputs (2nd) and Market sophistication (3rd).

> Lowest rankings

United Kingdom ranks lowest in Institutions (24th), Business sophistication (13th) and Human capital and research (8th).

The full WIPO Intellectual Property Statistics profile for United Kingdom can be found on this link.

Global Innovation Index 2023



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

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

> High-Income economies

United Kingdom performs above the high-income group average in all the pillars.

> Europe

United Kingdom performs above the regional average in all the pillars.

Knowledge and technology outputs

- United Kingdom | Score: 61.36
- Top 10 | Score: 58.96
- Europe | Score: 38.80
- High income | Score: 38.62

Creative outputs

- United Kingdom | 59.96
- Top 10 | 56.09
- High income | 40.27
- Europe | 39.87

Business sophistication

- Top 10 | 64.39
- United Kingdom | 58.40
- High income | 46.38
- Europe | 44.61

Market sophistication

- United Kingdom | 69.27
- Top 10 | 61.93
- High income | 46.42
- Europe | 43.65

Human capital and research

- Top 10 | 60.28
- United Kingdom | 58.93
- High income | 46.30
- Europe | 44.05

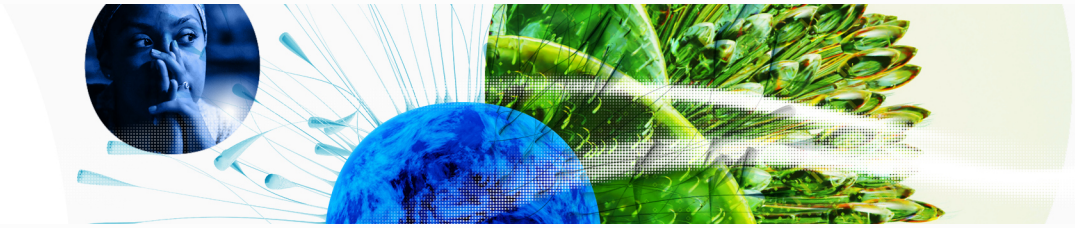
Infrastructure

- United Kingdom | 63.68
- Top 10 | 62.83
- High income | 55.85
- Europe | 54.69

Institutions

- Top 10 | 79.85
- United Kingdom | 70.85
- High income | 68.16
- Europe | 61.69

Global Innovation Index 2023



→ Innovation strengths and weaknesses in United Kingdom

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

> United Kingdom's main innovation strengths are **Citable documents H-index** (rank 1), **Software spending, % GDP** (rank 2) and **Environmental performance** (rank 2).

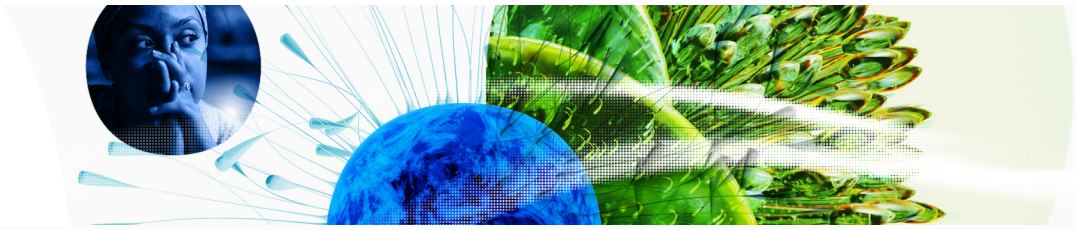
Strengths

Rank	Code	Indicator name
1	6.1.5	Citable documents H-index
2	6.2.3	Software spending, % GDP
2	3.3.2	Environmental performance
2	2.3.4	QS university ranking, top 3
3	3.1.2	ICT use
4	7.1.1	Intangible asset intensity, top 15, %
6	7.2.1	Cultural and creative services exports, % total trade
7	7.3.2	Country-code TLDs/th pop. 15-69
7	2.3.3	Global corporate R&D investors, top 3, mn US$
7	6.2.2	Unicorn valuation, % GDP

Weaknesses

Rank	Code	Indicator name
114	3.2.3	Gross capital formation, % GDP
87	2.1.5	Pupil-teacher ratio, secondary
86	6.2.1	Labor productivity growth, %
76	5.3.4	FDI net inflows, % GDP
57	2.2.2	Graduates in science and engineering, %
50	3.2.1	Electricity output, GWh/mn pop.
38	1.3.2	Entrepreneurship policies and culture
38	2.1.2	Government funding/pupil, secondary, % GDP/cap
36	7.2.2	National feature films/mn pop. 15-69
34	5.3.5	Research talent, % in businesses

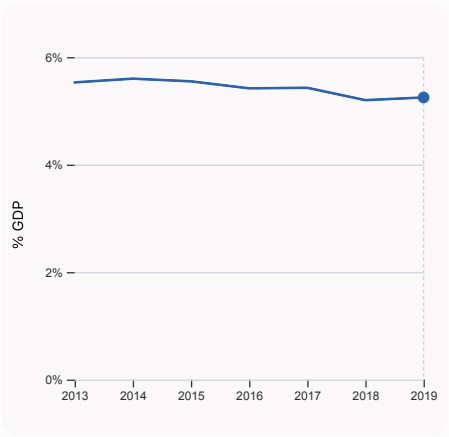
Global Innovation Index 2023



→ United Kingdom's innovation system

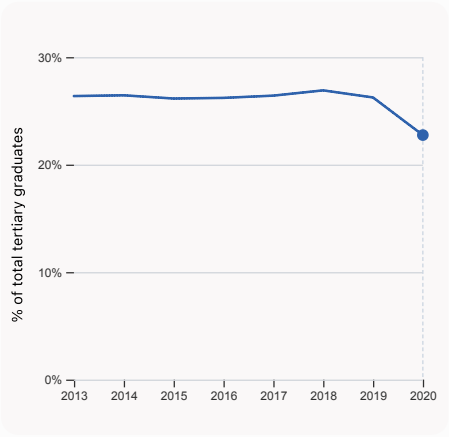
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in United Kingdom



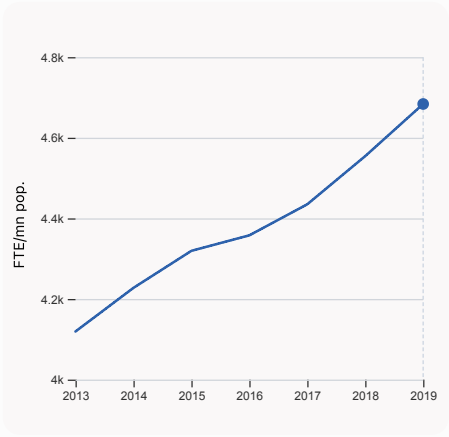
2.1.1 Expenditure on education, % GDP

was equal to 5.25% GDP in 2019, up by 0.05 percentage points from the year prior – and equivalent to an indicator rank of 27.



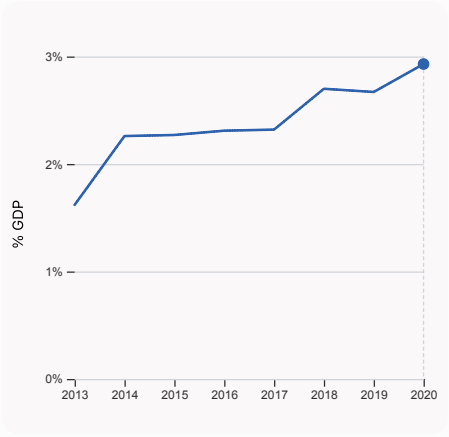
2.2.2 Graduates in science and engineering, %

was equal to 22.75% of total tertiary graduates in 2020, down by 3.5 percentage points from the year prior – and equivalent to an indicator rank of 57.



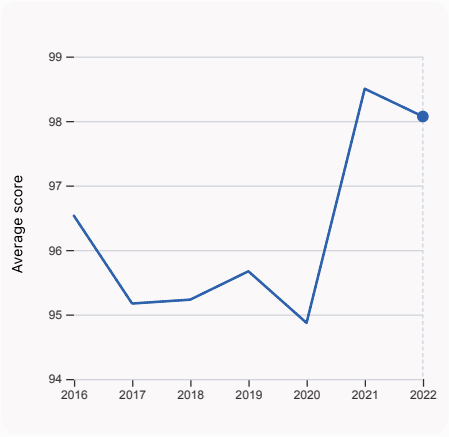
2.3.1 Researchers, FTE/mn pop.

was equal to 4,683.77 FTE/mn pop. in 2019, up by 2.84% from the year prior – and equivalent to an indicator rank of 20.



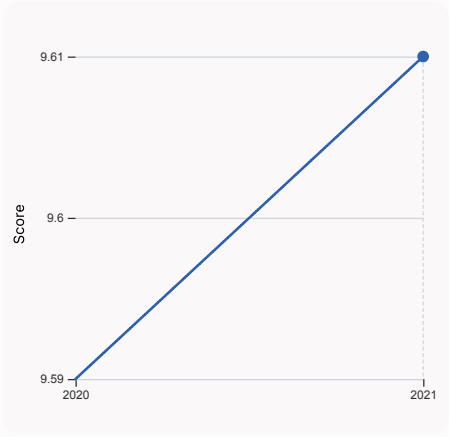
2.3.2 Gross expenditure on R&D, % GDP

was equal to 2.93% GDP in 2020, up by 0.26 percentage points from the year prior – and equivalent to an indicator rank of 11.



2.3.4 QS university ranking, top 3

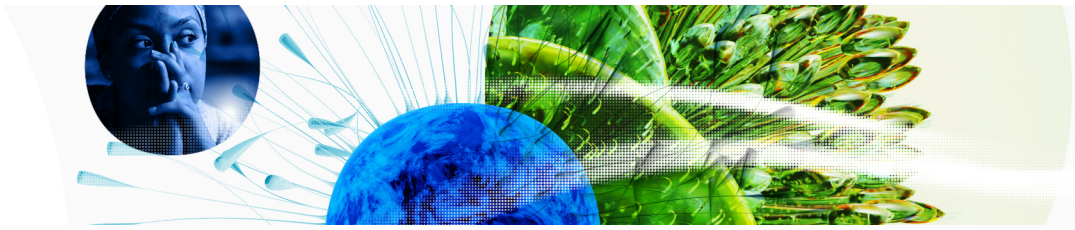
was equal to an average score of 98.07 for the top 3 universities in 2022, down by 0.44% from the year prior – and equivalent to an indicator rank of 2.

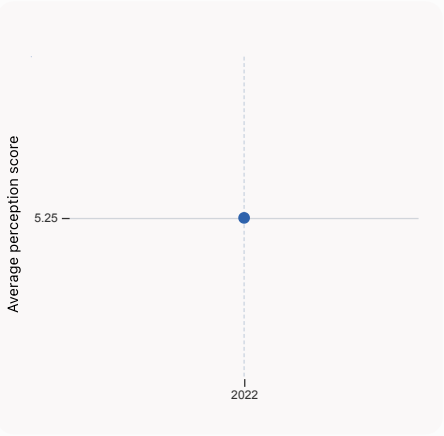


3.1.1 ICT access

was equal to a score of 9.61 in 2021, up by 0.21% from the year prior – and equivalent to an indicator rank of 10.

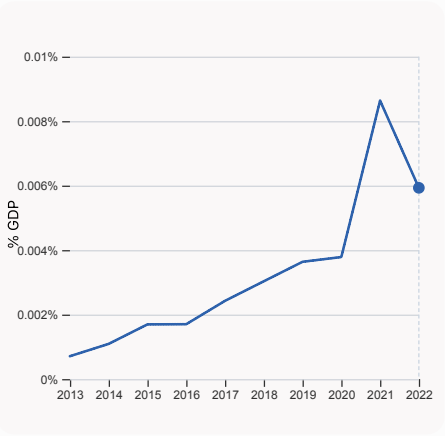
Global Innovation Index 2023





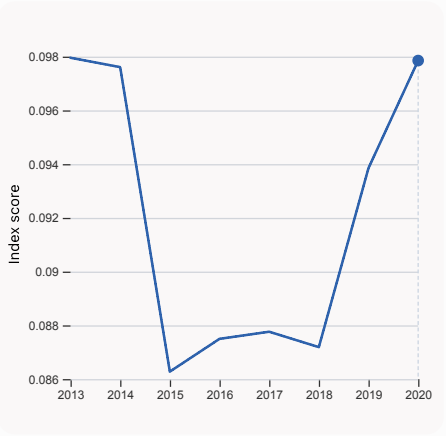
4.1.1 Finance for startups and scaleups

was equal to an average perception score of 5.25 in 2022, equivalent to an indicator rank of 27.



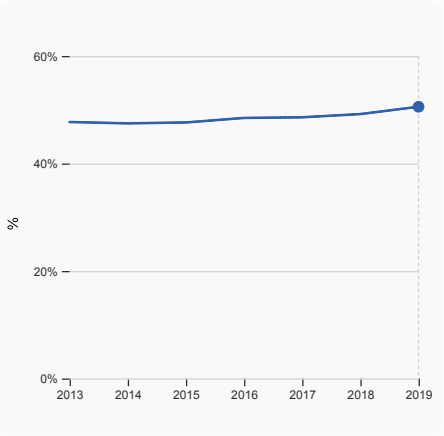
4.2.4 VC received, value, % GDP

was equal to 0.00593% GDP in 2022, down by 0.0027 percentage points from the year prior – and equivalent to an indicator rank of 8.



4.3.2 Domestic industry diversification

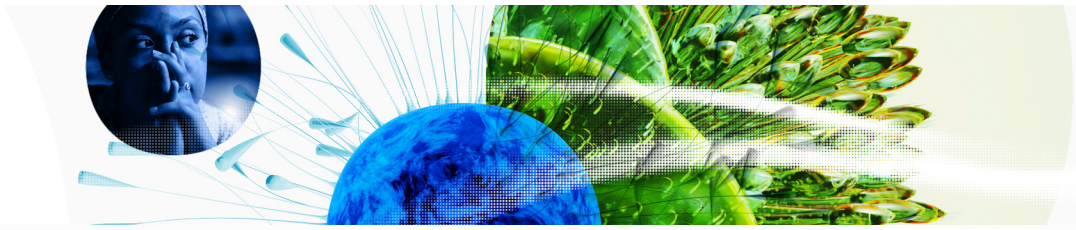
was equal to an index score of 0.098 in 2020, up by 4.26% from the year prior – and equivalent to an indicator rank of 14.



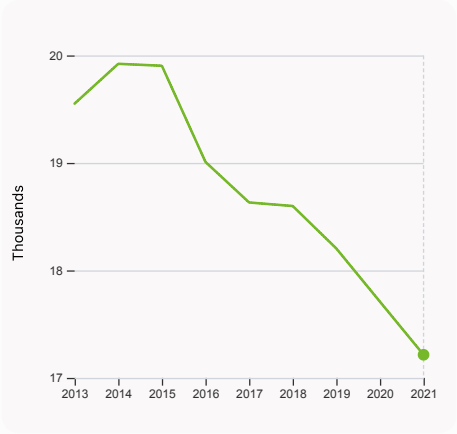
5.1.1 Knowledge-intensive employment, %

was equal to 50.56% in 2019, up by 1.36 percentage points from the year prior – and equivalent to an indicator rank of 11.

Global Innovation Index 2023

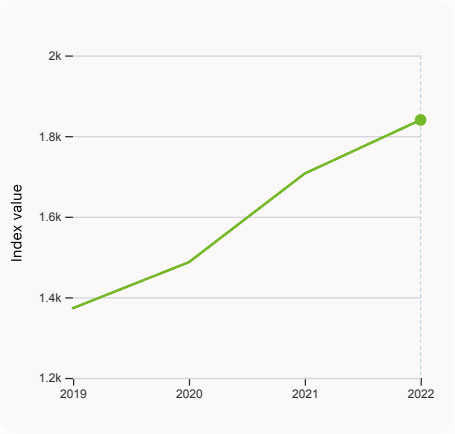


> Innovation outputs in United Kingdom



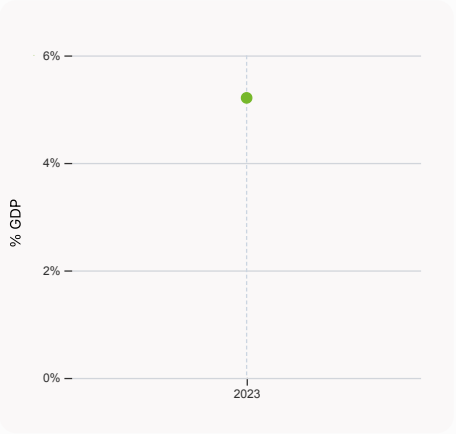
6.1.1 Patents by origin

was equal to 17.21 Thousands in 2021, down by 2.79% from the year prior – and equivalent to an indicator rank of 16.



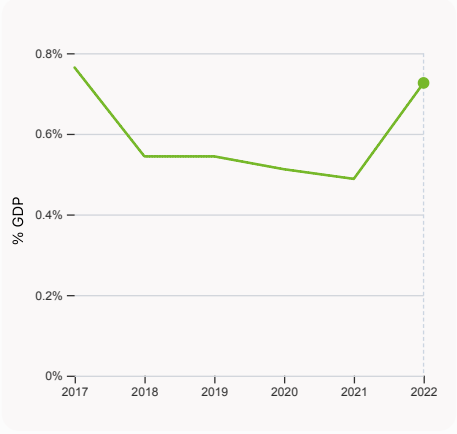
6.1.5 Citable documents H-index

was equal to an index value of 1,840 in 2022, up by 7.79% from the year prior – and equivalent to an indicator rank of 1.



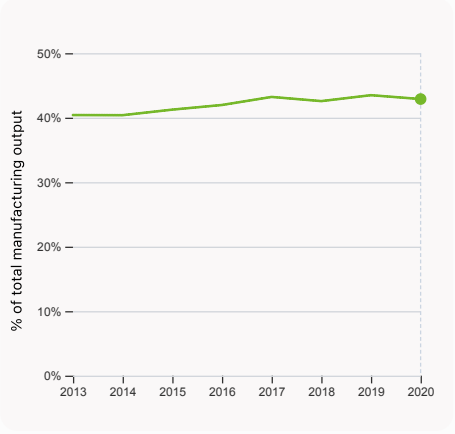
6.2.2 Unicorn valuation, % GDP

was equal to 5.21 % GDP in 2023 – and equivalent to an indicator rank of 7.



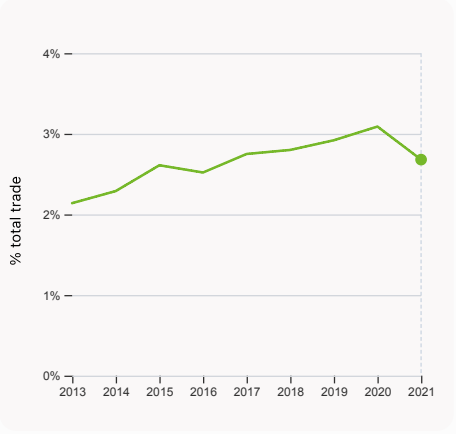
6.2.3 Software spending, % GDP

was equal to 0.726% GDP in 2022, up by 0.24 percentage points from the year prior – and equivalent to an indicator rank of 2.



6.2.4 High-tech manufacturing, %

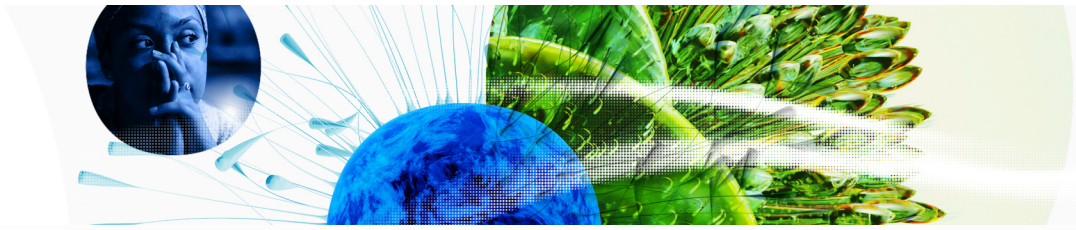
was equal to 42.89% of total manufacturing output in 2020, down by 0.6 percentage points from the year prior – and equivalent to an indicator rank of 22.



6.3.1 Intellectual property receipts, % total trade

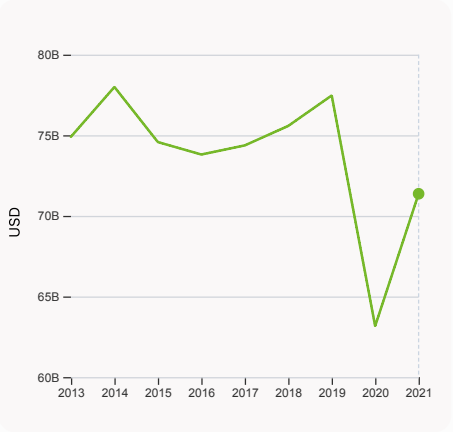
was equal to 2.68% total trade in 2021, down by 0.41 percentage points from the year prior – and equivalent to an indicator rank of 9.

Global Innovation Index 2023



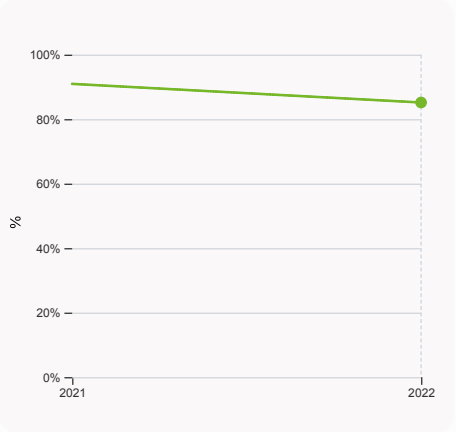
6.3.2 Production and export complexity

was equal to a score of 1.54 in 2020, up by 0.65% from the year prior – and equivalent to an indicator rank of 10.



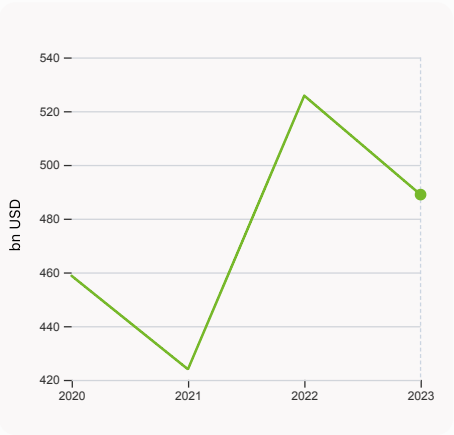
6.3.3 High-tech exports

was equal to 71,371,707,831 USD in 2021, up by 12.99% from the year prior – and equivalent to an indicator rank of 22.



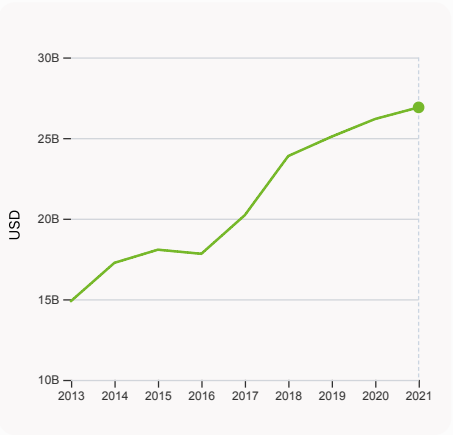
7.1.1 Intangible asset intensity, top 15, %

was equal to 85.16% in 2022, down by 5.78 percentage points from the year prior – and equivalent to an indicator rank of 4.



7.1.3 Global brand value, top 5,000

was equal to 488.945 bn USD in 2023, down by 7.0027% from the year prior – and equivalent to an indicator rank of 10.



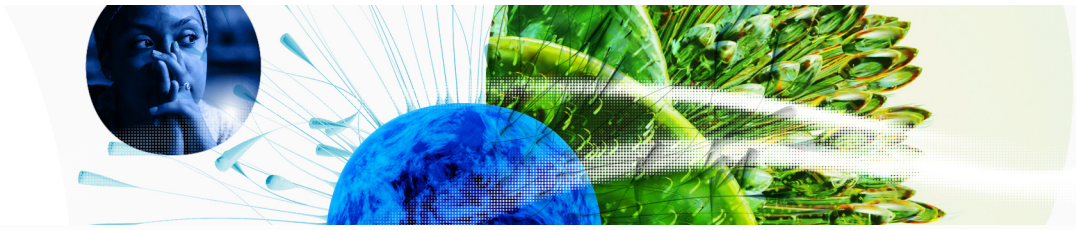
7.2.1 Cultural and creative services exports

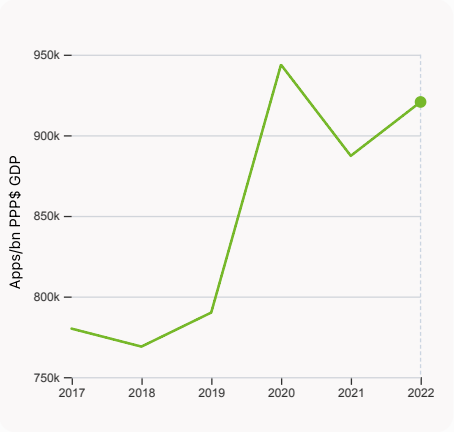
was equal to 26,901,868,000 USD in 2021, up by 2.75% from the year prior – and equivalent to an indicator rank of 6.

7.2.2 National feature films/mn pop. 15-69

was equal to 3.39 films/mn pop. 15–69 in 2021, up by 32.94% from the year prior – and equivalent to an indicator rank of 36.

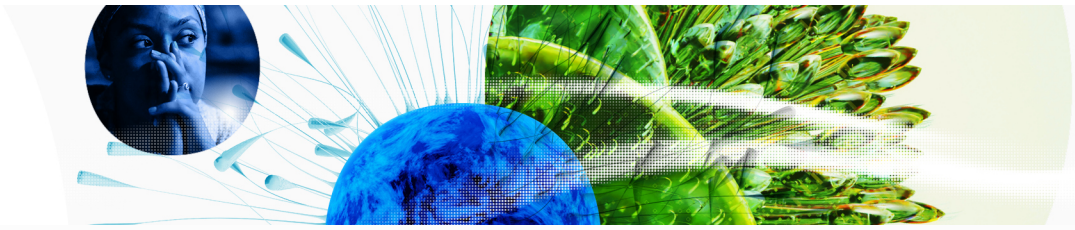
Global Innovation Index 2023





7.3.4 Mobile app creation/bn PPP$ GDP

was equal to 920,655.83 Apps/bn PPP$ GDP in 2022, up by 3.77% from the year prior – and equivalent to an indicator rank of 22.



→ United Kingdom's innovation top performers

> 2.3.3 Global corporate R&D investors from United Kingdom

Rank	Firm	Industry	R&D	R&D Growth	R&D Intensity
			[mn EUR]	[%]	[%]
19	ASTRAZENECA	Pharmaceuticals & Biotechnology	7,110	34	22
35	GSK	Pharmaceuticals & Biotechnology	5,501	3	14
93	HSBC	Banks	2,095	23	5
162	ATLASSIAN CORPORATION	Software & Computer Services	1,234	45	50

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 United Kingdom's top universities

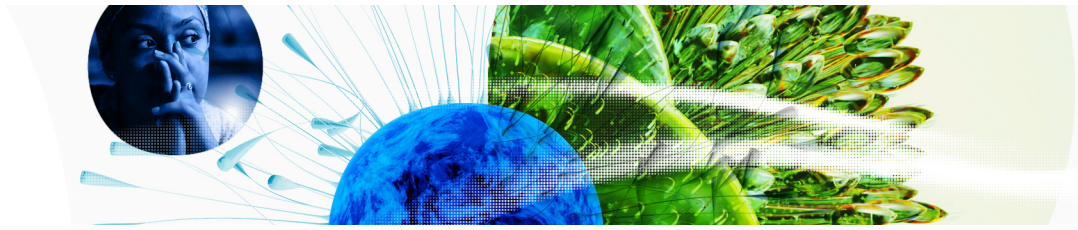
Rank	University	Score
2	UNIVERSITY OF CAMBRIDGE	98.80
4	UNIVERSITY OF OXFORD	98.40
6	IMPERIAL COLLEGE LONDON	97.00

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 United Kingdom

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	REVOLUT	Fintech	London	33
2	BLOCKCHAIN.COM	Fintech	London	14
3	GLOBAL SWITCH	Hardware	London	11

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 United Kingdom

Rank	Firm	Intensity, %
1	ASTRAZENECA PLC	99.40
2	BRITISH AMERICAN TOBACCO PLC	113.51
3	UNILEVER PLC	96.51

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

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

Rank	Brand	Industry	Brand Value, mn USD
1	SHELL	Oil & Gas	48,208.8
2	EY	Commercial Services	25,700.6
3	HSBC	Banking	19,851.0

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

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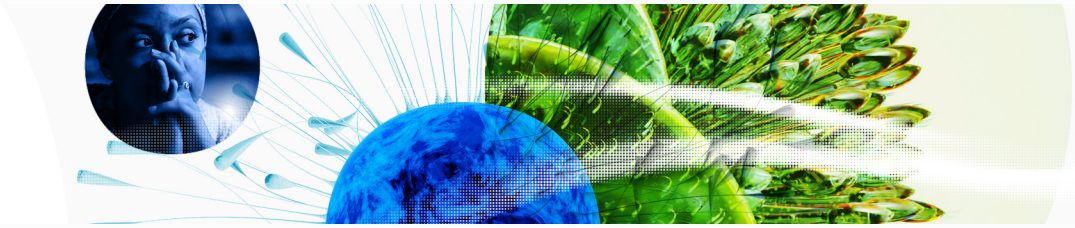

GII 2023 rank

4

United Kingdom

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
2	6	High	EUR	67.5	3,776.0	55,862.1

	Score / Value	Rank	
Institutions	**70.9**	**24**	
1.1 Institutional environment	**66.9**	**32**	◇
1.1.1 Operational stability for businesses*	61.8	41	◇
1.1.2 Government effectiveness*	72.1	24	
1.2 Regulatory environment	**89.1**	**12**	
1.2.1 Regulatory quality*	80.1	17	
1.2.2 Rule of law*	81.5	19	
1.2.3 Cost of redundancy dismissal	9.3	25	
1.3 Business environment	**56.5**	**43**	
1.3.1 Policies for doing business†	65.8	32	
1.3.2 Entrepreneurship policies and culture†	47.3	38	○ ◇
Human capital and research	**58.9**	**8**	
2.1 Education	**59.6**	**38**	
2.1.1 Expenditure on education, % GDP	5.2	27	
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.3	38	○
2.1.3 School life expectancy, years	17.3	16	
2.1.4 PISA scales in reading, maths and science	503.5	12	
2.1.5 Pupil-teacher ratio, secondary	17.3	87	○ ◇
2.2 Tertiary education	**46.0**	**18**	
2.2.1 Tertiary enrolment, % gross	69.5	38	
2.2.2 Graduates in science and engineering, %	22.8	57	○
2.2.3 Tertiary inbound mobility, %	20.1	7	
2.3 Research and development (R&D)	**71.3**	**6**	
2.3.1 Researchers, FTE/mn pop.	4,683.8	20	
2.3.2 Gross expenditure on R&D, % GDP	2.9	11	
2.3.3 Global corporate R&D investors, top 3, mn US$	84.6	7	●
2.3.4 QS university ranking, top 3*	99.4	2	●
Infrastructure	**63.7**	**6**	
3.1 Information and communication technologies (ICTs)	**94.2**	**6**	
3.1.1 ICT access*	94.4	10	
3.1.2 ICT use*	99.5	3	●
3.1.3 Government's online service*	87.4	17	
3.1.4 E-participation*	95.3	6	
3.2 General infrastructure	**35.0**	**42**	◇
3.2.1 Electricity output, GWh/mn pop.	4,560.7	50	○ ◇
3.2.2 Logistics performance*	72.7	18	
3.2.3 Gross capital formation, % GDP	17.4	114	○ ◇
3.3 Ecological sustainability	**61.9**	**2**	
3.3.1 GDP/unit of energy use	17.9	12	
3.3.2 Environmental performance*	99.7	2	●
3.3.3 ISO 14001 environment/bn PPP$ GDP	5.1	20	
Market sophistication	**69.3**	**3**	
4.1 Credit	**60.2**	**18**	
4.1.1 Finance for startups and scaleups†	64.8	27	
4.1.2 Domestic credit to private sector, % GDP	146.6	11	
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	
4.2 Investment	**57.4**	**11**	
4.2.1 Market capitalization, % GDP	126.6	9	
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.6	11	
4.2.3 VC recipients, deals/bn PPP$ GDP	0.3	7	
4.2.4 VC received, value, % GDP	0.0	8	
4.3 Trade, diversification, and market scale	**90.1**	**6**	
4.3.1 Applied tariff rate, weighted avg., %	1.3	16	
4.3.2 Domestic industry diversification	97.5	14	
4.3.3 Domestic market scale, bn PPP$	3,776.0	9	

	Score / Value	Rank	
Business sophistication	**58.4**	**13**	
5.1 Knowledge workers	**67.1**	**10**	
5.1.1 Knowledge-intensive employment, %	50.6	11	
5.1.2 Firms offering formal training, %	n/a	n/a	
5.1.3 GERD performed by business, % GDP	2.1	10	
5.1.4 GERD financed by business, %	57.5	17	
5.1.5 Females employed w/advanced degrees, %	24.1	22	
5.2 Innovation linkages	**62.4**	**11**	
5.2.1 University-industry R&D collaboration†	82.0	12	
5.2.2 State of cluster development†	77.7	14	
5.2.3 GERD financed by abroad, % GDP	0.3	9	
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.2	10	
5.2.5 Patent families/bn PPP$ GDP	1.9	20	
5.3 Knowledge absorption	**45.7**	**30**	
5.3.1 Intellectual property payments, % total trade	2.0	13	
5.3.2 High-tech imports, % total trade	10.0	36	
5.3.3 ICT services imports, % total trade	1.8	40	
5.3.4 FDI net inflows, % GDP	1.9	76	○
5.3.5 Research talent, % in businesses	41.8	34	○ ◇
Knowledge and technology outputs	**61.4**	**7**	
6.1 Knowledge creation	**60.6**	**9**	
6.1.1 Patents by origin/bn PPP$ GDP	5.1	16	
6.1.2 PCT patents by origin/bn PPP$ GDP	1.5	20	
6.1.3 Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific and technical articles/bn PPP$ GDP	n/a	n/a	
6.1.5 Citable documents H-index	100.0	1	●
6.2 Knowledge impact	**65.4**	**4**	
6.2.1 Labor productivity growth, %	0.3	86	○
6.2.2 Unicorn valuation, % GDP	5.2	7	●
6.2.3 Software spending, % GDP	0.7	2	●
6.2.4 High-tech manufacturing, %	42.9	22	
6.3 Knowledge diffusion	**58.0**	**9**	
6.3.1 Intellectual property receipts, % total trade	2.9	9	
6.3.2 Production and export complexity	84.8	10	
6.3.3 High-tech exports, % total trade	8.1	22	
6.3.4 ICT services exports, % total trade	4.8	20	
6.3.5 ISO 9001 quality/bn PPP$ GDP	11.7	23	
Creative outputs	**60.0**	**2**	
7.1 Intangible assets	**63.4**	**8**	
7.1.1 Intangible asset intensity, top 15, %	85.2	4	●
7.1.2 Trademarks by origin/bn PPP$ GDP	65.7	30	
7.1.3 Global brand value, top 5,000	14.1	10	
7.1.4 Industrial designs by origin/bn PPP$ GDP	8.3	13	
7.2 Creative goods and services	**45.0**	**9**	
7.2.1 Cultural and creative services exports, % total trade	3.1	6	●
7.2.2 National feature films/mn pop. 15-69	3.4	36	○
7.2.3 Entertainment and media market/th pop. 15-69	70.9	6	
7.2.4 Creative goods exports, % total trade	2.1	25	
7.3 Online creativity	**68.1**	**9**	
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	70.5	9	
7.3.2 Country-code TLDs/th pop. 15-69	70.9	7	●
7.3.3 GitHub commits/mn pop. 15-69	55.3	17	
7.3.4 Mobile app creation/bn PPP$ GDP	75.5	22	

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.

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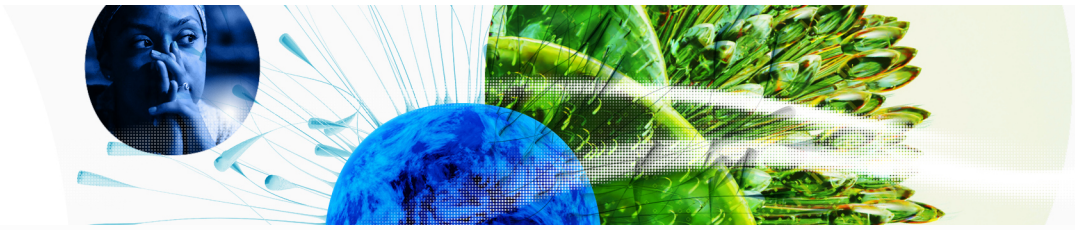

→ Data availability

The following tables list indicators that are either missing or outdated for United Kingdom.

> United Kingdom has missing data for three indicators and outdated data for seven indicators.

> Missing data for United Kingdom

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)
5.1.2	Firms offering formal training, %	n/a	2019	World Bank Enterprise Surveys
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2021	World Intellectual Property Organization; International Monetary Fund

> Outdated data for United Kingdom

Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	2019	2021	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2019	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
2.3.2	Gross expenditure on R&D, % GDP	2020	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
4.2.1	Market capitalization, % GDP	2014	2020	World Federation of Exchanges; World Bank
5.1.1	Knowledge-intensive employment, %	2019	2022	International Labour Organization
5.1.5	Females employed w/advanced degrees, %	2019	2022	International Labour Organization
5.3.5	Research talent, % in businesses	2019	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT

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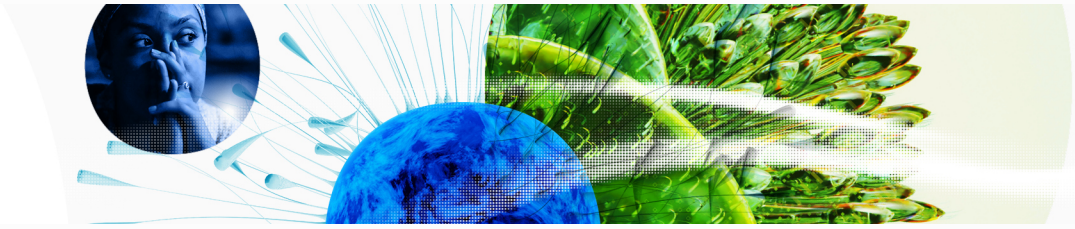

About the Global Innovation Index

- 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, 2023.

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.