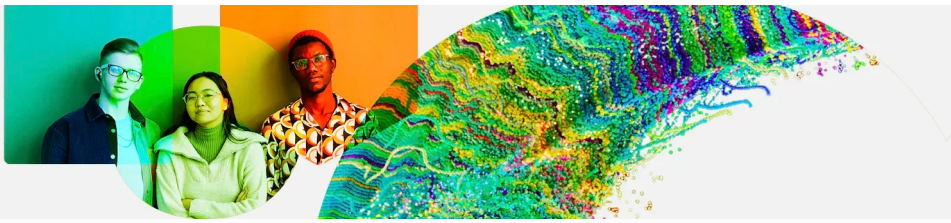
Global Innovation Index 2024



Ireland ranking in the Global Innovation Index 2024

Ireland ranks 19th among the 133 economies featured in the GII 2024.

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.

Ireland ranks 18th among the 51 high-income group economies.

Ireland ranks 11th among the 39 economies in Europe.

Ireland GII Ranking (2020-2024)

The table shows the rankings of Ireland 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 Ireland in the GII 2024 is between ranks 16 and 21.

Year	GII Position	Innovation Inputs	Innovation Outputs
2020	15th	20th	11th
2021	19th	22nd	19th
2022	23rd	25th	19th
2023	22nd	26th	18th
2024	19th	25th	15th

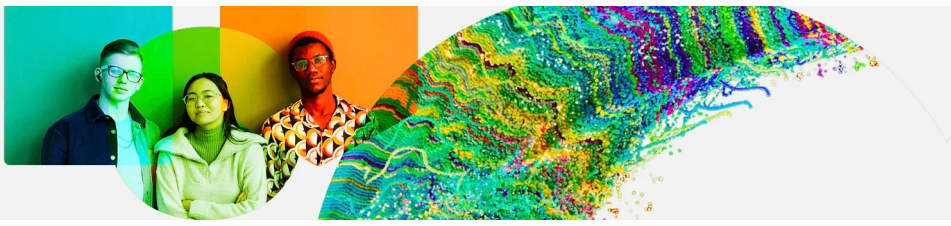
Ireland performs better in innovation outputs than innovation inputs in 2024.

This year **Ireland ranks 25th in innovation inputs.** This position is higher than last year.

Ireland ranks 15th in innovation outputs. This position is higher than last year.

Ireland has no clusters in the top 100 S&T clusters of the Global Innovation Index.

Global Innovation Index 2024



> Global Innovation Tracker

The Global Innovation Tracker 2024 shows what is the current state of innovation in Ireland, how rapidly is technology being embraced and what are the resulting societal impacts.

For Ireland, 3 indicators have improved in the short-term and 6 indicators have worsened.

Science and innovation investment

Scientific publications	R&D investments	Venture capital		International patent filings
		Deal numbers	Deal values	
▼ -3% 2022 - 2023	▼ -5.1% 2021 - 2022	▼ -1.1% 2022 - 2023	▼ -38.5% 2022 - 2023	▼ -0.4% 2022 - 2023
▲ 3.4% 2013 - 2023	▲ 3.7% 2012 - 2022	▲ 5.2% 2013 - 2023	▲ 7.5% 2013 - 2023	▲ 6.1% 2013 - 2023

Technology adoption

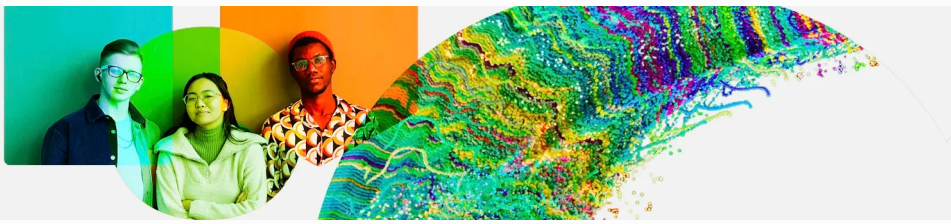
Safe sanitation	Connectivity		Robots	Electric vehicles
	Fixed broadband	5G		
0% 2021 - 2022	▲ 1.4% 2021 - 2022	0% 2021 - 2022	▲ 15.7% 2021 - 2022	n/a
▲ 0.9% 2012 - 2022	▲ 2.8% 2012 - 2022		▲ 13.1% 2012 - 2022	n/a
79.8 per 100 inhabitants in 2022	32.1 per 100 inhabitants in 2022	79 per 100 inhabitants in 2022		n/a

Socioeconomic impact

Labor productivity	Life expectancy	Temperature change
0% 2022 - 2023	▲ 0.9% 2021 - 2022	▲ 1.6°C 2023
▲ 0.6% 2013 - 2023	▲ 0.3% 2012 - 2022	n/a
113,735 USD in 2023	83.1 years in 2022	

Notes: Not all indicators of the Global Innovation Tracker are used to calculate the Global Innovation Index. Long-term annual growth refers to the compound annual growth rate (CAGR) over the indicated period. For each variable, a one-year growth rate is set for the short run, and ten-year CAGR is set for the long run; time windows might differ when gaps exist in data availability. The end period corresponds to the most recent available observation, which may differ among countries. Temperature change is an exception: it indicates the change in degrees Celsius with respect to the average temperature in the country from 1951–1980. Figures are rounded.

Global Innovation Index 2024

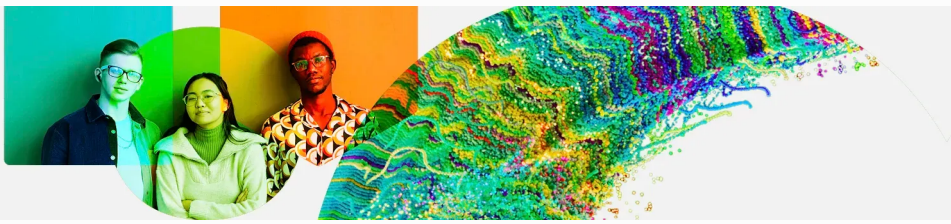


Expected vs. observed innovation performance

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.

Ireland is an innovation leader, ranking in the top 25 of the GII.

> Innovation overperformers relative to their economic development



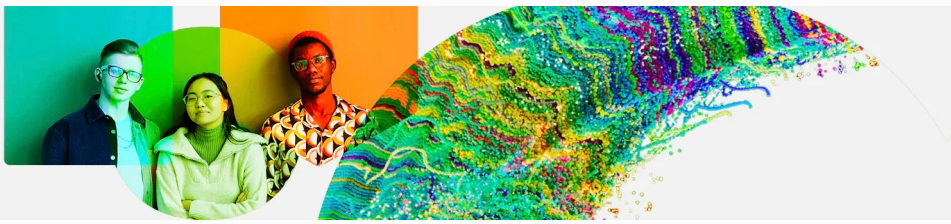
Effectively translating innovation investments into innovation outputs

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.

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

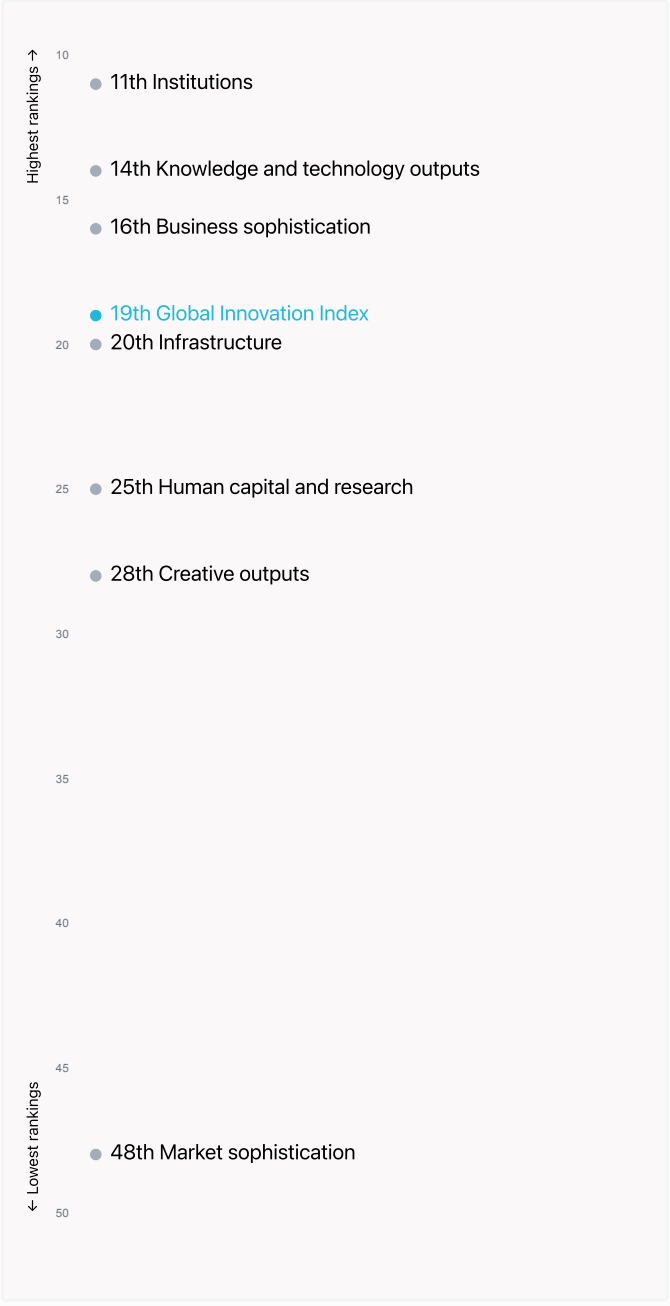
> Relationship between innovation inputs and outputs

Global Innovation Index 2024



Overview of Ireland's rankings in the seven areas of the GII in 2024

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



Highest rankings

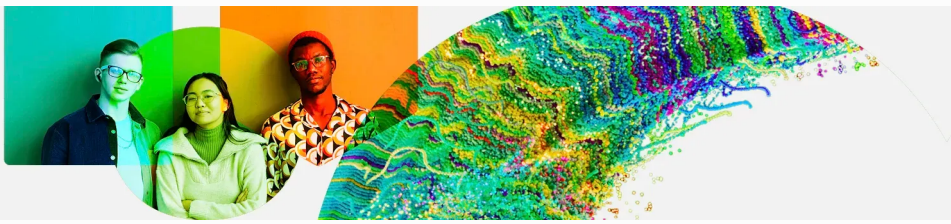
Ireland ranks highest in Institutions (11th), Knowledge and technology outputs (14th) and Business sophistication (16th).

Lowest rankings

Ireland ranks lowest in Market sophistication (48th), Creative outputs (28th) and Human capital and research (25th).

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

Global Innovation Index 2024



Benchmark of Ireland against other economy groupings for each of the seven areas of the GII Index

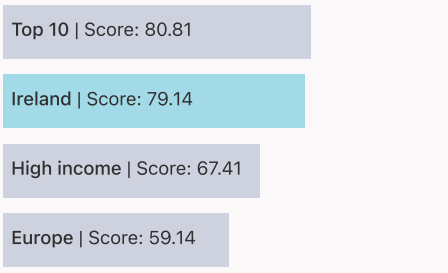
The charts shows the relative position of Ireland (blue bar) against other economy groupings (grey bars), for each of the seven areas of the GII Index.

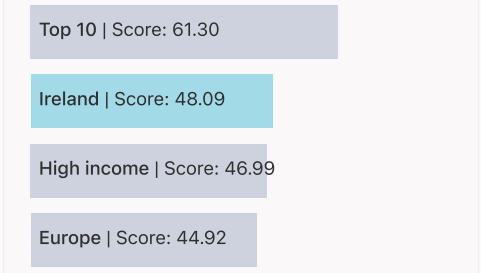
High-Income economies

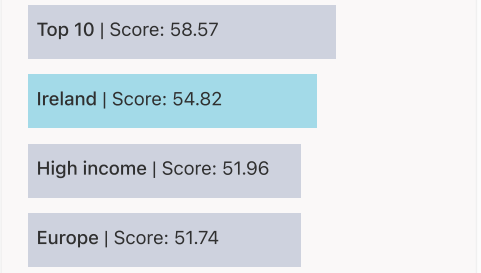
Ireland performs above the high-income group average in Institutions, Human capital and research, Infrastructure, Business sophistication, Knowledge and technology outputs, Creative outputs.

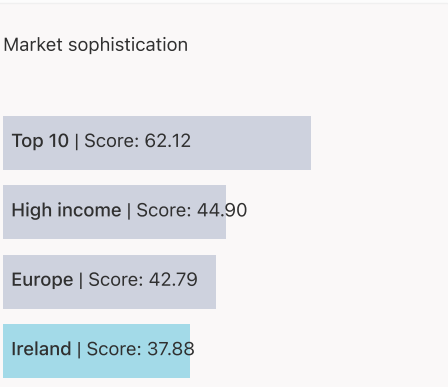
Europe

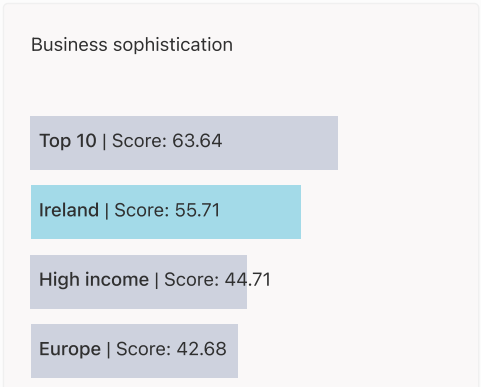
Ireland performs above the regional average in Institutions, Human capital and research, Infrastructure, Business sophistication, Knowledge and technology outputs, Creative outputs.

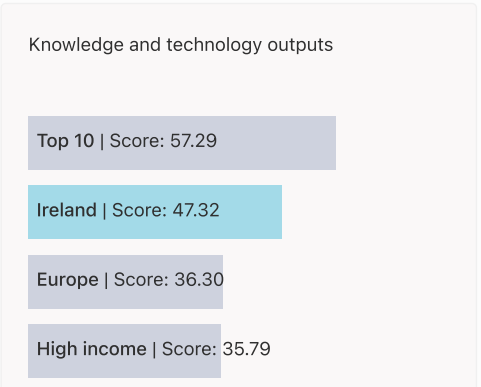


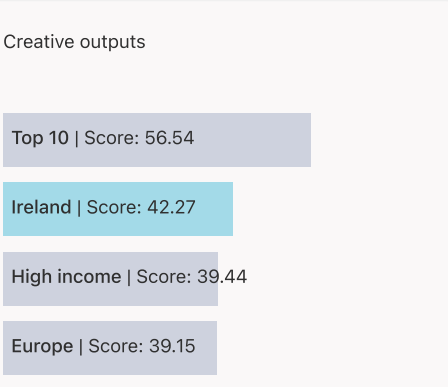




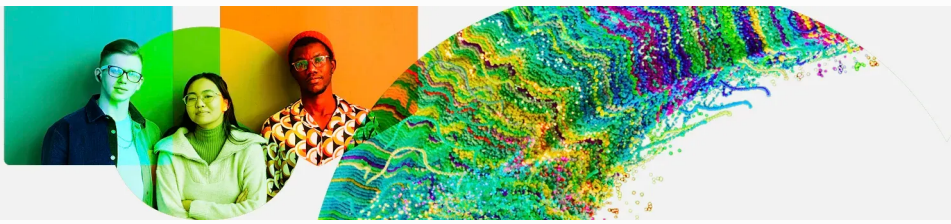








Global Innovation Index 2024



Innovation strengths and weaknesses in Ireland

The table below gives an overview of the indicator strengths and weaknesses of Ireland in the GII 2024.

Ireland's main innovation strengths are **GDP/unit of energy use** (rank 1), **ICT services exports, % total trade** (rank 1) and **Intellectual property payments, % total trade** (rank 1).

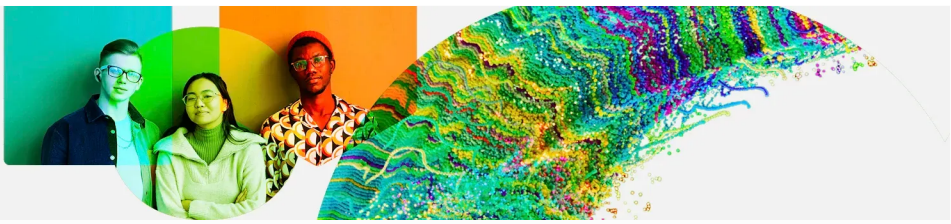
Strengths

Rank	Code	Indicator name
1	3.3.1	GDP/unit of energy use
1	6.3.4	ICT services exports, % total trade
1	5.3.1	Intellectual property payments, % total trade
2	7.1.1	Intangible asset intensity, top 15, %
4	5.1.5	Females employed w/advanced degrees, %
6	2.1.3	School life expectancy, years
9	6.3.3	High-tech exports, % total trade
9	6.3.1	Intellectual property receipts, % total trade
10	1.2.1	Regulatory quality*

Weaknesses

Rank	Code	Indicator name
117	6.2.1	Labor productivity growth, %
106	4.1.2	Domestic credit to private sector, % GDP
103	2.1.1	Expenditure on education, % GDP
82	2.1.2	Government funding/pupil, secondary, % GDP/cap
80	5.3.2	High-tech imports, % total trade
73	7.1.4	Industrial designs by origin/bn PPP$ GDP
72	2.1.5	Pupil–teacher ratio, secondary
68	6.3.5	ISO 9001 quality/bn PPP$ GDP
65	3.2.3	Gross capital formation, % GDP
45	6.1.3	Utility models by origin/bn PPP$ GDP

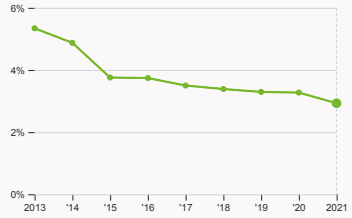
Global Innovation Index 2024



Ireland's innovation system

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

Innovation inputs in Ireland



2.1.1 **Expenditure on education**

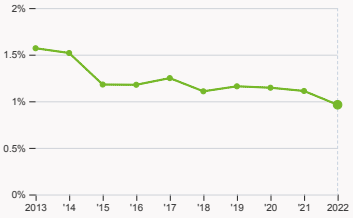
was equal to 2.93 % GDP in 2021, down by 0.34 percentage points from the year prior – and equivalent to an indicator rank of 103.

2.2.2 **Graduates in science and engineering**

was equal to 24.91 % of total graduates in 2021, down by 1.5 percentage points from the year prior – and equivalent to an indicator rank of 46.

2.3.1 **Researchers**

was equal to 5505.33 FTE per million population in 2022, up by 5.68% from the year prior – and equivalent to an indicator rank of 15.



2.3.2 **Gross expenditure on R&D**

was equal to 0.96 % GDP in 2022, down by 0.15 percentage points from the year prior – and equivalent to an indicator rank of 42.

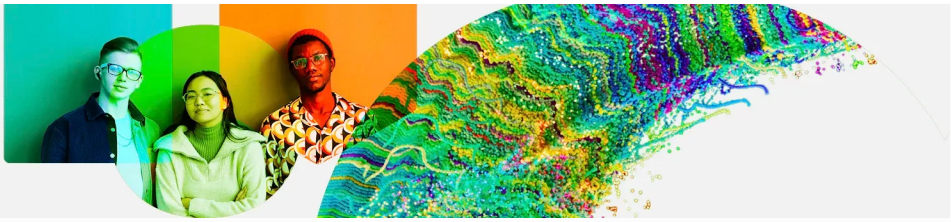
2.3.4 **QS university ranking**

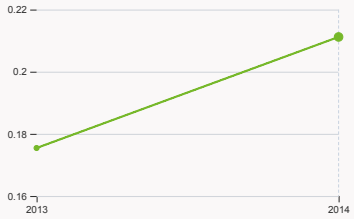
was equal to an average score of 49.43 for the top three universities in 2023, up by 4.5% from the year prior – and equivalent to an indicator rank of 22.

4.2.4 **VC received, value**

was equal to 571.39 thousand USD in 2023, down by 38.54% from the year prior – and equivalent to an indicator rank of 41.

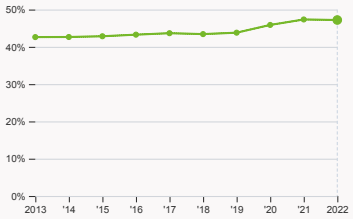
Global Innovation Index 2024





4.3.2 Domestic industry diversification

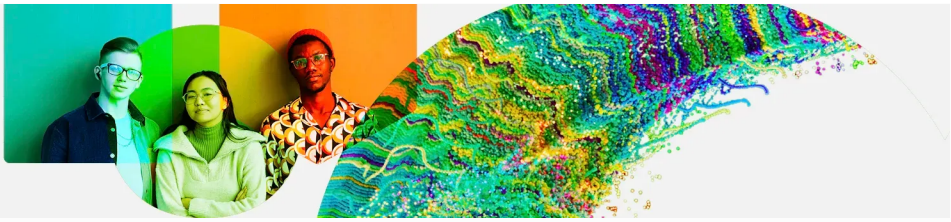
was equal to an index score of 0.21 in 2014, up by 20.37% from the year prior – and equivalent to an indicator rank of 79.



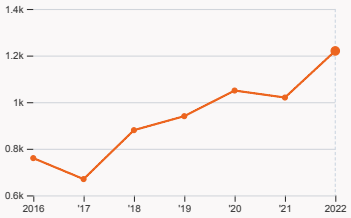
5.1.1 Knowledge-intensive employment

was equal to 47.2 % in 2022, down by 0.14 percentage points from the year prior – and equivalent to an indicator rank of 16.

Global Innovation Index 2024

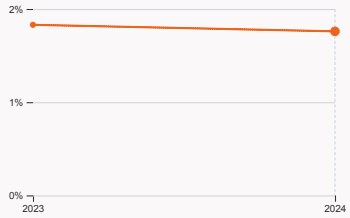


Innovation outputs in Ireland



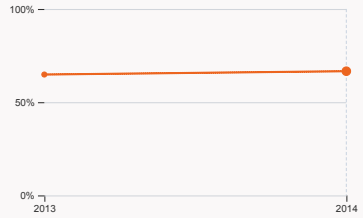
6.1.1 Patents by origin

was equal to 1.22 thousand patents in 2022, up by 19.61% from the year prior – and equivalent to an indicator rank of 33.



6.2.2 Unicorn valuation

was equal to 1.76 % GDP in 2024, down by 0.07 percentage points from the year prior – and equivalent to an indicator rank of 21.

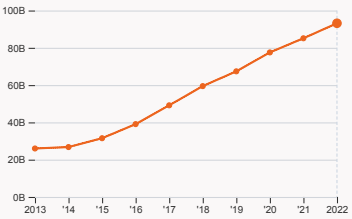


6.2.4 High-tech manufacturing

was equal to 66.62 % of total manufacturing output in 2014, up by 1.78 percentage points from the year prior – and equivalent to an indicator rank of 3.

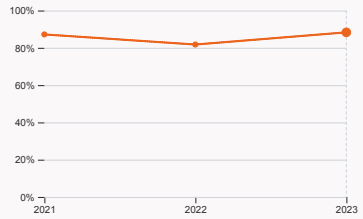
6.3.2 Production and export complexity

was equal to a score of 1.44 in 2021, down by 2.04% from the year prior – and equivalent to an indicator rank of 13.



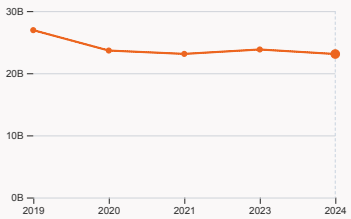
6.3.3 High-tech exports

was equal to 93.17 billion USD in 2022, up by 9.47% from the year prior – and equivalent to an indicator rank of 9.



7.1.1 Intangible asset intensity

was equal to 88.3 % for the top 15 companies in 2023, up by 6.54 percentage points from the year prior – and equivalent to an indicator rank of 2.

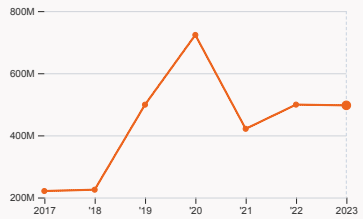


7.1.3 Global brand value

was equal to 23.09 billion USD for the brands in the top 5,000 in 2024, down by 3.06% from the year prior – and equivalent to an indicator rank of 38.

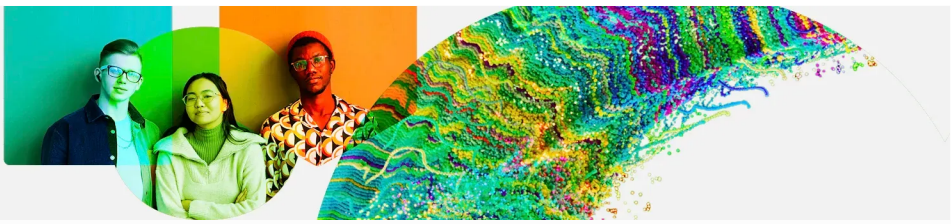
7.2.2 National feature films

was equal to 30 films in 2022, down by 9.09% from the year prior – and equivalent to an indicator rank of 11.



7.3.3 Mobile app creation

was equal to 496.6 million global downloads of mobile apps in 2023, down by 0.47% from the year prior – and equivalent to an indicator rank of 29.



Ireland's innovation top performers

2.3.3 Global corporate R&D investors from Ireland

Rank	Firm	Industry	R&D	R&D Growth	R&D Intensity
			[mn EUR]	[%]	[%]
85	MEDTRONIC PUBLIC LIMITED	Health Care Equipment & Services	2,528	-2	9
213	ACCENTURE	Support Services	1,053	0.4	2
249	SEAGATE	Technology Hardware & Equipment	866	2	13
338	EATON CORPORATION	Electronic & Electrical Equipment	623	8	3

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 Ireland's top universities

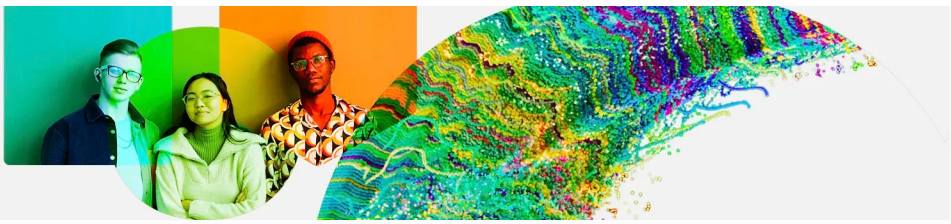
Rank	University	Score
81	TRINITY COLLEGE DUBLIN	63.50
171	UNIVERSITY COLLEGE DUBLIN (UCD)	48.80
289	UNIVERSITY OF GALWAY	36.00

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 Ireland

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	BROWSERSTACK	Enterprise Tech	Dublin	4
2	WAYFLYER	Financial Services	Dublin	2
3	FLIPDISH	Consumer & Retail	Dublin	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 Ireland

Rank	Firm	Intensity, %
1	ACCENTURE PLC	92.84
2	PDD HOLDINGS INC.	73.01
3	MEDTRONIC PLC	88.45

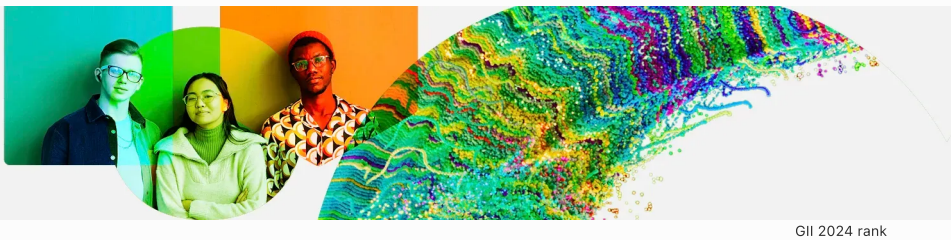
Source: Brand Finance (https://brandirectory.com/reports/gift-2022).
Note: Brand Finance only provides within economy ranks.

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

Rank	Brand	Industry	Brand Value, mn USD
1	GUINNESS	Beers	2,585.8
2	RYANAIR	Airlines	2,540.6
3	PRIMARK / PENNEY'S	Apparel	2,090

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

Global Innovation Index 2024



Ireland

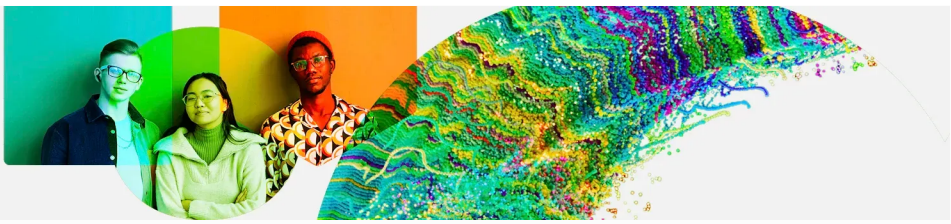
GII 2024 rank **19**

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
15	25	High	EUR	5.2	722.9	137,638.2

	Score / Value	Rank	
Institutions	**79.1**	**11**	
1.1 Institutional environment	**82.6**	**15**	
1.1.1 Operational stability for businesses*	80.7	22	
1.1.2 Government effectiveness*	84.4	13	
1.2 Regulatory environment	**86.3**	**12**	
1.2.1 Regulatory quality*	84.9	10	●◆
1.2.2 Rule of law*	87.6	15	
1.3 Business environment	**68.6**	**23**	
1.3.1 Policy stability for doing business†	77.4	14	
1.3.2 Entrepreneurship policies and culture†	59.7	19	
Human capital and research	**48.1**	**25**	◇
2.1 Education	**54.2**	**59**	◇
2.1.1 Expenditure on education, % GDP	2.9	103	○◇
2.1.2 Government funding/pupil, secondary, % GDP/cap	12	82	○◇
2.1.3 School life expectancy, years	19.1	6	●◆
2.1.4 PISA scales in reading, maths and science	503.8	8	
2.1.5 Pupil–teacher ratio, secondary	14.5	72	○◇
2.2 Tertiary education	**42**	**33**	
2.2.1 Tertiary enrolment, % gross	78.8	24	
2.2.2 Graduates in science and engineering, %	24.9	46	
2.2.3 Tertiary inbound mobility, %	9.3	29	
2.3 Research and development (R&D)	**48**	**21**	
2.3.1 Researchers, FTE/mn pop.	5,505.3	15	
2.3.2 Gross expenditure on R&D, % GDP	1	42	◇
2.3.3 Global corporate R&D investors, top 3, mn USD	70.7	12	
2.3.4 QS university ranking, top 3*	50	22	
Infrastructure	**54.8**	**20**	
3.1 Information and communication technologies (ICTs)	**78.5**	**47**	◇
3.1.1 ICT access*	91.7	58	◇
3.1.2 ICT use*	79.4	60	◇
3.1.3 Government's online service*	75.6	45	◇
3.1.4 E-participation*	67.4	47	◇
3.2 General infrastructure	**40.9**	**35**	◇
3.2.1 Electricity output, GWh/mn pop.	6,584.6	29	
3.2.2 Logistics performance*	68.2	25	◇
3.2.3 Gross capital formation, % GDP	23.6	65	○
3.3 Ecological sustainability	**45**	**7**	●◆
3.3.1 GDP/unit of energy use	41.6	1	●◆
3.3.2 Low-carbon energy use, %	18.5	61	
3.3.3 ISO 14001 environment/bn PPP$ GDP	1.6	62	
Market sophistication	**37.9**	**48**	◇
4.1 Credit	**34.3**	**43**	◇
4.1.1 Finance for startups and scaleups†	61.6	25	
4.1.2 Domestic credit to private sector, % GDP	26.2	106	○◇
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	
4.2 Investment	**21.1**	**40**	◇
4.2.1 Market capitalization, % GDP	37.4	42	◇
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.4	20	
4.2.3 VC recipients, deals/bn PPP$ GDP	0.1	32	◇
4.2.4 VC received, value, % GDP	0.001	41	◇
4.3 Trade, diversification and market scale	**58.3**	**58**	
4.3.1 Applied tariff rate, weighted avg., %	1.1	21	
4.3.2 Domestic industry diversification	69.6	79	
4.3.3 Domestic market scale, bn PPP$	722.9	38	

	Score / Value	Rank	
Business sophistication	**55.7**	**16**	
5.1 Knowledge workers	**67.5**	**15**	
5.1.1 Knowledge-intensive employment, %	47.2	16	
5.1.2 Firms offering formal training, %	59.8	8	
5.1.3 GERD performed by business, % GDP	0.8	34	◇
5.1.4 GERD financed by business, %	55.5	19	
5.1.5 Females employed w/advanced degrees, %	29.9	4	●◆
5.2 Innovation linkages	**48**	**24**	◇
5.2.1 Public Research-Industry co-publications, %	3.8	22	
5.2.2 University-industry R&D collaboration†	70.2	23	
5.2.3 State of cluster development†	74.1	28	
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.06	24	
5.2.5 Patent families/bn PPP$ GDP	2.2	18	
5.3 Knowledge absorption	**51.6**	**8**	●◆
5.3.1 Intellectual property payments, % total trade	21.4	1	●◆
5.3.2 High-tech imports, % total trade	7.4	80	○
5.3.3 ICT services imports, % total trade	1.7	41	
5.3.4 FDI net inflows, % GDP	8.9	11	
5.3.5 Research talent, % in businesses	44.4	33	◇
Knowledge and technology outputs	**47.3**	**14**	
6.1 Knowledge creation	**22.7**	**46**	◇
6.1.1 Patents by origin/bn PPP$ GDP	1.8	33	
6.1.2 PCT patents by origin/bn PPP$ GDP	1.1	22	◇
6.1.3 Utility models by origin/bn PPP$ GDP	0.1	45	○
6.1.4 Scientific and technical articles/bn PPP$ GDP	12.8	55	◇
6.1.5 Citable documents H-index	35.3	28	
6.2 Knowledge impact	**52.8**	**10**	●◆
6.2.1 Labor productivity growth, %	-0.9	117	○◇
6.2.2 Unicorn valuation, % GDP	1.8	21	
6.2.3 Software spending, % GDP	0.6	17	
6.2.4 High-tech manufacturing, %	66.6	3	
6.3 Knowledge diffusion	**66.4**	**1**	●◆
6.3.1 Intellectual property receipts, % total trade	2.8	9	●◆
6.3.2 Production and export complexity	79.3	13	
6.3.3 High-tech exports, % total trade	14.9	9	●◆
6.3.4 ICT services exports, % total trade	33	1	●◆
6.3.5 ISO 9001 quality/bn PPP$ GDP	4.2	68	○
Creative outputs	**42.3**	**28**	◇
7.1 Intangible assets	**40**	**36**	
7.1.1 Intangible asset intensity, top 15, %	88.3	2	●◆
7.1.2 Trademarks by origin/bn PPP$ GDP	n/a	n/a	
7.1.3 Global brand value, top 5,000, % GDP	3.7	38	◇
7.1.4 Industrial designs by origin/bn PPP$ GDP	0.6	73	○
7.2 Creative goods and services	**34.2**	**21**	
7.2.1 Cultural and creative services exports, % total trade	0.9	33	
7.2.2 National feature films/mn pop. 15–69	8.4	11	
7.2.3 Entertainment and media market/th pop. 15–69	45.8	16	
7.2.4 Creative goods exports, % total trade	1.1	43	
7.3 Online creativity	**55**	**24**	
7.3.1 Top-level domains (TLDs)/th pop. 15–69	31.8	21	
7.3.2 GitHub commits/mn pop. 15–69	59.6	17	
7.3.3 Mobile app creation/bn PPP$ GDP	73.5	29	

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question, that the economy's data is outdated. Square brackets [ ] indicate the the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level; n/a represents missing values; a dash - indicates an indicator which is not relevant to this economy and thus not considered for DMC thresholds.



Data availability

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

Ireland has missing data for two indicators and outdated data for eleven indicators.

Missing data for Ireland

Code	Indicator name	Economy Year	Model Year	Source
4.1.3	Loans from microfinance institutions, % GDP	n/a	2022	International Monetary Fund, Financial Access Survey (FAS)
7.1.2	Trademarks by origin/bn PPP$ GDP	n/a	2022	World Intellectual Property Organization; International Monetary Fund

Outdated data for Ireland

Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture†	2021	2023	Global Entrepreneurship Monitor
2.1.1	Expenditure on education, % GDP	2021	2022	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	2021	2022	UNESCO Institute for Statistics
2.1.5	Pupil–teacher ratio, secondary	2021	2022	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2021	2022	UNESCO Institute for Statistics
2.2.3	Tertiary inbound mobility, %	2021	2022	UNESCO Institute for Statistics
4.1.1	Finance for startups and scaleups†	2021	2023	Global Entrepreneurship Monitor
4.2.1	Market capitalization, % GDP	2018	2022	World Federation of Exchanges; World Bank
4.3.2	Domestic industry diversification	2014	2021	United Nations Industrial Development Organization (UNIDO), Industrial Statistics Database (INDSTAT) Rev.3 and 4
5.1.2	Firms offering formal training, %	2020	2023	World Bank Enterprise Surveys
6.2.4	High-tech manufacturing, %	2014	2021	United Nations Industrial Development Organization

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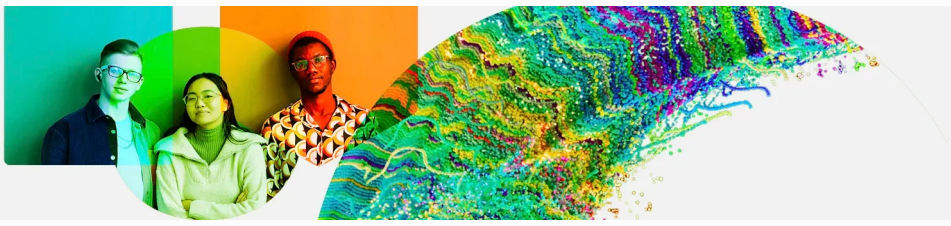

About the Global Innovation Index

- 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, 2024.

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.