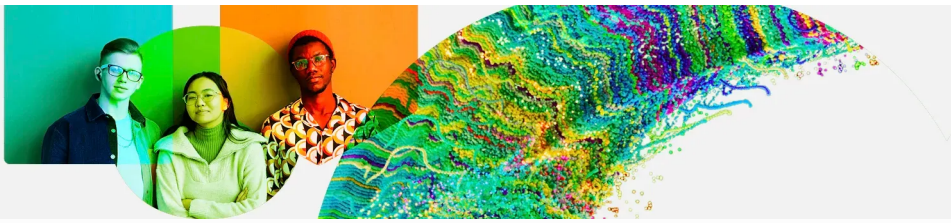
Global Innovation Index 2024



Australia ranking in the Global Innovation Index 2024

Australia ranks 23rd 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.

Australia ranks 22nd among the 51 high-income group economies.

Australia ranks 6th among the 17 economies in South East Asia, East Asia, and Oceania.

Australia GII Ranking (2020-2024)

The table shows the rankings of Australia 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 Australia in the GII 2024 is between ranks 21 and 26.

Year	GII Position	Innovation Inputs	Innovation Outputs
2020	23rd	13th	31st
2021	25th	15th	33rd
2022	25th	19th	32nd
2023	24th	16th	30th
2024	23rd	18th	30th

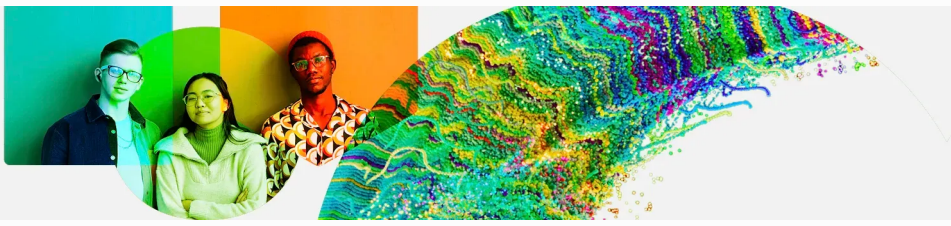
Australia performs worse in innovation outputs than innovation inputs in 2024.

This year **Australia ranks 18th in innovation inputs.** This position is lower than last year.

Australia ranks 30th in innovation outputs. This position is the same as last year.

Australia has 3 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 Australia, how rapidly is technology being embraced and what are the resulting societal impacts.

For Australia, 5 indicators have improved in the short-term and 8 indicators have worsened.

Science and innovation investment

Scientific publications	R&D investments	Venture capital		International patent filings
		Deal numbers	Deal values	
▼ -10.5% 2022 - 2023	▲ 1.7% 2019 - 2021	▼ -21.4% 2022 - 2023	▼ -51.1% 2022 - 2023	▼ -14.3% 2022 - 2023
▲ 2.9% 2013 - 2023	▲ 0.4% 2011 - 2021	▲ 13.7% 2013 - 2023	▲ 24.3% 2013 - 2023	▼ -0.6% 2013 - 2023

Technology adoption

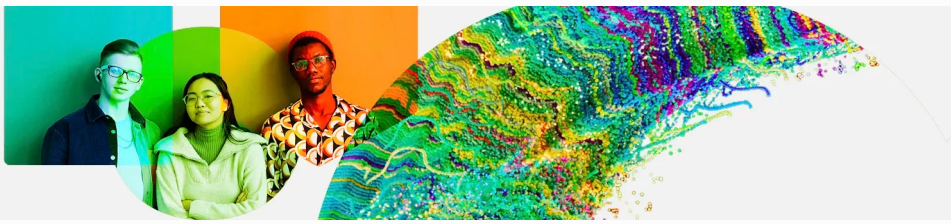
Safe sanitation	Connectivity		Robots	Electric vehicles
	Fixed broadband	5G		
▲ 0.1% 2021 - 2022	▼ -2.3% 2021 - 2022	▲ 8.9% 2021 - 2022	▲ 1.7% 2021 - 2022	▲ 105.7% 2022 - 2023
▲ 0.1% 2012 - 2022	▲ 3.3% 2012 - 2022		▼ -1.6% 2012 - 2022	▲ 77.3% 2013 - 2023
95.8 per 100 inhabitants in 2022	35.1 per 100 inhabitants in 2022	84.4 per 100 inhabitants in 2022		1.2 per 100 inhabitants in 2023

Socioeconomic impact

Labor productivity	Life expectancy	Temperature change
▼ -0.8% 2022 - 2023	▼ -0.1% 2021 - 2022	▲ 0.9°C 2023
▲ 1% 2013 - 2023	▲ 0.1% 2012 - 2022	n/a
123,395 USD in 2023	83.2 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



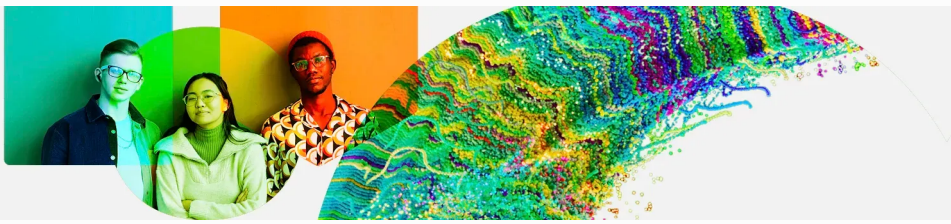
Expected vs. observed innovation performance

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.

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

> Innovation overperformers relative to their economic development

Global Innovation Index 2024



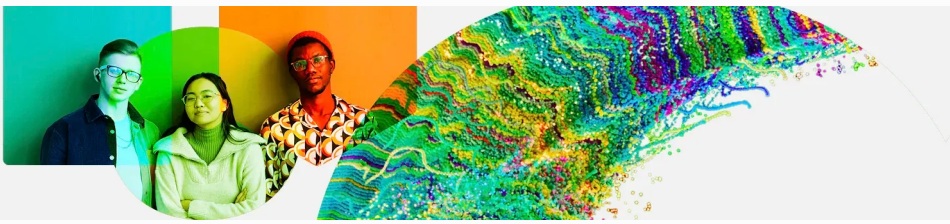
Effectively translating innovation investments into innovation outputs

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.

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

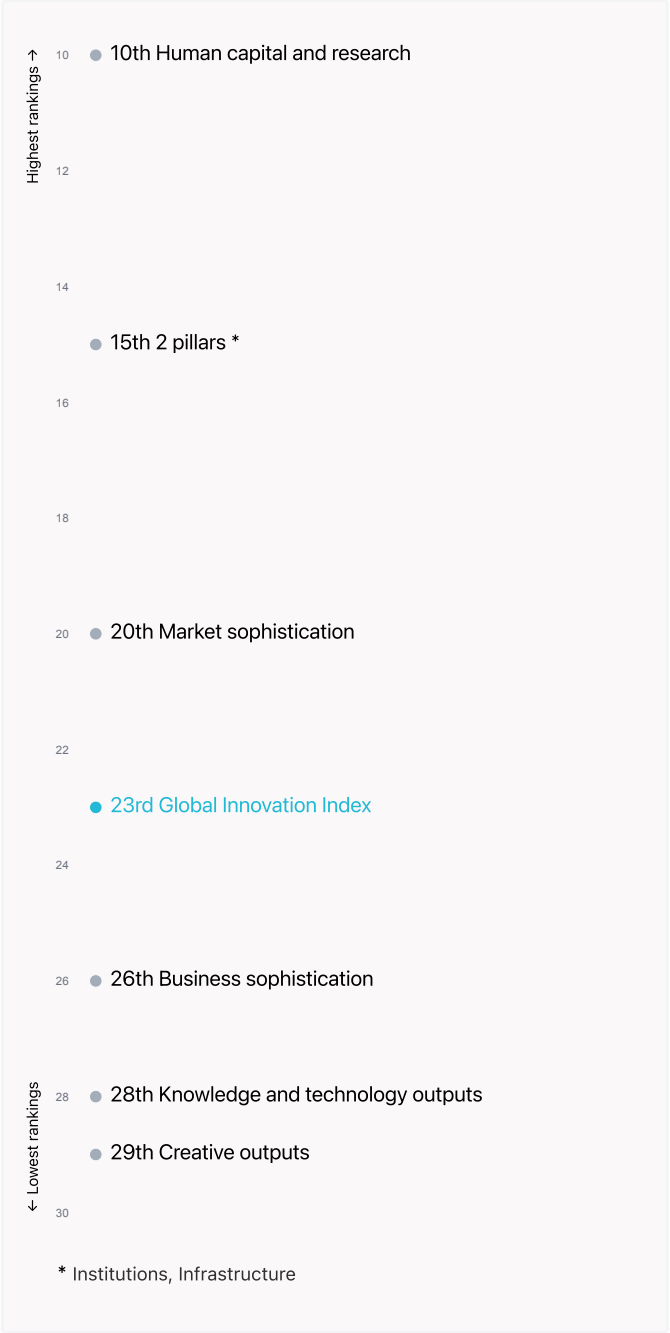
> Relationship between innovation inputs and outputs

Global Innovation Index 2024



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



Highest rankings

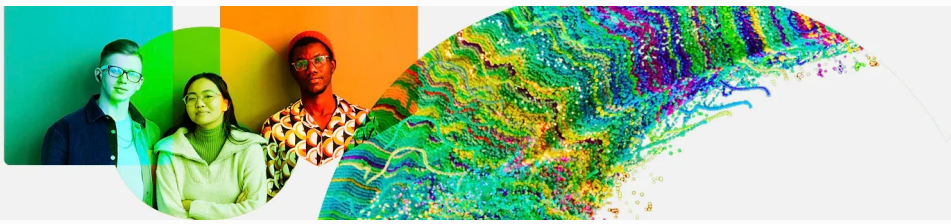
Australia ranks highest in Human capital and research (10th), Institutions, Infrastructure (15th) and Market sophistication (20th).

Lowest rankings

Australia ranks lowest in Creative outputs (29th), Knowledge and technology outputs (28th) and Business sophistication (26th).

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

Global Innovation Index 2024



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

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

High-Income economies

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

South East Asia, East Asia, And Oceania

Australia performs above the regional average in all pillars.

Institutions

- Top 10 | Score: 80.81
- Australia | Score: 76.96
- High income | Score: 67.41
- SEAO | Score: 59.26

Human capital and research

- Top 10 | Score: 61.30
- Australia | Score: 58.70
- High income | Score: 46.99
- SEAO | Score: 39.09

Infrastructure

- Top 10 | Score: 58.57
- Australia | Score: 55.41
- High income | Score: 51.96
- SEAO | Score: 45.67

Market sophistication

- Top 10 | Score: 62.12
- Australia | Score: 53.77
- SEAO | Score: 45.28
- High income | Score: 44.90

Business sophistication

- Top 10 | Score: 63.64
- Australia | Score: 48.16
- High income | Score: 44.71
- SEAO | Score: 39.01

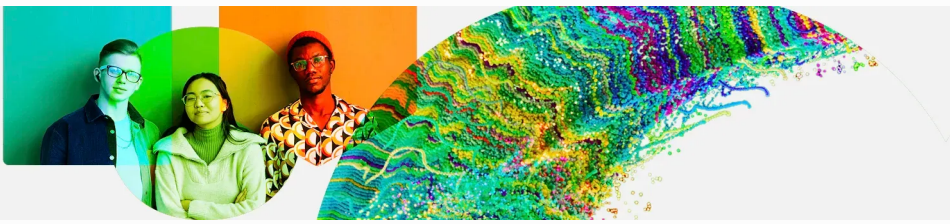
Knowledge and technology outputs

- Top 10 | Score: 57.29
- High income | Score: 35.79
- Australia | Score: 33.13
- SEAO | Score: 29.72

Creative outputs

- Top 10 | Score: 56.54
- Australia | Score: 42.05
- High income | Score: 39.44
- SEAO | Score: 33.06

Global Innovation Index 2024



Innovation strengths and weaknesses in Australia

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

Australia's main innovation strengths are **School life expectancy, years** (rank 1), **E-participation*** (rank 2) and **Regulatory quality*** (rank 2).

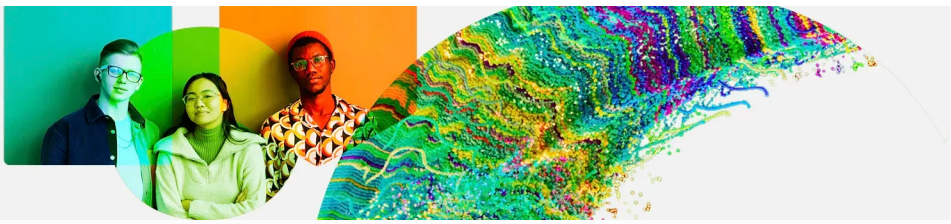
Strengths

Rank	Code	Indicator name
1	2.1.3	School life expectancy, years
2	3.1.4	E-participation*
2	1.2.1	Regulatory quality*
3	2.3.4	QS university ranking, top 3*
4	2.2.1	Tertiary enrolment, % gross
6	6.1.5	Citable documents H-index
6	5.1.5	Females employed w/advanced degrees, %
6	2.2.3	Tertiary inbound mobility, %
7	4.3.1	Applied tariff rate, weighted avg., %
7	3.1.3	Government's online service*

Weaknesses

Rank	Code	Indicator name
91	6.3.2	Production and export complexity
84	2.2.2	Graduates in science and engineering, %
78	6.2.1	Labor productivity growth, %
78	5.3.3	ICT services imports, % total trade
77	6.3.4	ICT services exports, % total trade
75	3.3.2	Low-carbon energy use, %
74	3.3.1	GDP/unit of energy use
71	3.2.3	Gross capital formation, % GDP
67	7.2.1	Cultural and creative services exports, % total trade
55	2.1.2	Government funding/pupil, secondary, % GDP/cap

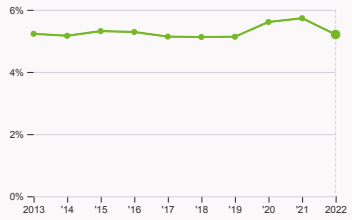
Global Innovation Index 2024



Australia's innovation system

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

Innovation inputs in Australia

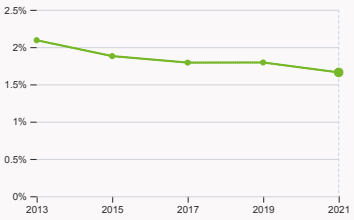


2.1.1 **Expenditure on education**

was equal to 5.21 % GDP in 2022, down by 0.52 percentage points from the year prior – and equivalent to an indicator rank of 37.

2.2.2 **Graduates in science and engineering**

was equal to 19.15 % of total graduates in 2022, down by 1.53 percentage points from the year prior – and equivalent to an indicator rank of 84.



2.3.2 **Gross expenditure on R&D**

was equal to 1.66 % GDP in 2021, down by 0.13 percentage points from the year prior – and equivalent to an indicator rank of 23.

2.3.4 **QS university ranking**

was equal to an average score of 87.1 for the top three universities in 2023, up by 7.4% from the year prior – and equivalent to an indicator rank of 3.

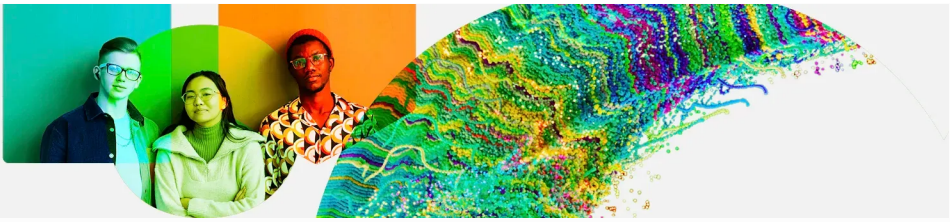
4.2.4 **VC received, value**

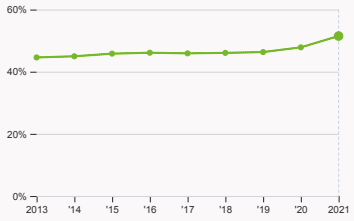
was equal to 2.09 million USD in 2023, down by 50.94% from the year prior – and equivalent to an indicator rank of 30.

4.3.2 **Domestic industry diversification**

was equal to an index score of 0.11 in 2022, down by 0.31% from the year prior – and equivalent to an indicator rank of 33.

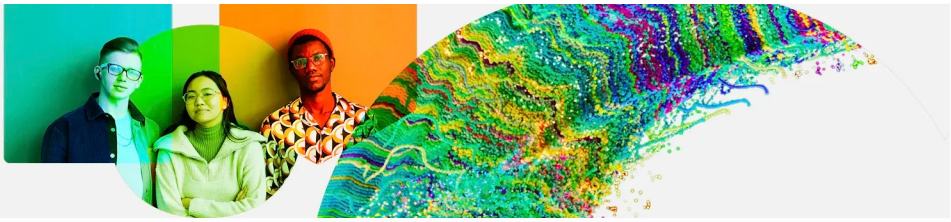
Global Innovation Index 2024



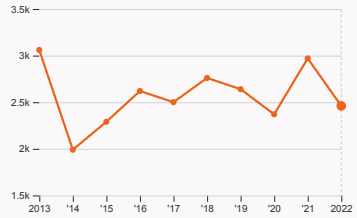


5.1.1 **Knowledge-intensive employment**
was equal to 51.48 % in 2021, up by 3.64 percentage points from the year prior – and equivalent to an indicator rank of 9.

Global Innovation Index 2024

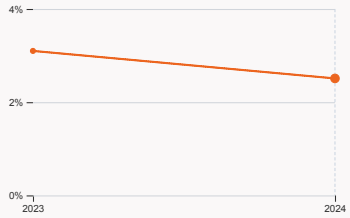


Innovation outputs in Australia



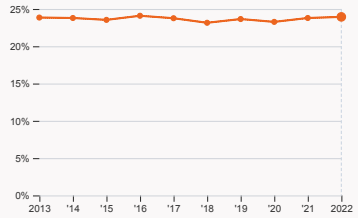
6.1.1 Patents by origin

was equal to 2.46 thousand patents in 2022, down by 17.17% from the year prior – and equivalent to an indicator rank of 39.



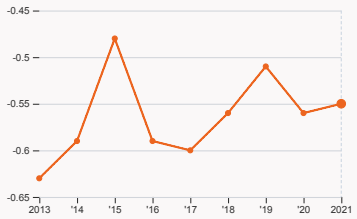
6.2.2 Unicorn valuation

was equal to 2.51 % GDP in 2024, down by 0.59 percentage points from the year prior – and equivalent to an indicator rank of 14.



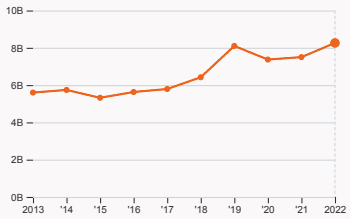
6.2.4 High-tech manufacturing

was equal to 23.94 % of total manufacturing output in 2022, up by 0.15 percentage points from the year prior – and equivalent to an indicator rank of 50.



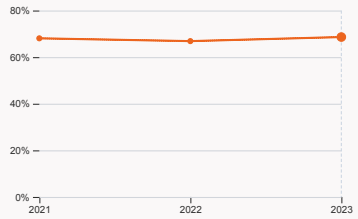
6.3.2 Production and export complexity

was equal to a score of -0.55 in 2021, up by 1.79% from the year prior – and equivalent to an indicator rank of 91.



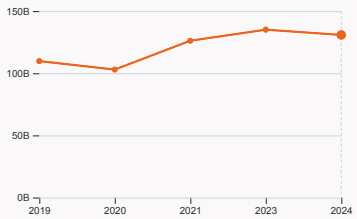
6.3.3 High-tech exports

was equal to 8.26 billion USD in 2022, up by 10.13% from the year prior – and equivalent to an indicator rank of 63.



7.1.1 Intangible asset intensity

was equal to 68.62 % for the top 15 companies in 2023, up by 1.75 percentage points from the year prior – and equivalent to an indicator rank of 20.

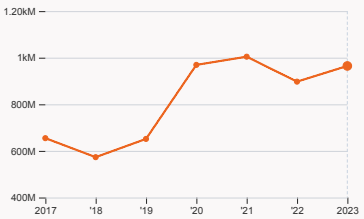


7.1.3 Global brand value

was equal to 130.8 billion USD for the brands in the top 5,000 in 2024, down by 3.14% from the year prior – and equivalent to an indicator rank of 28.

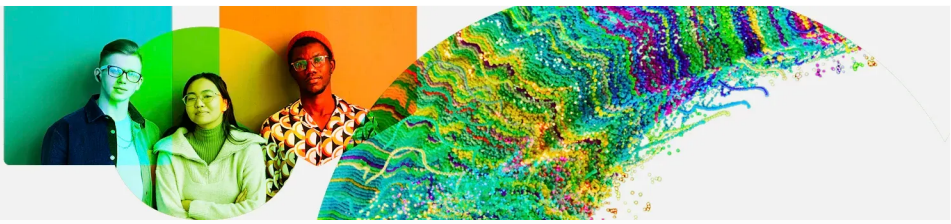
7.2.2 National feature films

was equal to 52 films in 2022, up by 136.36% from the year prior – and equivalent to an indicator rank of 46.



7.3.3 Mobile app creation

was equal to 964.53 million global downloads of mobile apps in 2023, up by 7.51% from the year prior – and equivalent to an indicator rank of 38.



Australia's innovation top performers

2.3.3 Global corporate R&D investors from Australia

Rank	Firm	Industry	R&D	R&D Growth	R&D Intensity
			[mn EUR]	[%]	[%]
194	CSL	Pharmaceuticals & Biotechnology	1,158	7	94
267	TELSTRA	Technology Hardware & Equipment	808	43	6
367	COMMONWEALTH BANK OF AUSTRALIA	Banks	570	21	3
439	NATIONAL AUSTRALIA BANK	Banks	464	46	4

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 Australia's top universities

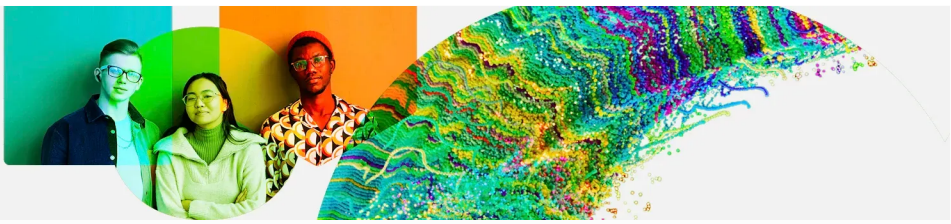
Rank	University	Score
15	THE UNIVERSITY OF MELBOURNE	87.90
19	THE UNIVERSITY OF NEW SOUTH WALES	86.70
19	THE UNIVERSITY OF SYDNEY	86.70

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 Australia

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	CANVA	Enterprise Tech	Surry Hills	25
2	AIRWALLEX	Financial Services	Melbourne	6
3	IMMUTABLE	Media & Entertainment	Sydney	3

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 Australia

Rank	Firm	Intensity, %
1	BHP GROUP LIMITED	63.03
2	CSL LIMITED	73.51
3	COMMONWEALTH BANK OF AUSTRALIA	48.40

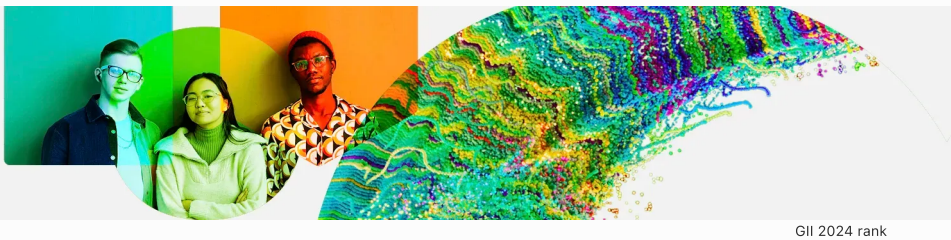
Source: Brand Finance (https://brandirectory.com/reports/gift-2022).
Note: Brand Finance only provides within economy ranks.

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

Rank	Brand	Industry	Brand Value, mn USD
1	WOOLWORTHS	Retail	9,819.8
2	TELSTRA	Telecoms	8,328.3
3	COMMONWEALTH BANK	Banking	6,759.3

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

Global Innovation Index 2024



Australia

GII 2024 rank **23**

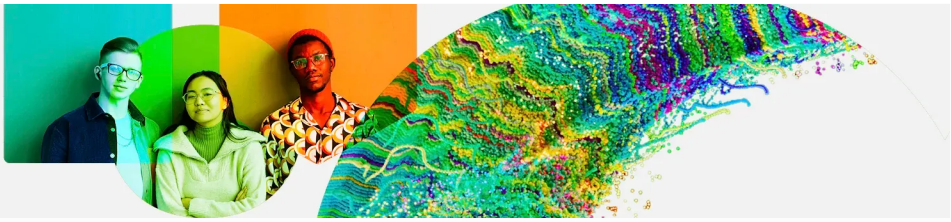
Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
30	18	High	SEAO	26.5	1,719.3	64,673.8

	Score / Value	Rank	
Institutions	**77**	**15**	
1.1 Institutional environment	**84**	**14**	
1.1.1 Operational stability for businesses*	84	12	
1.1.2 Government effectiveness*	83.9	14	
1.2 Regulatory environment	**89.4**	**6**	●◆
1.2.1 Regulatory quality*	91.6	2	●◆
1.2.2 Rule of law*	87.1	16	
1.3 Business environment	**57.5**	**36**	
1.3.1 Policy stability for doing business†	70.4	26	
1.3.2 Entrepreneurship policies and culture†	44.6	36	
Human capital and research	**58.7**	**10**	
2.1 Education	**61.7**	**31**	
2.1.1 Expenditure on education, % GDP	5.2	37	
2.1.2 Government funding/pupil, secondary, % GDP/cap	19.2	55	○
2.1.3 School life expectancy, years	20.7	1	●◆
2.1.4 PISA scales in reading, maths and science	497.4	10	
2.1.5 Pupil–teacher ratio, secondary	n/a	n/a	
2.2 Tertiary education	**54.1**	**8**	
2.2.1 Tertiary enrolment, % gross	106.2	4	●◆
2.2.2 Graduates in science and engineering, %	19.1	84	○◇
2.2.3 Tertiary inbound mobility, %	23	6	●◆
2.3 Research and development (R&D)	**60.3**	**15**	
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	1.7	23	
2.3.3 Global corporate R&D investors, top 3, mn USD	65.3	19	
2.3.4 QS university ranking, top 3*	88.2	3	●◆
Infrastructure	**55.4**	**15**	
3.1 Information and communication technologies (ICTs)	**95.2**	**5**	●◆
3.1.1 ICT access*	99.8	14	
3.1.2 ICT use*	89.1	21	
3.1.3 Government's online service*	93.1	7	●◆
3.1.4 E-participation*	98.8	2	●◆
3.2 General infrastructure	**47**	**24**	
3.2.1 Electricity output, GWh/mn pop.	10,417.8	14	
3.2.2 Logistics performance*	72.7	18	
3.2.3 Gross capital formation, % GDP	23.4	71	○
3.3 Ecological sustainability	**24**	**52**	
3.3.1 GDP/unit of energy use	9.7	74	○
3.3.2 Low-carbon energy use, %	14.4	75	○
3.3.3 ISO 14001 environment/bn PPP$ GDP	4.4	24	
Market sophistication	**53.8**	**20**	
4.1 Credit	**54.9**	**16**	
4.1.1 Finance for startups and scaleups†	60.6	28	
4.1.2 Domestic credit to private sector, % GDP	133.9	11	
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	
4.2 Investment	**33.1**	**24**	
4.2.1 Market capitalization, % GDP	116.5	12	
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.3	21	
4.2.3 VC recipients, deals/bn PPP$ GDP	0.2	19	
4.2.4 VC received, value, % GDP	0.002	30	
4.3 Trade, diversification and market scale	**73.3**	**17**	
4.3.1 Applied tariff rate, weighted avg., %	0.6	7	●◆
4.3.2 Domestic industry diversification	90.9	33	
4.3.3 Domestic market scale, bn PPP$	1,719.3	20	

	Score / Value	Rank	
Business sophistication	**48.2**	**26**	◇
5.1 Knowledge workers	**64.9**	**[18]**	
5.1.1 Knowledge-intensive employment, %	51.5	9	
5.1.2 Firms offering formal training, %	n/a	n/a	
5.1.3 GERD performed by business, % GDP	0.9	25	
5.1.4 GERD financed by business, %	n/a	n/a	
5.1.5 Females employed w/advanced degrees, %	28.7	6	●◆
5.2 Innovation linkages	**50.3**	**21**	
5.2.1 Public Research-Industry co-publications, %	2.1	42	◇
5.2.2 University-industry R&D collaboration†	80.9	12	
5.2.3 State of cluster development†	78.5	22	
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.1	13	
5.2.5 Patent families/bn PPP$ GDP	1	29	◇
5.3 Knowledge absorption	**29.3**	**56**	◇
5.3.1 Intellectual property payments, % total trade	1.1	31	
5.3.2 High-tech imports, % total trade	11.2	30	
5.3.3 ICT services imports, % total trade	1	78	○◇
5.3.4 FDI net inflows, % GDP	2.2	71	
5.3.5 Research talent, % in businesses	n/a	n/a	
Knowledge and technology outputs	**33.1**	**28**	◇
6.1 Knowledge creation	**46.3**	**17**	
6.1.1 Patents by origin/bn PPP$ GDP	1.5	39	◇
6.1.2 PCT patents by origin/bn PPP$ GDP	0.9	29	◇
6.1.3 Utility models by origin/bn PPP$ GDP	-	-	
6.1.4 Scientific and technical articles/bn PPP$ GDP	34.7	10	
6.1.5 Citable documents H-index	70.7	6	●◆
6.2 Knowledge impact	**36.9**	**34**	
6.2.1 Labor productivity growth, %	0.3	78	○
6.2.2 Unicorn valuation, % GDP	2.5	14	
6.2.3 Software spending, % GDP	0.2	68	◇
6.2.4 High-tech manufacturing, %	23.9	50	◇
6.3 Knowledge diffusion	**16.2**	**71**	◇
6.3.1 Intellectual property receipts, % total trade	0.3	35	◇
6.3.2 Production and export complexity	29.2	91	○◇
6.3.3 High-tech exports, % total trade	2	63	◇
6.3.4 ICT services exports, % total trade	1.2	77	○
6.3.5 ISO 9001 quality/bn PPP$ GDP	8.7	33	
Creative outputs	**42.1**	**29**	◇
7.1 Intangible assets	**42.4**	**30**	
7.1.1 Intangible asset intensity, top 15, %	68.6	20	
7.1.2 Trademarks by origin/bn PPP$ GDP	50.2	35	
7.1.3 Global brand value, top 5,000, % GDP	7.8	28	
7.1.4 Industrial designs by origin/bn PPP$ GDP	1.3	49	
7.2 Creative goods and services	**24.4**	**47**	◇
7.2.1 Cultural and creative services exports, % total trade	0.3	67	○
7.2.2 National feature films/mn pop. 15–69	2.8	46	
7.2.3 Entertainment and media market/th pop. 15–69	65	5	
7.2.4 Creative goods exports, % total trade	0.5	64	
7.3 Online creativity	**59**	**18**	
7.3.1 Top-level domains (TLDs)/th pop. 15–69	55.7	10	
7.3.2 GitHub commits/mn pop. 15–69	49	23	◇
7.3.3 Mobile app creation/bn PPP$ GDP	72.2	38	

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.

Global Innovation Index 2024



Data availability

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

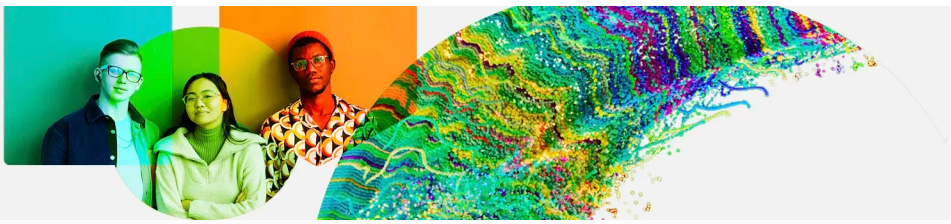
Australia has missing data for seven indicators and outdated data for six indicators.

Missing data for Australia

Code	Indicator name	Economy Year	Model Year	Source
2.1.5	Pupil–teacher ratio, secondary	n/a	2022	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	n/a	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
4.1.3	Loans from microfinance institutions, % GDP	n/a	2022	International Monetary Fund, Financial Access Survey (FAS)
5.1.2	Firms offering formal training, %	n/a	2023	World Bank Enterprise Surveys
5.1.4	GERD financed by business, %	n/a	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.3.5	Research talent, % in businesses	n/a	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2022	World Intellectual Property Organization; International Monetary Fund

Outdated data for Australia

Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture†	2019	2023	Global Entrepreneurship Monitor
2.3.2	Gross expenditure on R&D, % GDP	2021	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
4.1.1	Finance for startups and scaleups†	2019	2023	Global Entrepreneurship Monitor
5.1.1	Knowledge-intensive employment, %	2021	2022	International Labour Organization
5.1.3	GERD performed by business, % GDP	2021	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.5	Females employed w/advanced degrees, %	2021	2023	International Labour Organization

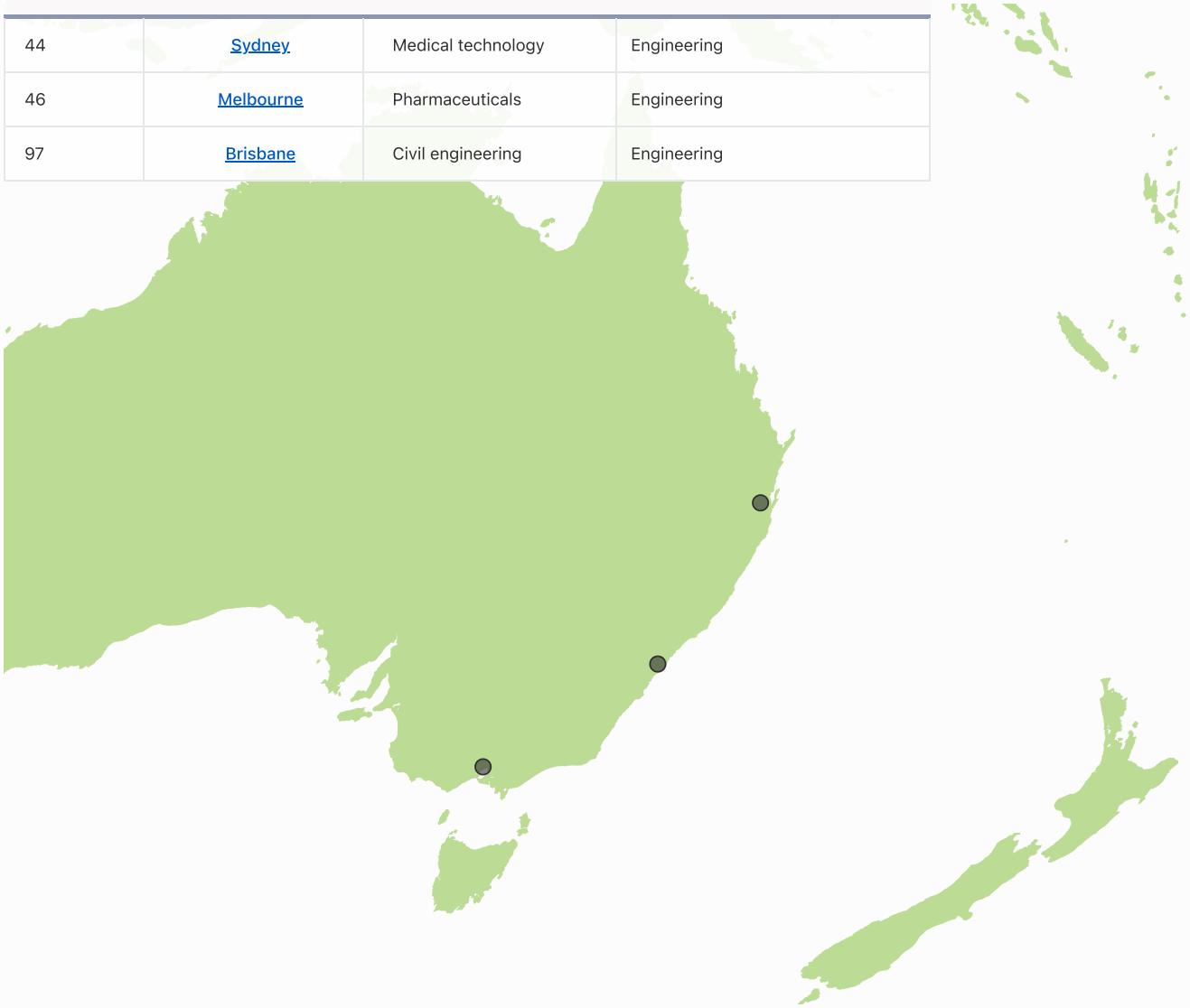


Top science and technology clusters in Australia

Australia has 3 clusters in the top 100 S&T clusters of the Global Innovation Index, the same number as in 2023.

The table and map below give an overview of the top science and technology clusters in Australia.

Rank	Cluster name	Top patent field	Top academic subject
44	Sydney	Medical technology	Engineering
46	Melbourne	Pharmaceuticals	Engineering
97	Brisbane	Civil engineering	Engineering



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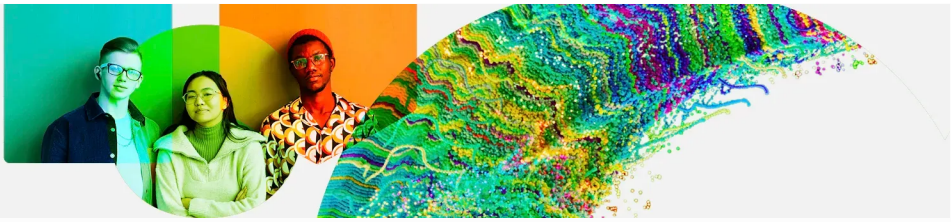
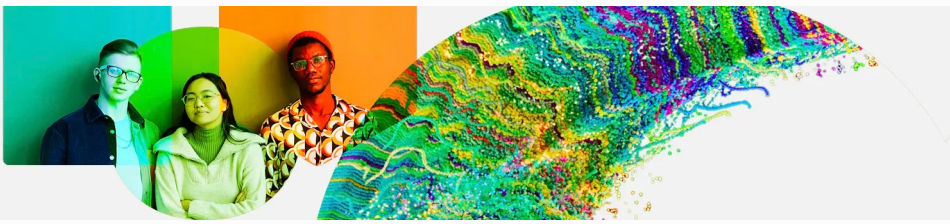


The table and map below give an overview of the top science and technology clusters by intensity in Australia.

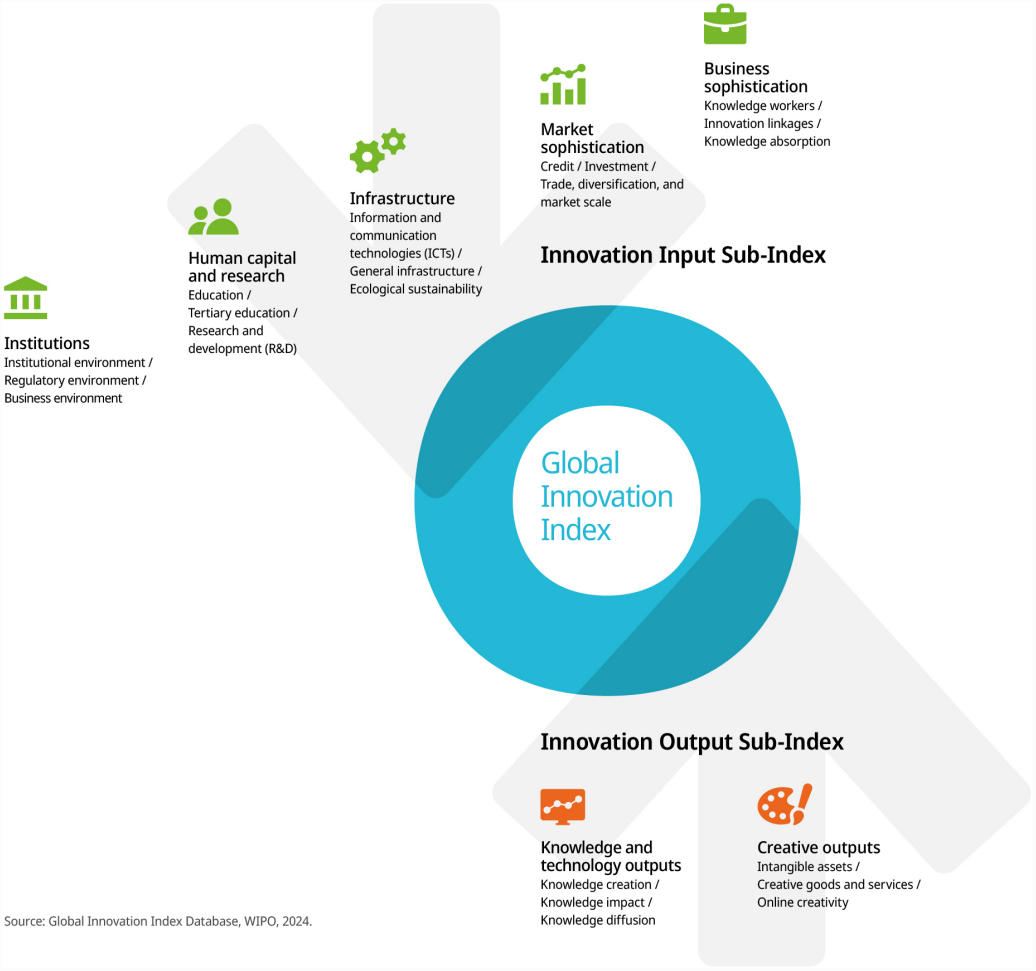
Rank	Cluster name	Top patent field	Top academic subject
43	Sydney	Medical technology	Engineering
54	Melbourne	Pharmaceuticals	Engineering
57	Brisbane	Civil engineering	Engineering

Global Innovation Index 2024



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.