Global Innovation Index 2025

Luxembourg ranking in the Global Innovation Index 2025

Luxembourg ranks 23rd among the 139 economies featured in the GII 2025.

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.

Luxembourg ranks 22nd among the 54 High-income group economies.

Luxembourg ranks 14th among the 39 economies in Europe.

Luxembourg GII Ranking (2020-2025)

The table shows the rankings of Luxembourg over the past six 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 Luxembourg in the GII 2025 is between ranks 20 and 28.

Year	GII Position	Innovation Inputs	Innovation Outputs
2020	18th	24th	14th
2021	23rd	26th	18th
2022	19th	20th	18th
2023	21st	22nd	23rd
2024	20th	24th	21st
2025	23rd	26th	25th

Luxembourg performs better in innovation outputs than innovation inputs in 2025.

This year Luxembourg ranks 26th in innovation inputs. This position is lower than last year.

Luxembourg ranks 25th in innovation outputs. This position is lower than last year.

Luxembourg has no clusters in the world's top innovation clusters of the Global Innovation Index.

Global Innovation Index 2025

> Global Innovation Tracker

The Global Innovation Tracker 2025 shows what is the current state of innovation in Luxembourg, how rapidly is technology being embraced and what are the resulting societal impacts.

For Luxembourg, 6 indicators have improved in the short-term and 2 indicators have worsened.

Science and innovation investment

	Scientific publications	R&D investments	Venture capital deal numbers	International patent filings
Short term	▲ 0.8 % 2023 - 2024	▼ -2.9 % 2022 - 2023	0 % 2023 - 2024	▲ 28.2 % 2023 - 2024
Long term (annual growth)	▲ 5.3 % 2014 - 2024	▲ 0.4 % 2013 - 2023	▲ 0.8 % 2020 - 2024	▲ 0.1 % 2014 - 2024

Technology adoption

	Safe sanitation	Connectivity		Robots	Electric vehicles
		Fixed broadband	5G		
Short term	▲ 0.3% 2023 - 2024	▲ 2.8% 2021 - 2022	▲ 1% 2022 - 2023	n/a	n/a
Long term (annual growth)	▲ 0.3% 2014 - 2024	▲ 4% 2012 - 2022	n/a	n/a	n/a
Penetration	96.3 per 100 inhabitants in 2024	38.3 per 100 inhabitants in 2022	99 per 100 inhabitants in 2023	n/a	n/a

Socioeconomic impact

	Labor productivity	Life expectancy	Temperature change
Short term	▲ 0.5 % 2023 - 2024	0 % 2022 - 2023	+ 2.8 °C 2024
Long term (annual growth)	▼ -0.4 % 2014 - 2024	▲ 0.2 % 2013 - 2023	+ 2.5 °C 2014
Level	183,415.1 USD in 2024	82.2 years in 2023	n/a

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 countries. from 1951–1980. Figures are rounded.

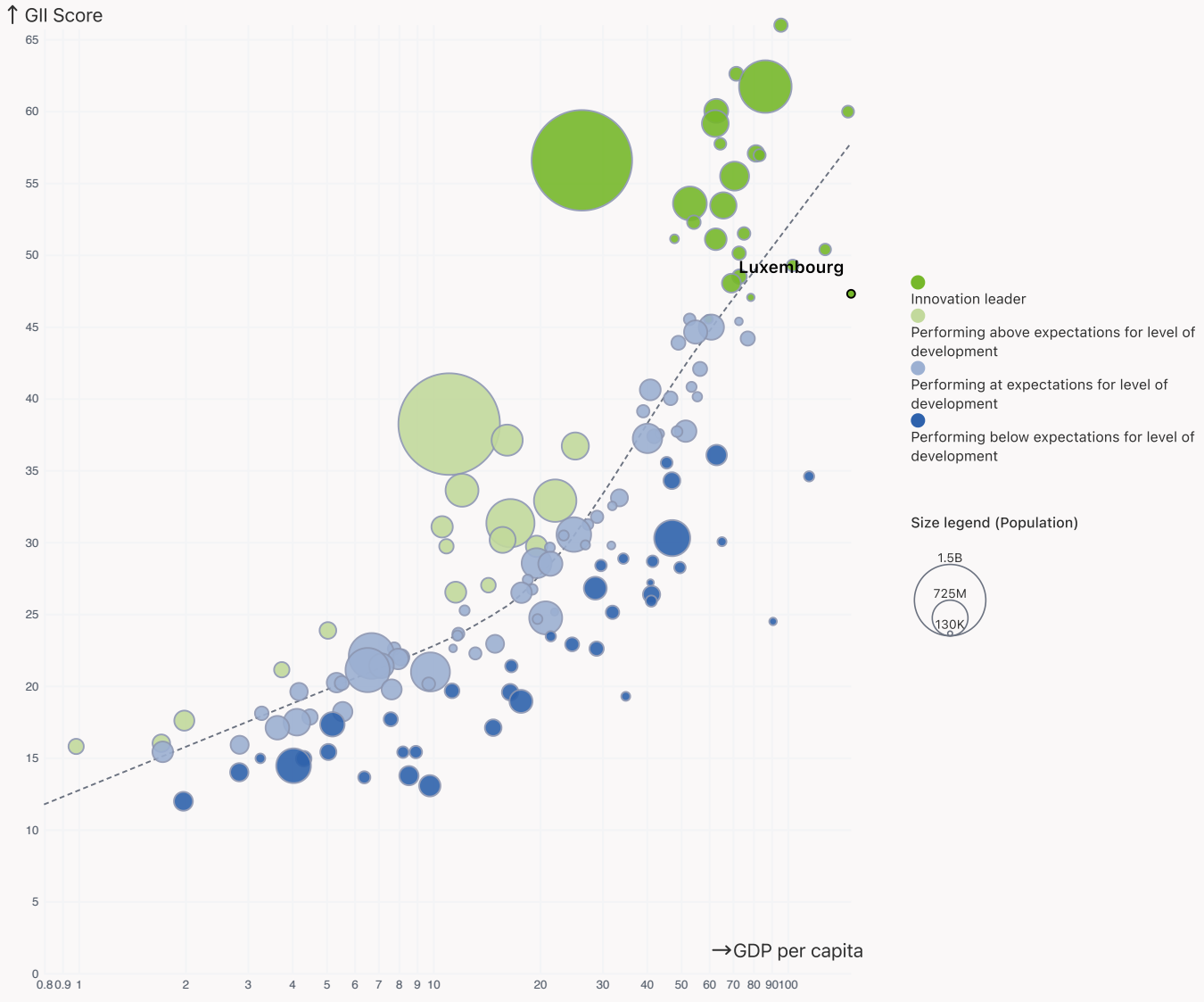
Global Innovation Index 2025

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.

Luxembourg is an Innovation leader, ranking in the top 25 of the GII.

> Innovation overperformers relative to their economic development



Global Innovation Index 2025

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.

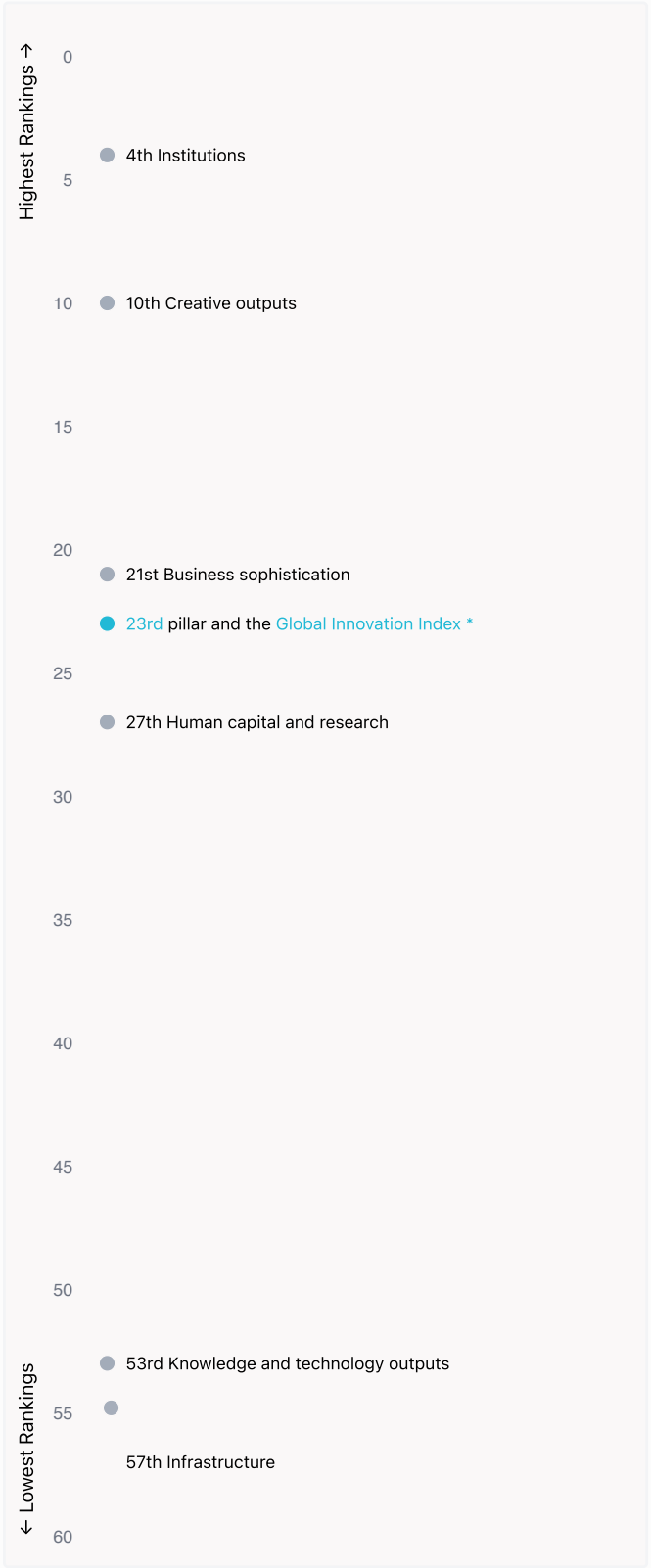
Luxembourg produces less innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs

Global Innovation Index 2025

Overview of Luxembourg's rankings in the seven areas of the GII in 2025

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



Highest Rankings

Luxembourg ranks highest in Institutions (4th), Creative outputs (10th), Business sophistication (21st) and Market sophistication (23rd).

Lowest Rankings

Luxembourg ranks lowest in Infrastructure (57th), Knowledge and technology outputs (53rd) and Human capital and research (27th).

* Market sophistication

The full WIPO Intellectual Property Statistics profile for Luxembourg can be found on https://www.wipo.int/edocs/statistics-country-profile/en/lu.pdf

Global Innovation Index 2025

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

The charts shows the relative position of Luxembourg (blue bar) against other economy groupings (grey bars)

High-income economies

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

Europe

Luxembourg performs above the regional average in Institutions, Human capital and research, Market sophistication, Business sophistication, Creative outputs.

Institutions

- Luxembourg | Score: 83.78
- Top 10 | Score: 78.63
- High-income | Score: 65.99
- Europe | Score: 59.42

Human capital and research

- Top 10 | Score: 59.30
- Luxembourg | Score: 47.95
- High-income | Score: 45.45
- Europe | Score: 44.67

Infrastructure

- Top 10 | Score: 61.36
- High-income | Score: 54.18
- Europe | Score: 54.13
- Luxembourg | Score: 46.59

Market sophistication

- Top 10 | Score: 61.82
- Luxembourg | Score: 50.25
- High-income | Score: 47.12
- Europe | Score: 44.89

Business sophistication

- Top 10 | Score: 59.10
- Luxembourg | Score: 49.03
- High-income | Score: 42.22
- Europe | Score: 40.79

Knowledge and technology outputs

- Top 10 | Score: 54.93
- Europe | Score: 34.99
- High-income | Score: 33.94
- Luxembourg | Score: 24.66

Creative outputs

- Top 10 | Score: 55.98
- Luxembourg | Score: 53.37
- High-income | Score: 38.68
- Europe | Score: 38.66

Global Innovation Index 2025

Innovation strengths and weaknesses in Luxembourg

The table below gives an overview of the indicator strengths and weaknesses of Luxembourg in the GII 2025.

Luxembourg's best-ranked innovation strengths are **Cultural and creative services exports, % total trade** (rank 1), **VC investor co-participation/bn PPP$ GDP** (rank 1) and **Knowledge-intensive employment, %** (rank 1).

Strengths

Rank	Code	Indicator name
1	7.2.1	Cultural and creative services exports, % total trade
1	4.2.5	VC investor co-participation/bn PPP$ GDP
1	5.1.1	Knowledge-intensive employment, %
1	2.2.3	Tertiary inbound mobility, %
2	1.3.1	Policy stability for doing business†
2	4.2.4	VC investors, deal count/bn PPP$ GDP
3	1.2.1	Regulatory quality*
4	1.1.2	Government effectiveness*
5	5.1.2	Females employed w/advanced degrees, %
6	5.3.3	ICT services imports, % total trade
6	5.3.1	Intellectual property payments, % total trade
6	1.2.2	Rule of law*
6	7.3.1	Top-level domains (TLDs)/th pop. 15–69

Weaknesses

Rank	Code	Indicator name
138	5.3.2	High-tech imports, % total trade
137	5.3.4	FDI net inflows, % GDP
122	6.2.1	Labor productivity growth, %
116	3.2.3	Gross capital formation, % GDP
110	5.1.3	Youth demographic dividend, %
109	7.2.4	Creative goods exports, % total trade
102	2.2.1	Tertiary enrolment, % gross
100	6.3.5	ISO 9001 quality/bn PPP$ GDP
95	3.3.2	Low-carbon energy use, %
94	4.3.3	Domestic market scale, bn PPP$

Global Innovation Index 2025

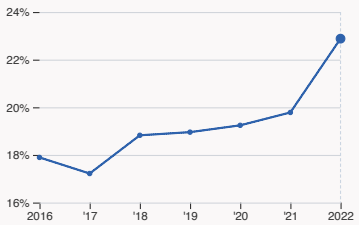
Luxembourg's innovation system

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

Innovation inputs in Luxembourg

2.1.1 Expenditure on education

was equal to 4.7 % GDP in 2022, up by 0.98 percentage points from the year prior – and equivalent to an indicator rank of 51.



2.2.2 Graduates in science and engineering

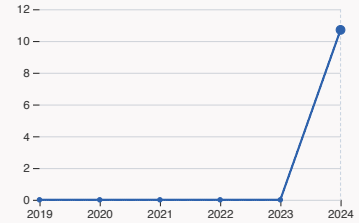
was equal to 22.88 % of total graduates in 2022, up by 3.1 percentage points from the year prior – and equivalent to an indicator rank of 63.

2.3.1 Researchers

was equal to 5224.2 FTE per million population in 2023, down by 1.68% from the year prior – and equivalent to an indicator rank of 20.

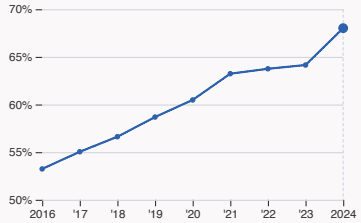
2.3.2 Gross expenditure on R&D

was equal to 1.03 % GDP in 2023, down by 0.02 percentage points from the year prior – and equivalent to an indicator rank of 40.



2.3.4 QS university ranking

was equal to an average score of 10.7 for the top three universities in 2024, up by 1070% from the year prior – and equivalent to an indicator rank of 68.



5.1.1 Knowledge-intensive employment

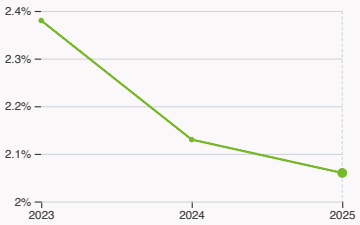
was equal to 68.01 % in 2024, up by 3.87 percentage points from the year prior – and equivalent to an indicator rank of 1.

Global Innovation Index 2025

Innovation outputs in Luxembourg

6.1.1 Patents by origin

was equal to 442 patents in 2023, down by 2% from the year prior – and equivalent to an indicator rank of 15.

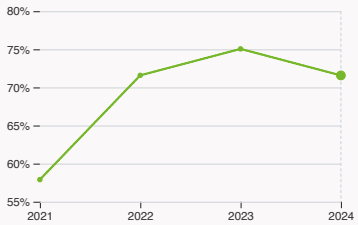


6.2.2 Unicorn valuation

was equal to 2.06 % GDP in 2025, down by 0.07 percentage points from the year prior – and equivalent to an indicator rank of 20.

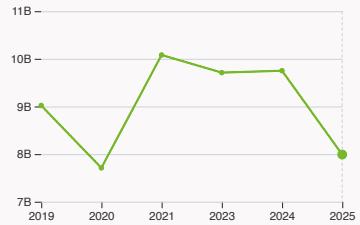
6.3.3 High-tech exports

was equal to 1.17 billion USD in 2023, down by 3.31% from the year prior – and equivalent to an indicator rank of 87.



7.1.1 Intangible asset intensity, top 15

was equal to 71.57 % for the top 15 companies in 2024, down by 3.48 percentage points from the year prior – and equivalent to an indicator rank of 14.



7.1.3 Global brand value, top 5,000

was equal to 7.99 billion USD for the brands in the top 5,000 in 2025, down by 18.05% from the year prior – and equivalent to an indicator rank of 24.

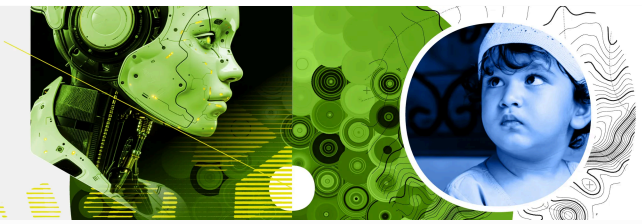
7.2.2 National feature films

was equal to 5 films in 2023 with no change from the year prior – and equivalent to an indicator rank of 8.

7.3.3 Mobile app creation

was equal to 41.71 million global downloads of mobile apps in 2024, down by 3.94% from the year prior – and equivalent to an indicator rank of 42.

Global Innovation Index 2025



Luxembourg's innovation top performers

Disclaimer: This section contains only the top performers per country. For the complete list, please visit the GII Innovation Ecosystems and Data Explorer website.

2.3.3 Global corporate R&D investors from Luxembourg

Rank	Firm	Industry	R&D [mn EUR]	R&D Growth [%]	R&D Intensity [%]
1	SPOTIFY	Software & Computer Services	1,496	11	11
2	ARCELORMITTAL	Industrial Metals & Mining	296	4	0.5
3	OUTSYSTEMS	Financial Services	118	4	28

Source: WIPO, based on European Commission's Joint Research Centre (https://iri.jrc.ec.europa.eu/scoreboard/2024-eu-industrial-rd-investment-scoreboard) and Orbis database (https://www.moodys.com/web/en/us/capabilities/company-reference-data/orbis.html).
Note: Data is based on the 2024 EU Industrial R&D Investment Scoreboard from the European Commission's Joint Research Centre, which ranks the top 2,000 firms by R&D investment annually. For countries not represented in the Scoreboard, companies from Orbis with R&D expenditure above USD 50 million were identified and used to complement the dataset.

2.3.4 QS university ranking of Luxembourg's top universities

Rank	University	Score
355	UNIVERSITY OF LUXEMBOURG	32.10

Source: QS Quacquarelli Symonds Ltd (https://www.topuniversities.com/university-rankings/world-university-rankings/2024).
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'.

5.2.3 University industry and international engagement, top 5 universities

Rank	University	Score
1	UNIVERSITY OF LUXEMBOURG	87.00

Source: Times Higher Education (THE), World University Rankings 2025.
Note: Rank corresponds to within economy ranks. The score is calculated as the average of the International Outlook score (encompassing international staff, students, and co-authorship) and the industry score (reflecting industry income and patent citations). The 2025 ranking corresponds to data from the academic year that ended in 2022.

6.2.2 Top Unicorn Companies in Luxembourg

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	OCSIAL	Industrials	Leudelange	2

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 Luxembourg

Rank	Firm	Intensity, %
1	SPOTIFY TECHNOLOGY S.A.	92.91
2	EUROFINS SCIENTIFIC SE	79.77
3	ALLEGRO.EU S.A.	99.42

Source: Brand Finance (https://brandirectory.com/reports/gift-2024).
Note: Brand Finance only provides within economy ranks.

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

Rank	Brand	Industry	Brand Value, mn USD
1	ARCELORMITTAL	Mining, Iron & Steel	3,575.5
2	EUROFINS SCIENTIFIC	Healthcare Facilities	1,350.9
3	TENARIS	Engineering	721

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

Luxembourg

GII 2025 rank **23**

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
25	26	High	Europe	0.7	101.9	151,145.8

	Score / Value	Rank	
Institutions	**83.8**	**4**	
1.1 Institutional environment	**88.4**	**5**	
1.1.1 Operational stability for businesses*	86.7	8	
1.1.2 Government effectiveness*	90.1	4	●
1.2 Regulatory environment	**93**	**4**	
1.2.1 Regulatory quality*	91.2	3	●
1.2.2 Rule of law*	94.8	6	●
1.3 Business environment	**69.9**	**18**	
1.3.1 Policy stability for doing business†	93.7	2	●
1.3.2 Entrepreneurship policies and culture†	46.2	40	
Human capital and research	**47.9**	**27**	◇
2.1 Education	**57.8**	**46**	◇
2.1.1 Expenditure on education, % GDP	4.7	51	
2.1.2 Government funding/pupil, secondary, % GDP/cap	20.9	41	
2.1.3 School life expectancy, years	14.4	62	◇
2.1.4 PISA scales in reading, maths and science	476.7	32	
2.1.5 Pupil–teacher ratio, secondary	8.1	10	
2.2 Tertiary education	**51.1**	**9**	
2.2.1 Tertiary enrolment, % gross	21	102	○ ◇
2.2.2 Graduates in science and engineering, %	22.9	63	
2.2.3 Tertiary inbound mobility, %	50.5	1	●
2.3 Research and development (R&D)	**34.9**	**31**	◇
2.3.1 Researchers, FTE/mn pop.	5,224.2	20	
2.3.2 Gross expenditure on R&D, % GDP	1	40	◇
2.3.3 Global corporate R&D investors, top 3, mn USD	62.3	22	
2.3.4 QS university ranking, top 3*	11	68	◇
Infrastructure	**46.6**	**57**	◇
3.1 Information and communication technologies (ICTs)	**84.8**	**43**	◇
3.1.1 ICT access*	99.3	12	
3.1.2 ICT use*	84.6	39	
3.1.3 Government's online service*	70.6	64	◇
3.2 General infrastructure	**31**	**78**	◇
3.2.1 Electricity output, GWh/mn pop.	1,865.7	86	◇
3.2.2 Logistics performance*	68.2	25	◇
3.2.3 Gross capital formation, % GDP	17.3	116	○ ◇
3.3 Ecological sustainability	**23.9**	**55**	
3.3.1 GDP/unit of energy use	23.4	7	
3.3.2 Low-carbon energy use, %	9.1	95	○
3.3.3 ISO 14001 environment/bn PPP$ GDP	0.8	78	
Market sophistication	**50.2**	**23**	
4.1 Credit	**43.9**	**34**	
4.1.1 Finance for startups and scaleups†	51	46	◇
4.1.2 Domestic credit to private sector, % GDP	96.5	23	
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	
4.2 Investment	**40.3**	**11**	
4.2.1 Market capitalization, % GDP	67.9	28	
4.2.2 Venture capital (VC) received, deal count/bn PPP$ GDP	0.3	24	
4.2.3 Late-stage VC deal count, % global VC	0.03	55	
4.2.4 VC investors, deal count/bn PPP$ GDP	4.3	2	●
4.2.5 VC investor co-participation/bn PPP$ GDP	1.3	1	●
4.3 Trade, diversification and market scale	**66.6**	**79**	◇
4.3.1 Applied tariff rate, weighted avg., %	1.3	24	
4.3.2 Domestic industry diversification	n/a	n/a	
4.3.3 Domestic market scale, bn PPP$	101.9	94	○ ◇

	Score / Value	Rank	
Business sophistication	**49**	**21**	
5.1 Knowledge workers	**56.1**	**18**	
5.1.1 Knowledge-intensive employment, %	68	1	●
5.1.2 Females employed w/advanced degrees, %	29.7	5	●
5.1.3 Youth demographic dividend, %	26.5	110	○
5.1.4 GERD performed by business, % GDP	0.5	39	◇
5.1.5 GERD financed by business, %	44.2	37	◇
5.2 Innovation linkages	**60.8**	**15**	
5.2.1 Public research–industry co-publications, %	4.5	18	
5.2.2 University–industry R&D collaboration†	63.2	17	
5.2.3 University industry & international engagement, top 5*	85.7	15	
5.2.4 State of cluster development†	75.2	26	
5.2.5 Patent families/bn PPP$ GDP	3	12	
5.3 Knowledge absorption	**30.2**	**55**	◇
5.3.1 Intellectual property payments, % total trade	4.6	6	●
5.3.2 High-tech imports, % total trade	1.3	138	○ ◇
5.3.3 ICT services imports, % total trade	4.7	6	●
5.3.4 FDI net inflows, % GDP	-161.3	137	○ ◇
5.3.5 Research talent, % in businesses	32.4	41	◇
Knowledge and technology outputs	**24.7**	**53**	◇
6.1 Knowledge creation	**27.8**	**34**	◇
6.1.1 Patents by origin/bn PPP$ GDP	4.5	15	
6.1.2 PCT patents by inventor origin/bn PPP$ GDP	0.9	25	◇
6.1.3 Utility models by origin/bn PPP$ GDP	-	-	
6.1.4 Scientific and technical articles/bn PPP$ GDP	14.6	49	◇
6.1.5 Citable documents H-index	12.4	66	◇
6.2 Knowledge impact	**26.8**	**63**	◇
6.2.1 Labor productivity growth, %	-1	122	○ ◇
6.2.2 Unicorn valuation, % GDP	2.1	20	
6.2.3 Software spending, % GDP	0.2	82	◇
6.2.4 High-tech manufacturing	n/a	n/a	
6.3 Knowledge diffusion	**19.4**	**64**	◇
6.3.1 Intellectual property receipts, % total trade	1.4	16	
6.3.2 Production and export complexity	n/a	n/a	
6.3.3 High-tech exports, % total trade	0.7	87	◇
6.3.4 ICT services exports, % total trade	3.5	39	
6.3.5 ISO 9001 quality/bn PPP$ GDP	1.4	100	○ ◇
Creative outputs	**53.4**	**10**	
7.1 Intangible assets	**48.5**	**20**	
7.1.1 Intangible asset intensity, top 15, %	71.6	14	
7.1.2 Trademarks by origin/bn PPP$ GDP	43.9	41	
7.1.3 Global brand value, top 5,000, % GDP	8.2	24	
7.1.4 Industrial designs by origin/bn PPP$ GDP	3.4	22	
7.2 Creative goods and services	**49.5**	**4**	
7.2.1 Cultural and creative services exports, % total trade	6.3	1	●
7.2.2 National feature films/mn pop. 15–69	10.2	8	
7.2.3 Entertainment and media market/th pop. 15–69	n/a	n/a	
7.2.4 Creative goods exports, % total trade	0.06	109	○
7.3 Online creativity	**67.1**	**14**	
7.3.1 Top-level domains (TLDs)/th pop. 15–69	82.6	6	●
7.3.2 GitHub commits/mn pop. 15–69	48.3	23	◇
7.3.3 Mobile app creation/bn PPP$ GDP	70.4	42	

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 2025

Data Availability

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

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

Missing data for Luxembourg

Code	Indicator name	Economy year	Model year	Source
4.1.3	Loans from microfinance institutions, % GDP	n/a	2023	International Monetary Fund, Financial Access Survey (FAS)
4.3.2	Domestic industry diversification	n/a	2022	United Nations Industrial Development Organization (UNIDO)
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2023	World Intellectual Property Organization; International Monetary Fund
6.2.4	High-tech manufacturing	n/a	2022	United Nations Industrial Development Organization (UNIDO)
6.3.2	Production and export complexity	n/a	2022	Harvard University, Growth Lab
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2024	PwC, GEMO; United Nations, World Population Prospects; International Monetary Fund

Outdated data for Luxembourg

Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	2022	2023	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	2022	2023	UNESCO Institute for Statistics
2.1.4	PISA scales in reading, maths and science	2018	2022	OECD, PISA
2.1.5	Pupil–teacher ratio, secondary	2022	2023	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2022	2023	UNESCO Institute for Statistics
2.2.3	Tertiary inbound mobility, %	2022	2023	UNESCO Institute for Statistics
5.1.5	GERD financed by business, %	2021	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT

Global Innovation Index 2025

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 140 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.