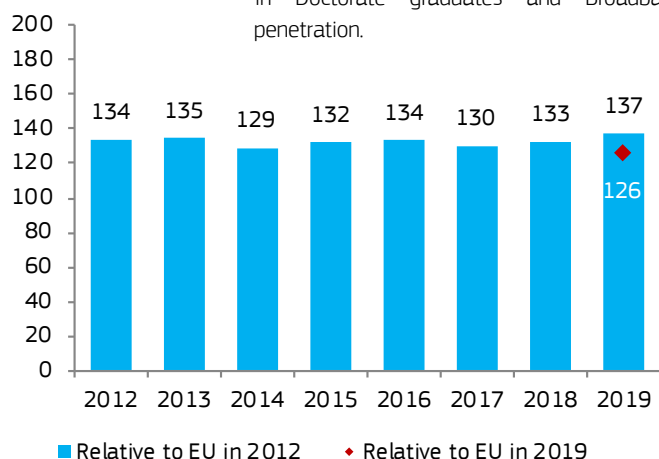




Luxembourg is an Innovation Leader.

Over time, performance has increased relative to that of the EU in 2012. The strong increase in 2019 is mainly due to improved performance in Doctorate graduates and Broadband penetration.



Attractive research systems, Employment impacts and Human resources are the strongest innovation dimensions. Luxembourg scores particularly well on Foreign doctorate students, International scientific co-publications, Trademark applications, and Employment in knowledge-intensive activities. Firm investments, Sales impacts and Linkages are the weakest innovation dimensions. Overall, Luxembourg's lowest indicator scores comprise Sales of new-to-market or new-to-firm innovations, Non-R&D innovation expenditures, Private co-funding of public R&D expenditures, and R&D expenditures in the business sector.

Structural differences with the EU are shown in the table below. Luxembourg shows the highest positive difference to the EU in Top R&D spending enterprises, FDI net inflows and GDP per capita, and the biggest negative difference in Employment share in manufacturing, Employment share high and medium high-tech manufacturing and Turnover share large enterprises.

Luxembourg	Performance relative to EU	
	Relative to EU 2019 in 2019	2012 in 2019
SUMMARY INNOVATION INDEX	126.0	133.9 137.1
Human resources	154.5	141.8 177.9
New doctorate graduates	86.0	32.4 94.7
Population with tertiary education	203.2	219.0 258.7
Lifelong learning	176.3	190.0 190.0
Attractive research systems	206.8	217.2 236.2
International scientific co-publications	263.6	246.4 387.1
Most cited publications	115.2	138.1 115.3
Foreign doctorate students	310.5	358.0 358.0
Innovation-friendly environment	135.8	217.1 236.2
Broadband penetration	147.8	130.0 340.0
Opportunity-driven entrepreneurship	122.2	275.6 166.4
Finance and support	106.2	138.0 122.7
R&D expenditure in the public sector	66.4	57.8 65.2
Venture capital expenditures	151.6	272.6 219.2
Firm investments	63.1	68.2 81.9
R&D expenditure in the business sector	45.6	52.2 52.2
Non-R&D innovation expenditures	23.0	33.8 32.3
Enterprises providing ICT training	122.2	123.1 169.2
Innovators	141.9	149.9 126.8
SMEs product/process innovations	124.6	147.9 124.2
SMEs marketing/organizational innovations	171.3	163.4 140.7
SMEs innovating in-house	132.1	137.7 115.0
Linkages	87.6	90.8 90.2
Innovative SMEs collaborating with others	106.1	164.9 105.4
Public-private co-publications	174.0	125.0 196.7
Private co-funding of public R&D exp.	36.5	33.4 36.8
Intellectual assets	151.0	154.3 141.0
PCT patent applications	70.1	65.8 65.1
Trademark applications	235.3	250.5 250.5
Design applications	189.4	200.0 158.9
Employment impacts	175.4	131.9 189.2
Employment in knowledge-intensive activities	235.0	232.4 254.1
Employment fast-growing enterprises	127.1	50.9 136.9
Sales impacts	85.2	96.0 84.8
Medium and high-tech product exports	76.4	94.4 84.7
Knowledge-intensive services exports	147.6	146.4 152.4
Sales of new-to-market/firm innovations	17.9	45.7 14.9

The colours show normalised performance in 2019 relative to that of the EU in 2019: dark green: above 125%; light green: between 95% and 125%; yellow: between 50% and 95%; orange: below 50%. Normalised performance uses the data after a possible imputation of missing data and transformation of the data.

	LU	EU
Performance and structure of the economy		
GDP per capita (PPS)	79,400	29,100
Average annual GDP growth (%)	2.69	1.84
Employment share manufacturing (NACE C) (%)	4.5	16.6
of which High and medium high-tech (%)	17.2	37.5
Employment share services (NACE G-N) (%)	46.8	41.4
of which Knowledge-intensive services (%)	59.8	34.3
Turnover share SMEs (%)	51.6	38.3
Turnover share large enterprises (%)	33.6	43.2
Foreign-controlled enterprises – share of value added (%)	18.8	11.1
Business and entrepreneurship		
Enterprise births (10+ employees) (%)	0.9	1.1
Total Entrepreneurial Activity (TEA) (%)	10.0	6.7
FDI net inflows (% GDP)	11.3	2.6
Top R&D spending enterprises per 10 million population	271.4	16.2
Buyer sophistication (1 to 7 best)	5.0	3.7
Governance and policy framework		
Ease of starting a business (0 to 100 best)	69.6	76.5
Basic-school entrepreneurial education and training (1 to 5 best)	2.3	1.9
Govt. procurement of advanced technology products (1 to 7 best)	4.7	3.5
Rule of law (-2.5 to 2.5 best)	1.8	1.1
Demography		
Population size (millions)	0.6	446.2
Average annual population growth (%)	1.95	0.14
Population density (inhabitants/km ²)	230.3	108.6

EU targets for 2020

Indicator	2015	Latest	Target ¹
Gross domestic expenditure on R&D (% of GDP)	1.30	1.22	2.30
Tertiary educational attainment (% of population aged 30-34)	52.3	56.5	66.0

1 Sources are provided in the introduction to the country profiles.

European Semester country report and country specific recommendations:

https://ec.europa.eu/info/publications/2020-european-semester-country-reports_en

<https://rio.jrc.ec.europa.eu/en/country-analysis/Luxembourg>