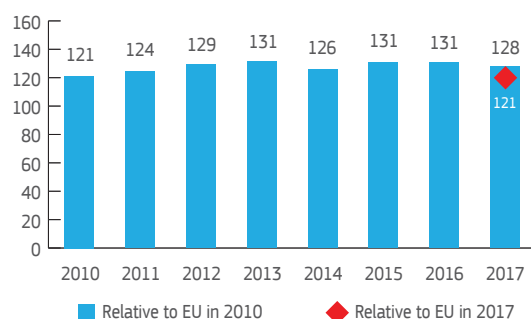




**Luxembourg is an Innovation Leader.**  
Over time, performance has increased relative to that of the EU in 2010.



Attractive research systems and Intellectual assets are the strongest innovation dimensions. Linkages and Firm investments are the weakest innovation dimensions.

Luxembourg	Performance relative to EU 2010 in		Relative to EU 2017 in
	2010	2017	
<b>SUMMARY INNOVATION INDEX</b>	<b>121.2</b>	<b>127.7</b>	<b>121.1</b>
<b>Human resources</b>	<b>137.3</b>	<b>150.3</b>	<b>126.0</b>
New doctorate graduates	46.2	83.1	59.6
Population with tertiary education	197.8	204.5	180.3
Lifelong learning	176.0	167.7	164.3
<b>Attractive research systems</b>	<b>163.7</b>	<b>224.8</b>	<b>197.8</b>
International scientific co-publications	282.4	576.0	354.1
Most cited publications	85.4	133.3	128.4
Foreign doctorate students	234.3	234.3	211.6
<b>Innovation-friendly environment</b>	<b>186.1</b>	<b>192.0</b>	<b>143.5</b>
Broadband penetration	144.4	277.8	156.3
Opportunity-driven entrepreneurship	210.7	141.1	131.0
<b>Finance and support</b>	<b>114.4</b>	<b>134.3</b>	<b>124.7</b>
R&D expenditure in the public sector	45.4	78.8	81.7
Venture capital expenditures	205.5	205.5	168.4
<b>Firm investments</b>	<b>67.4</b>	<b>77.1</b>	<b>68.9</b>
R&D expenditure in the business sector	57.2	51.9	46.6
Non-R&D innovation expenditures	24.5	4.9	4.5
Enterprises providing ICT training	114.3	164.3	143.8
<b>Innovators</b>	<b>134.9</b>	<b>122.3</b>	<b>142.2</b>
SMEs product/process innovations	127.3	107.8	131.8
SMEs marketing/organisational innovations	144.2	148.9	179.8
SMEs innovating in-house	132.6	109.1	117.0
<b>Linkages</b>	<b>80.1</b>	<b>62.8</b>	<b>62.2</b>
Innovative SMEs collaborating with others	111.7	80.0	79.6
Public-private co-publications	94.5	79.5	78.8
Private co-funding of public R&D exp.	32.4	27.1	26.7
<b>Intellectual assets</b>	<b>145.1</b>	<b>154.4</b>	<b>153.0</b>
PCT patent applications	44.2	47.5	49.6
Trademark applications	278.7	278.7	246.6
Design applications	139.3	161.1	166.9
<b>Employment impacts</b>	<b>124.4</b>	<b>139.4</b>	<b>138.6</b>
Employment in knowledge-intensive activities	225.4	211.7	191.8
Employment fast-growing enterprises	53.8	87.8	93.8
<b>Sales impacts</b>	<b>100.6</b>	<b>88.2</b>	<b>84.8</b>
Medium and high tech product exports	93.0	73.8	69.7
Knowledge-intensive services exports	146.1	149.8	142.8
Sales of new-to-market/firm innovations	56.6	33.6	33.2

Dark green: normalised performance above 120% of EU; light green: normalised performance between 90% and 120% of EU; yellow: normalised performance between 50% and 90% of EU; orange: normalised performance below 50% of EU. Normalised performance uses the data after a possible imputation of missing data and transformation of the data.

Data in red show a decline in performance compared to 2010.

For Luxembourg fast-track CIS 2016 data are not available.

**Structural differences** with the EU are shown in the table below. GDP per capita, the employment share in knowledge-intensive services, the turnover share of SMEs and the value added share of foreign-controlled enterprises are well above the EU average. The employment shares in manufacturing and in high and medium high-tech manufacturing, and the turnover share of large enterprises are well below the EU average

	LU	EU
<b>Performance and structure of the economy</b>		
GDP per capita (PPS)	75,700	28,600
Average annual GDP growth (%)	2.7	2.2
Employment share Manufacturing (NACE C) (%)	5.1	15.5
of which High and Medium high-tech (%)	20.7	37.2
Employment share Services (NACE G-N) (%)	46.2	41.6
of which Knowledge-intensive services (%)	59.2	35.0
Turnover share SMEs (%)	55.1	38.0
Turnover share large enterprises (%)	29.9	44.4
Foreign-controlled enterprises – share of value added (%)	22.3	12.5
<b>Business and entrepreneurship</b>		
Enterprise births (10+ employees) (%)	1.1	1.5
Total Entrepreneurial Activity (TEA) (%)	9.5	6.6
FDI net inflows (% GDP)	19.2	3.6
Top R&D spending enterprises per 10 mln population	272.4	19.7
Buyer sophistication (1 to 7 best)	4.9	3.7
<b>Governance and policy framework</b>		
Ease of starting a business (0 to 100 best)	68.8	76.9
Basic-school entrepren. education and training (1 to 5 best)	2.0	1.9
Govt. procurement of advanced tech products (1 to 7 best)	4.6	3.5
Rule of law (-2.5 to 2.5 best)	1.8	1.2
<b>Demography</b>		
Population size (millions)	0.6	510.1
Average annual population growth (%)	2.4	0.3
Population density (inhabitants/km <sup>2</sup> )	220.2	117.1

#### EU targets for 2020

Indicator	2013	Latest	Target <sup>1</sup>
Gross domestic expenditure on R&D (% of GDP)	1.30	1.24	2.30
Tertiary educational attainment (% of population aged 30-34)	52.5	54.5	66.0

<sup>1</sup> Sources are provided in the introduction to the country profiles.

#### RIO country report:

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

#### European Semester country report:

<https://ec.europa.eu/info/sites/info/files/2018-european-semester-country-report-luxembourg-en.pdf>