

# GLOBAL INNOVATION INDEX 2018

## Ukraine

**43<sup>rd</sup>** Ukraine is ranked 43rd in the GII 2018, moving up 7 positions from the previous year.

The GII indicators are grouped into innovation inputs and outputs. The following table reflects Ukraine's ranking over time<sup>1</sup>.

Ukraine's ranking over time

	GII	Input	Output	Efficiency
2018	43	75	35	5
2017	50	77	40	11
2016	56	76	40	12

- Ukraine performs much better in innovation outputs than in innovation inputs.
- This year it improves in inputs, moving up 2 spots since last year and reaching the 75th position.
- It also moves up 5 positions in outputs, where it ranks 35th this year.
- Ukraine proves to be highly efficient in translating its innovation inputs into outputs, as demonstrated by the Innovation Efficiency Ratio. Ranking 5th globally – its highest position yet – the Efficiency Ratio is positively influenced by a much higher ranking in innovation outputs (35th) compared to inputs (75th).

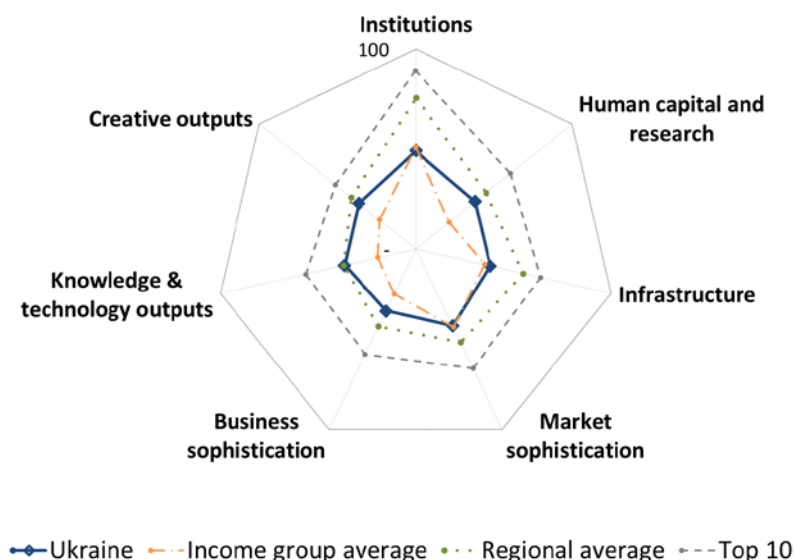
**1<sup>st</sup>** Ukraine is ranked 1st among the 30 lower-middle-income countries in the GII 2018.

**30<sup>th</sup>** Ukraine is ranked 30th among the 39 countries in Europe.

<sup>1</sup> Note that year-on-year comparisons of the GII ranks are imperfect and influenced by changes in the GII model and data availability.

## Benchmarking Ukraine to other lower-middle-income countries and the Europe region

Ukraine's scores by area



### Lower-middle-income countries

Ukraine has high scores in 5 out of the 7 GII areas – **Human Capital & Research, Infrastructure, Business Sophistication, Knowledge & Technology Outputs, and Creative Outputs**, in which it scores above the average of the lower-middle-income group.

Top scores in areas such as *Education, Information & Communication Technologies (ICTs), Knowledge workers, Knowledge creation, and Intangible assets* are behind these high rankings.

### Europe region

Compared to other countries in the Europe region, Ukraine performs below-average in all the 7 GII areas.

## Ukraine's innovation profile

### Strengths

- The **Innovation Efficiency Ratio** is the most important GII strength for Ukraine. Here it takes the 5th position globally. Most other GII strengths for this country are concentrated on the innovation output side of the GII.
- On the **innovation input** side, two out of three GII strengths are found in **Human Capital & Research** (43rd), where Ukraine demonstrates strong performance in the indicators *Tertiary enrolment* (12th) and *Pupil-teacher ratio*, which positions 3rd in the world.
- The third strength is in **Business Sophistication** (46th) in the indicator *Females employed with advanced degrees*, in which Ukraine is third in the world.
- On the **innovation output** side, Ukraine achieves remarkable results in **Knowledge & Technology Outputs** (27th), its top-ranked GII area. Here strengths are exhibited in one of its three components – *Knowledge creation* (15th). At the indicator level, it demonstrates strong performance in five indicators: *Productivity growth* (15th), *Computer software spending* (17th), *ICT services exports* (15th), *Patents by origin* (19th), and *Utility models by origin* – in which it ranks 1st globally.
- In **Creative Outputs** (45th), the area *Intangible assets* (13th) and two of its four indicators – *Trademarks by origin* (5th) and *Industrial designs by origin* (7th) – are marked as GII strengths.

## Weaknesses

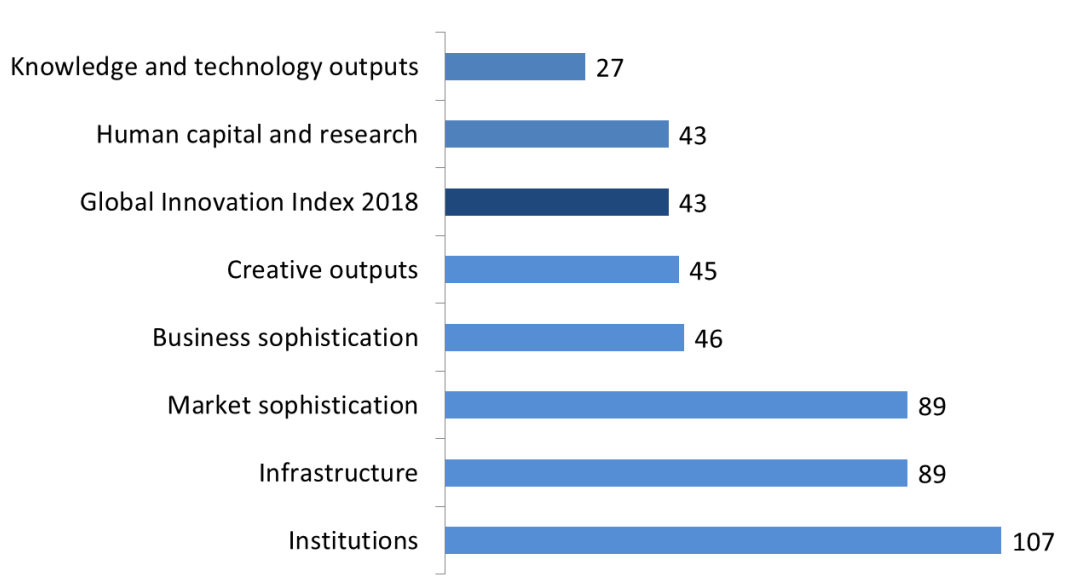
- Ukraine's relative weaknesses are mainly accrued in **innovation inputs**, across all 5 GII input areas but mostly in Institutions.
- **Institutions** (107th), the lowest-ranked GII area for Ukraine, is itself signaled as a GII weakness. Here the country shows relatively weak performance in one of its three components, *Political environment* (122nd), as well as in the indicators *Political stability & safety* (123rd), *Rule of law* (107th), and *Ease of resolving insolvency* (118th).
- In **Human Capital & Research** (43rd), one relative weakness lies in the indicator *Global R&D companies expenditure* (40th).
- In **Infrastructure** (89th), the area *Ecological sustainability* (115th) and the indicator *GDP per unit of energy use* (113th) present relatively weak performance.
- In **Market Sophistication** (89th), Ukraine exhibits relative weaknesses in one of its three components, *Investment* (115th), and in two indicators: *Microfinance gross loans* (79th) and *Venture capital deals* (79th).
- In **Business Sophistication** (46th), one GII weakness is found in the indicator *State of cluster development* (98st).
- On the **innovation output** side, only two indicators are signaled as weak: *ICTs & business model creation* (106th) and *National feature films* (101st), both in **Creative Outputs** (45th).

The following figure presents a summary of Ukraine's ranks in the 7 GII areas, as well as the overall rank in the GII 2018.

### Ukraine's rank in the GII 2018 and the 7 GII areas

Rank 1 is the highest possible in each pillar

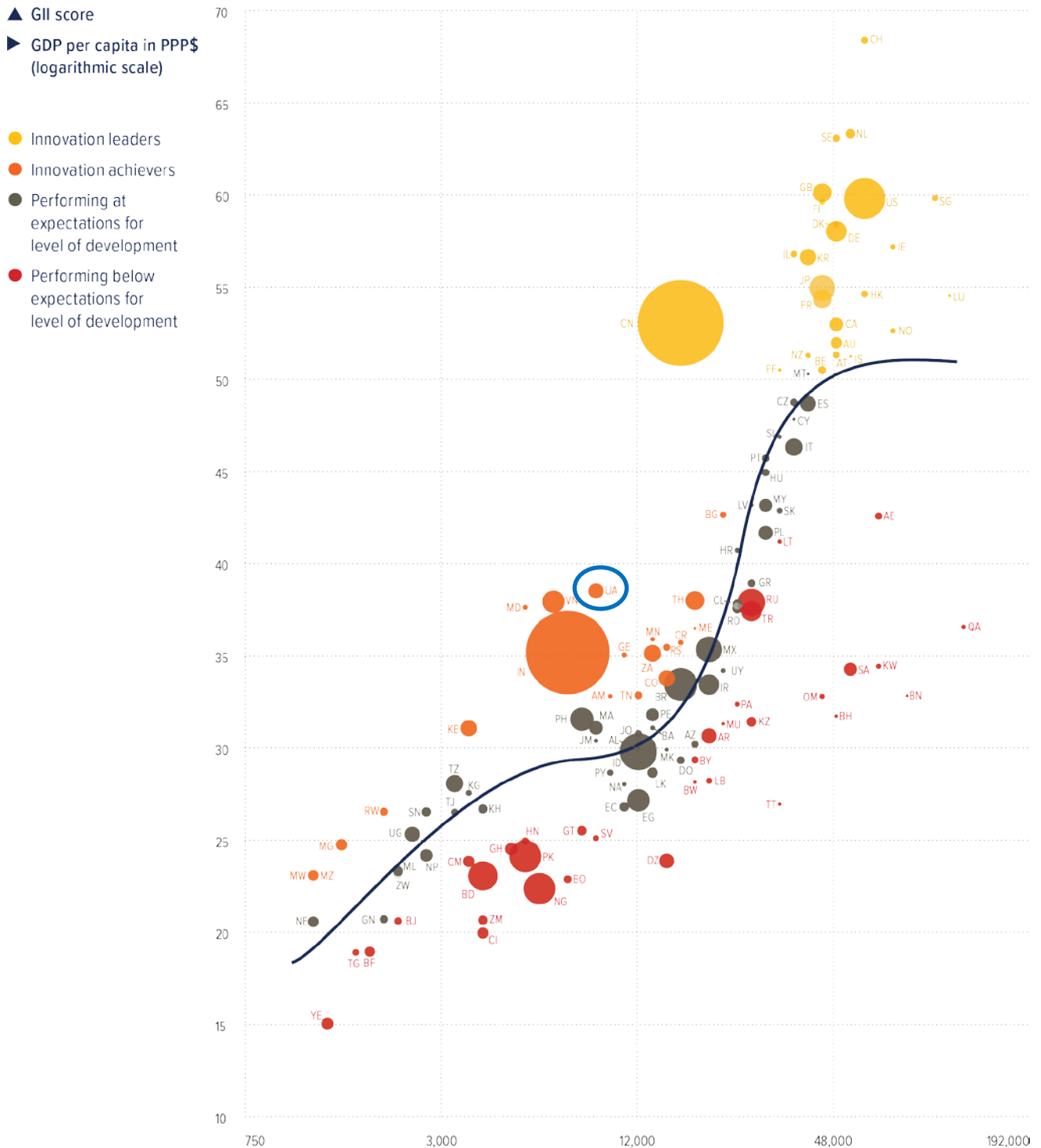
Total number of countries: 126



## Expected vs. Observed Innovation Performance

The GII bubble chart shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The depicted trendline gives an indication of the expected innovation performance at different levels of income. Countries located above the trendline are performing better than what would be expected based on their income level. Countries below the line are Innovation Under-performers relative to GDP.

Relative to GDP, Ukraine performs well above its expected level of development.



## Missing and Outdated Data

More and better data improves the ability of a country to understand its strengths and weaknesses and give policymakers greater capacity to plan and adapt public policies accordingly. The GII 2018 covers 126 countries that complied with the minimum indicator coverage of 35 indicators in the Innovation Input Sub-Index (66%) and 18 indicators in the Innovation Output Sub-Index (66%).

The following tables show data for Ukraine that is not available or that is outdated.

### Missing Data








Code	Indicator	Country Year	Model Year	Source
2.1.4	PISA scales in reading, maths & science	n/a	2015	OECD PISA
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	2016	PwC's Global Entertainment and Media Outlook, 2017–2021

### Outdated Data

Code	Indicator	Country Year	Model Year	Source
2.1.3	School life expectancy, years	2014	2016	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2014	2016	UNESCO Institute for Statistics
4.1.3	Microfinance gross loans, % GDP	2015	2016	Microfinance Information Exchange, Mix Market
4.2.2	Market capitalization, % GDP	2011	2016	World Bank, World Development Indicators
5.3.2	High-tech net imports, % total trade	2015	2016	UN COMTRADE
6.3.2	High-tech net exports, % total trade	2015	2016	UN COMTRADE
7.2.5	Creative goods exports, % total trade	2015	2016	UN COMTRADE



Output rank	Input rank	Income	Region	Efficiency ratio	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2017 rank
35	75	Lower-middle	EUR	5 ●	44.2	366.4	8,713.0	50

				Score/Value	Rank					Score/Value	Rank
	<b>Institutions</b> .....	<b>49.1</b>	<b>107</b>	●		<b>Business sophistication</b> .....	<b>34.5</b>	<b>46</b>	◆		
1.1	Political environment.....	27.4	122	○	5.1	Knowledge workers.....	46.0	41	◆		
1.1.1	Political stability & safety*.....	20.9	123	○◇	5.1.1	Knowledge-intensive employment, %.....	37.3	33	◆		
1.1.2	Government effectiveness*.....	30.7	102		5.1.2	Firms offering formal training, % firms.....	22.6	68			
1.2	Regulatory environment.....	60.2	78		5.1.3	GERD performed by business, % GDP.....	0.3	46	◆		
1.2.1	Regulatory quality*.....	33.1	97		5.1.4	GERD financed by business, %.....	36.9	47	◆		
1.2.2	Rule of law*.....	22.9	107	○	5.1.5	Females employed w/advanced degrees, %.....	29.8	3	◆◆		
1.2.3	Cost of redundancy dismissal, salary weeks.....	13.0	43		5.2	Innovation linkages.....	29.0	63			
1.3	Business environment.....	59.6	100		5.2.1	University/industry research collaboration <sup>†</sup> .....	39.8	70			
1.3.1	Ease of starting a business*.....	91.1	45		5.2.2	State of cluster development <sup>†</sup> .....	35.5	98	○		
1.3.2	Ease of resolving insolvency*.....	28.2	118	○◇	5.2.3	GERD financed by abroad, %.....	22.1	19			
					5.2.4	JV–strategic alliance deals/bn PPP\$ GDP.....	0.0	87			
					5.2.5	Patent families 2+ offices/bn PPP\$ GDP.....	0.2	39	◆		
	<b>Human capital &amp; research</b> .....	<b>37.9</b>	<b>43</b>	◆	5.3	Knowledge absorption.....	28.4	75			
2.1	Education.....	55.8	34	◆	5.3.1	Intellectual property payments, % total trade.....	0.7	47			
2.1.1	Expenditure on education, % GDP.....	5.9	26		5.3.2	High-tech net imports, % total trade <sup>Ⓔ</sup> .....	8.0	64			
2.1.2	Government funding/pupil, secondary, % GDP/cap.....	25.9	21		5.3.3	ICT services imports, % total trade.....	1.0	69			
2.1.3	School life expectancy, years <sup>Ⓔ</sup> .....	15.0	51	◆	5.3.4	FDI net inflows, % GDP.....	2.6	68			
2.1.4	PISA scales in reading, maths & science.....	n/a	n/a		5.3.5	Research talent, % in business enterprise.....	29.1	42			
2.1.5	Pupil-teacher ratio, secondary.....	7.0	3	◆◆							
2.2	Tertiary education.....	45.2	26	◆		<b>Knowledge &amp; technology outputs</b> .....	<b>36.7</b>	<b>27</b>	◆		
2.2.1	Tertiary enrolment, % gross <sup>Ⓔ</sup> .....	83.4	12	◆◆	6.1	Knowledge creation.....	46.8	15	◆◆		
2.2.2	Graduates in science & engineering, %.....	26.7	21		6.1.1	Patents by origin/bn PPP\$ GDP.....	6.3	19	◆◆		
2.2.3	Tertiary inbound mobility, %.....	3.2	61		6.1.2	PCT patents by origin/bn PPP\$ GDP.....	0.4	38	◆		
2.3	Research & development (R&D).....	12.8	50	◆	6.1.3	Utility models by origin/bn PPP\$ GDP.....	26.8	1	◆◆		
2.3.1	Researchers, FTE/mn pop.....	1,037.2	49	◆	6.1.4	Scientific & technical articles/bn PPP\$ GDP.....	10.2	50			
2.3.2	Gross expenditure on R&D, % GDP.....	0.5	62		6.1.5	Citable documents H index.....	15.0	49			
2.3.3	Global R&D companies, top 3, mn US\$.....	0.0	40	○◇	6.2	Knowledge impact.....	42.0	40	◆		
2.3.4	QS university ranking, average score top 3*.....	27.7	43	◆	6.2.1	Growth rate of PPP\$ GDP/worker, %.....	3.4	15	●		
					6.2.2	New businesses/th pop. 15–64.....	1.5	60			
					6.2.3	Computer software spending, % GDP.....	0.6	17	◆◆		
					6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP.....	3.9	71			
					6.2.5	High- & medium-high-tech manufactures, %.....	0.2	50			
	<b>Infrastructure</b> .....	<b>38.1</b>	<b>89</b>		6.3	Knowledge diffusion.....	21.3	53			
3.1	Information & communication technologies (ICTs).....	57.7	69	◆	6.3.1	Intellectual property receipts, % total trade.....	0.2	46			
3.1.1	ICT access*.....	66.0	64	◆	6.3.2	High-tech net exports, % total trade <sup>Ⓔ</sup> .....	3.1	45			
3.1.2	ICT use*.....	31.7	95		6.3.3	ICT services exports, % total trade.....	4.8	15	●		
3.1.3	Government's online service*.....	58.7	70		6.3.4	FDI net outflows, % GDP.....	0.2	92			
3.1.4	E-participation*.....	74.6	32	◆							
3.2	General infrastructure.....	31.4	89			<b>Creative outputs</b> .....	<b>36.5</b>	<b>45</b>	◆		
3.2.1	Electricity output, kWh/cap.....	3,590.4	54	◆	7.1	Intangible assets.....	58.6	13	◆◆		
3.2.2	Logistics performance*.....	31.2	79		7.1.1	Trademarks by origin/bn PPP\$ GDP.....	130.0	5	◆◆		
3.2.3	Gross capital formation, % GDP.....	21.0	77		7.1.2	Industrial designs by origin/bn PPP\$ GDP.....	15.3	7	◆◆		
3.3	Ecological sustainability.....	25.1	115	○	7.1.3	ICTs & business model creation <sup>†</sup> .....	49.6	106	○		
3.3.1	GDP/unit of energy use.....	3.5	113	○◇	7.1.4	ICTs & organizational model creation <sup>†</sup> .....	54.3	57			
3.3.2	Environmental performance*.....	52.9	88		7.2	Creative goods & services.....	11.9	86			
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP.....	1.3	60	◆	7.2.1	Cultural & creative services exports, % total trade.....	0.1	58			
					7.2.2	National feature films/mn pop. 15–69.....	0.1	101	○		
					7.2.3	Entertainment & Media market/th pop. 15–69.....	n/a	n/a			
					7.2.4	Printing & other media, % manufacturing.....	0.9	63			
					7.2.5	Creative goods exports, % total trade <sup>Ⓔ</sup> .....	0.4	61			
	<b>Market sophistication</b> .....	<b>42.7</b>	<b>89</b>		7.3	Online creativity.....	16.9	43	◆		
4.1	Credit.....	31.3	84		7.3.1	Generic top-level domains (TLDs)/th pop. 15–69.....	4.3	57	◆		
4.1.1	Ease of getting credit*.....	75.0	26		7.3.2	Country-code TLDs/th pop. 15–69.....	4.9	50	◆		
4.1.2	Domestic credit to private sector, % GDP.....	47.3	73		7.3.3	Wikipedia edits/mn pop. 15–69.....	31.1	38	◆		
4.1.3	Microfinance gross loans, % GDP <sup>Ⓔ</sup> .....	0.0	79	○	7.3.4	Mobile app creation/bn PPP\$ GDP.....	37.3	19	◆		
4.2	Investment.....	30.0	115	○							
4.2.1	Ease of protecting minority investors*.....	55.0	78								
4.2.2	Market capitalization, % GDP <sup>Ⓔ</sup> .....	22.2	60								
4.2.3	Venture capital deals/bn PPP\$ GDP.....	0.0	79	○							
4.3	Trade, competition, & market scale.....	66.7	45	◆							
4.3.1	Applied tariff rate, weighted mean, %.....	2.5	55								
4.3.2	Intensity of local competition <sup>†</sup> .....	66.1	74								
4.3.3	Domestic market scale, bn PPP\$.....	366.4	47								

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; \* an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data, at <http://globalinnovationindex.org>.

Square brackets indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level; see page 75 of this appendix for details.