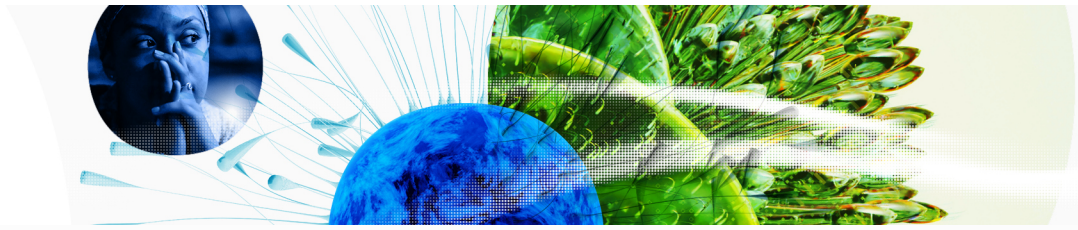
Global Innovation Index 2023



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**.

Ukraine ranking in the Global Innovation Index 2023

> Ukraine ranks 55th among the 132 economies featured in the GII 2023.

> Ukraine ranks 3rd among the 37 lower-middle-income group economies.

> Ukraine ranks 34th among the 39 economies in Europe.

> Ukraine GII Ranking (2020-2023)

The table shows the rankings of Ukraine 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 Ukraine in the GII 2023 is between ranks 48 and 56.

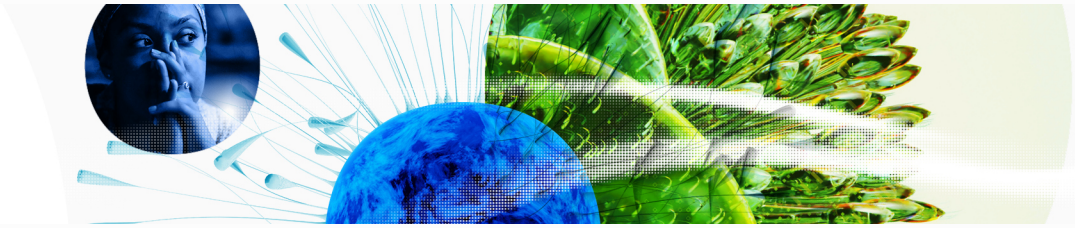
	GII Position	Innovation Inputs	Innovation Outputs
2020	45th	71st	37th
2021	49th	76th	37th
2022	57th	75th	48th
2023	55th	78th	42nd

Ukraine performs better in **innovation outputs** than innovation inputs in 2023.

This year **Ukraine ranks 78th in innovation inputs.** This position is lower than last year.

Ukraine ranks 42nd in innovation outputs. This position is higher than last year.

Global Innovation Index 2023

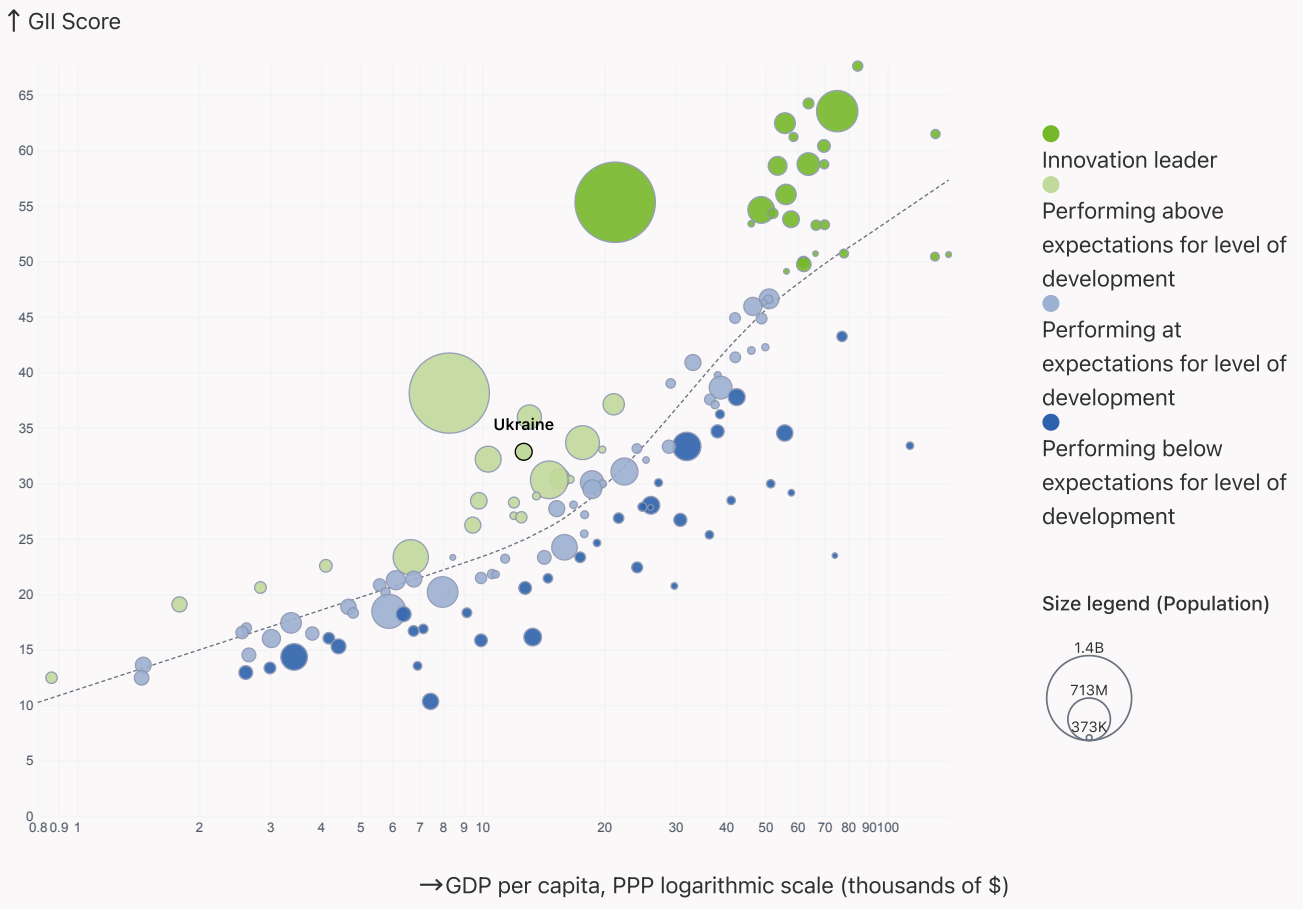


→ Expected vs. observed innovation performance

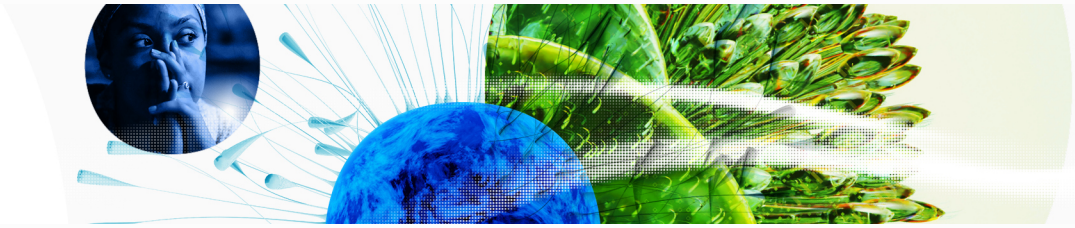
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected and those below are performing below expectations.

> Relative to GDP, Ukraine is performing above expectations for its level of development.

> Innovation overperformers relative to their economic development



Global Innovation Index 2023

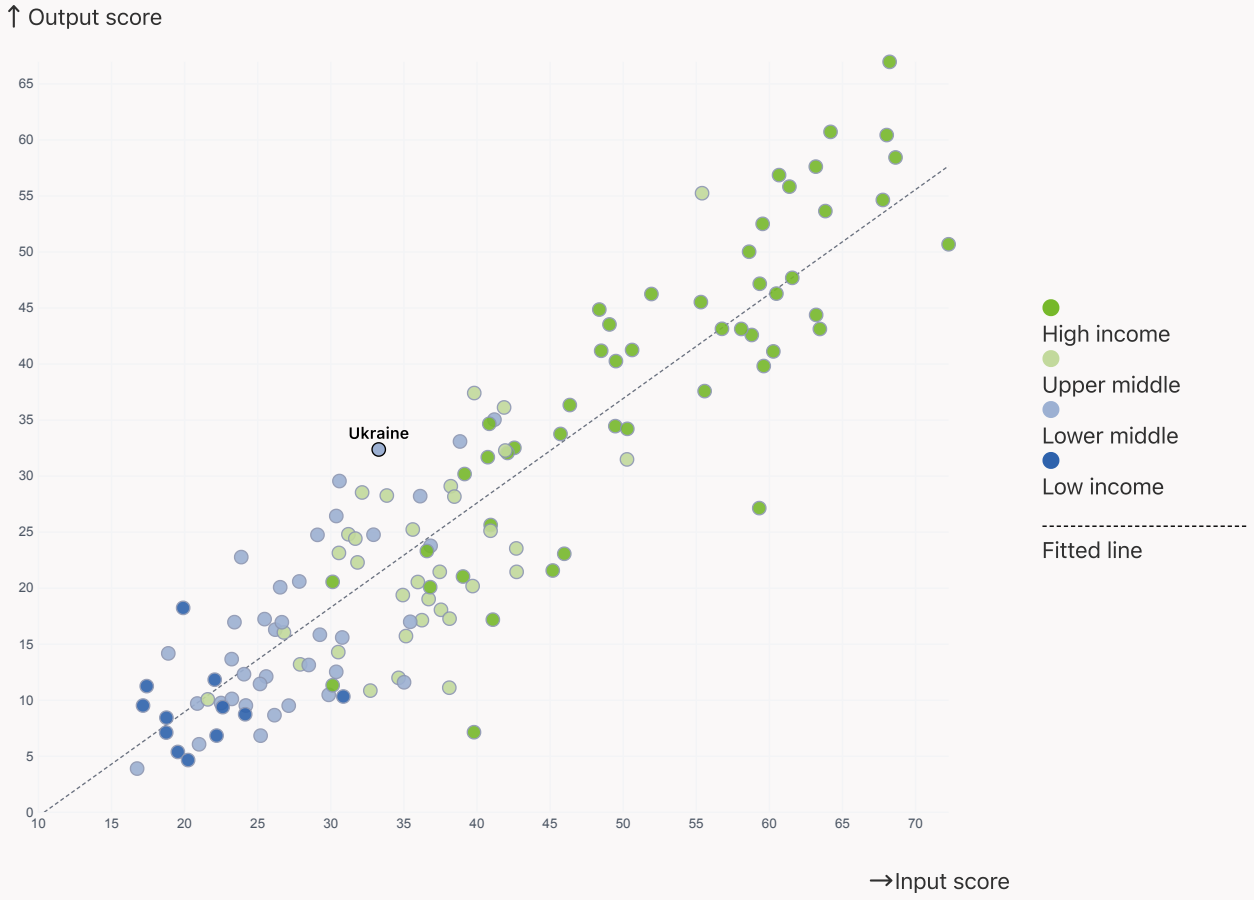


→ Effectively translating innovation investments into innovation outputs

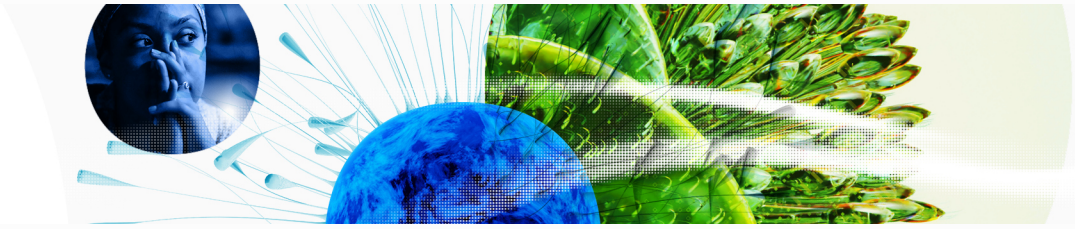
The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

> Ukraine produces more innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs

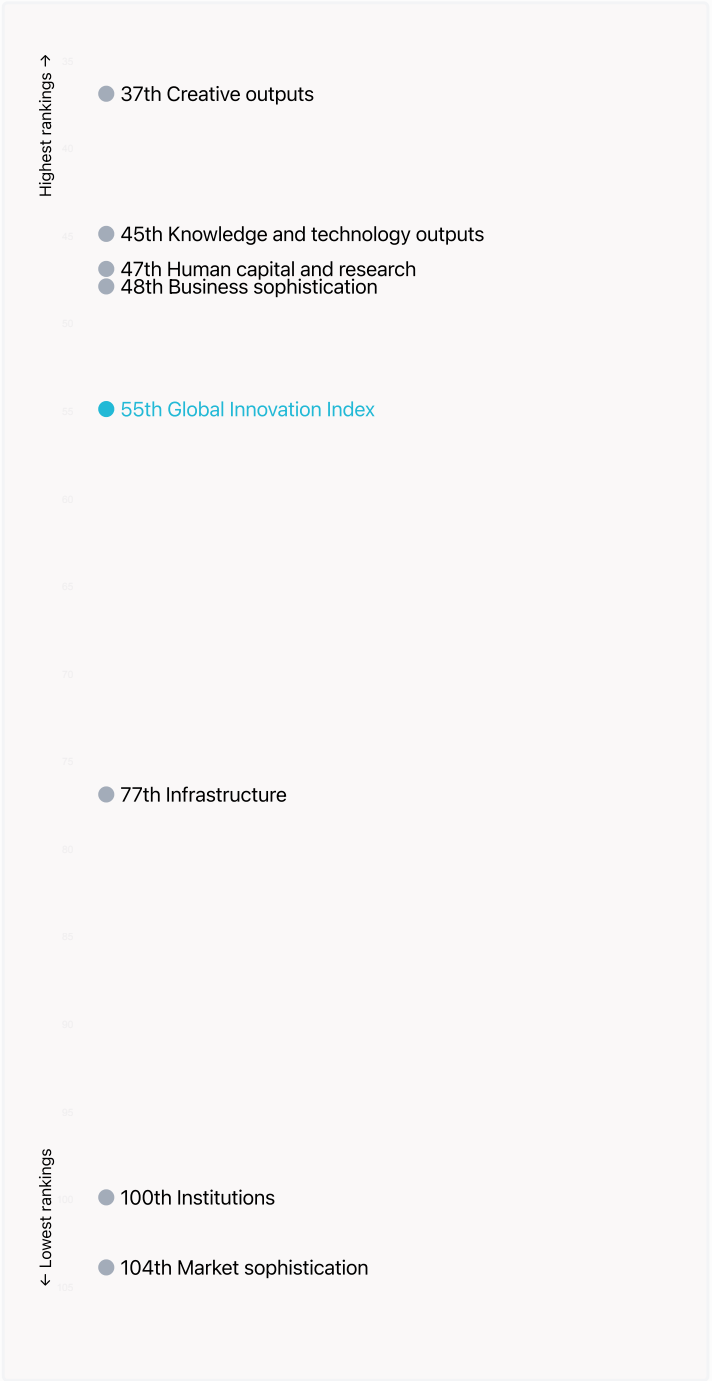


Global Innovation Index 2023



→ Overview of Ukraine's rankings in the seven areas of the GII in 2023

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



> Highest rankings

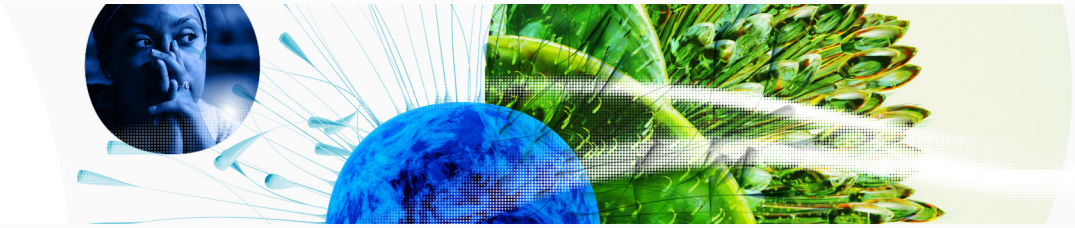
Ukraine ranks highest in Creative outputs (37th), Knowledge and technology outputs (45th), Human capital and research (47th) and Business sophistication (48th).

> Lowest rankings

Ukraine ranks lowest in Market sophistication (104th), Institutions (100th) and Infrastructure (77th).

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

Global Innovation Index 2023



→ Benchmark of Ukraine against other country groupings for each of the seven areas of the GII Index

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

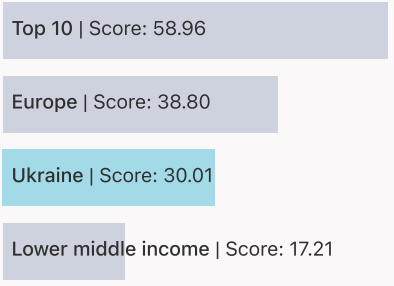
> Lower-Middle-Income economies

Ukraine performs above the lower-middle-income group average in Knowledge and technology outputs, Creative outputs, Business sophistication, Human capital and research, Infrastructure.

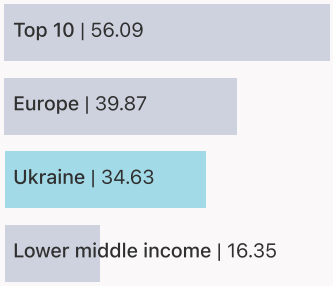
> Europe

Ukraine performs below the regional average in all the pillars.

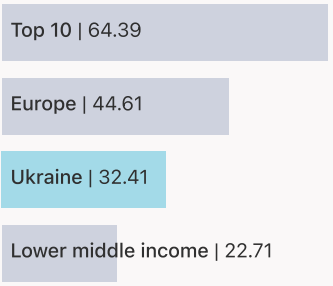
Knowledge and technology outputs



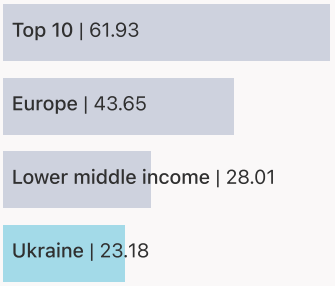
Creative outputs



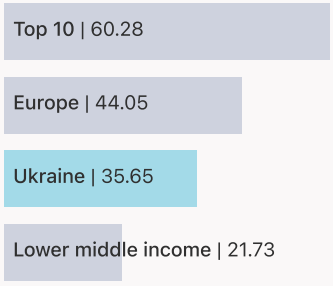
Business sophistication



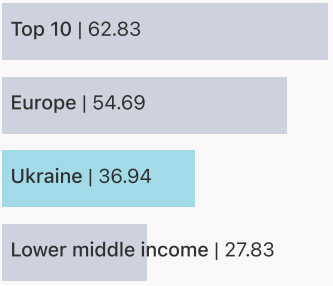
Market sophistication



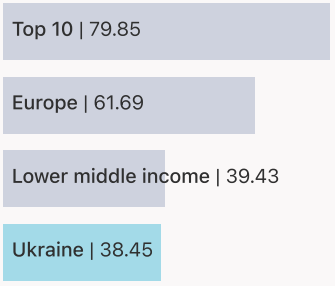
Human capital and research



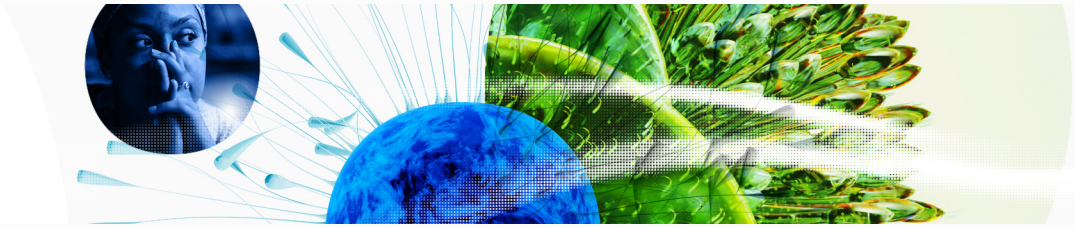
Infrastructure



Institutions



Global Innovation Index 2023



→ Innovation strengths and weaknesses in Ukraine

The table below gives an overview of the indicator strengths and weaknesses of Ukraine in the GII 2023.

> Ukraine's main innovation strengths are **Utility models by origin/bn PPP$ GDP** (rank 1), **Females employed w/advanced degrees, %** (rank 2) and **Software spending, % GDP** (rank 4).

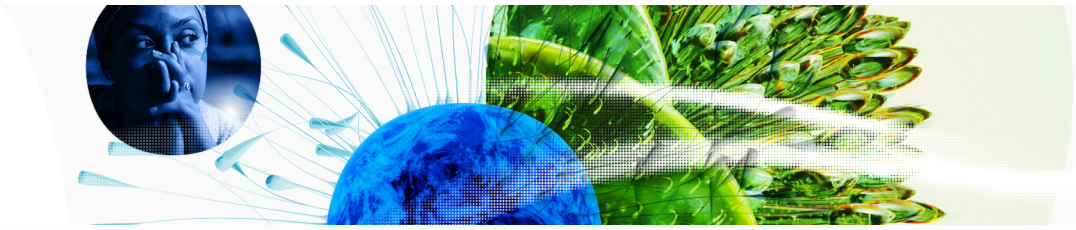
Strengths

Rank	Code	Indicator name
1	6.1.3	Utility models by origin/bn PPP$ GDP
2	5.1.5	Females employed w/advanced degrees, %
4	6.2.3	Software spending, % GDP
6	6.3.4	ICT services exports, % total trade
10	2.1.2	Government funding/pupil, secondary, % GDP/cap
12	7.3.4	Mobile app creation/bn PPP$ GDP
14	2.1.5	Pupil-teacher ratio, secondary
16	7.1.4	Industrial designs by origin/bn PPP$ GDP
22	7.1.2	Trademarks by origin/bn PPP$ GDP

Weaknesses

Rank	Code	Indicator name
130	1.1.1	Operational stability for businesses
129	6.2.1	Labor productivity growth, %
124	3.2.3	Gross capital formation, % GDP
115	3.3.1	GDP/unit of energy use
97	4.2.3	VC recipients, deals/bn PPP$ GDP
90	4.2.4	VC received, value, % GDP
75	4.2.1	Market capitalization, % GDP
52	4.1.3	Loans from microfinance institutions, % GDP
48	6.2.2	Unicorn valuation, % GDP
40	2.3.3	Global corporate R&D investors, top 3, mn US$

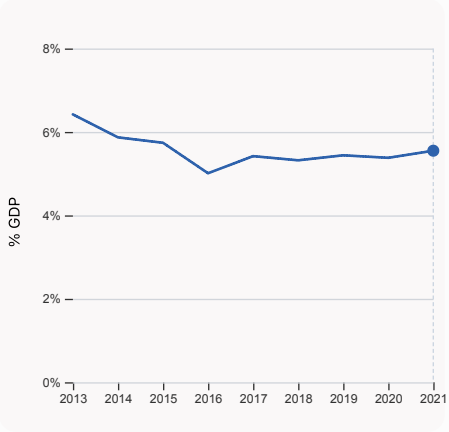
Global Innovation Index 2023



→ Ukraine's innovation system

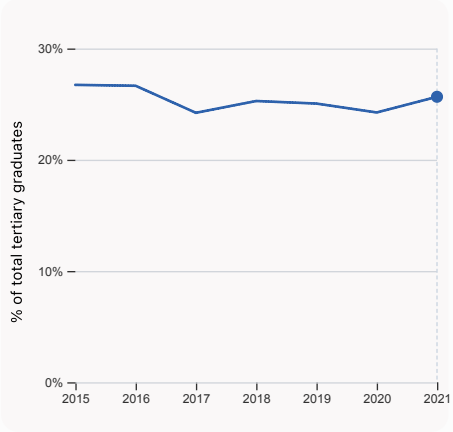
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Ukraine



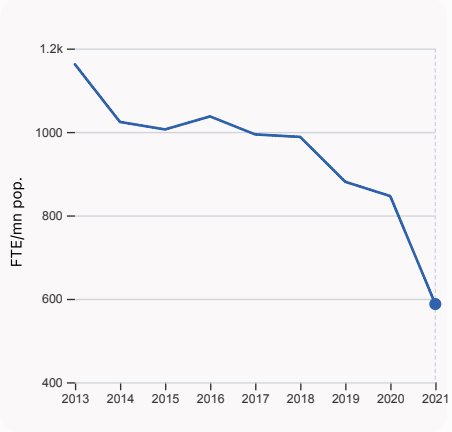
2.1.1 Expenditure on education, % GDP

was equal to 5.55% GDP in 2021, up by 0.17 percentage points from the year prior – and equivalent to an indicator rank of 24.



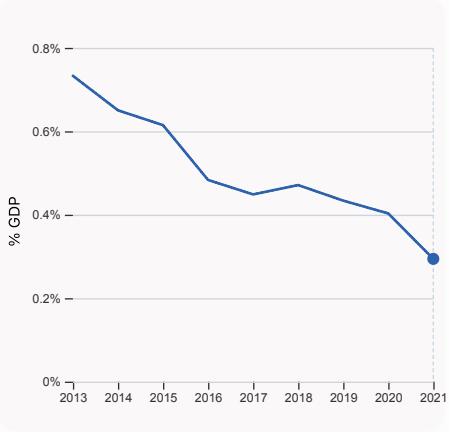
2.2.2 Graduates in science and engineering, %

was equal to 25.66% of total tertiary graduates in 2021, up by 1.41 percentage points from the year prior – and equivalent to an indicator rank of 43.



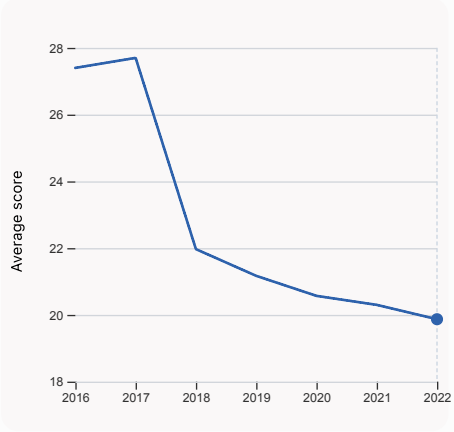
2.3.1 Researchers, FTE/mn pop.

was equal to 587.5 FTE/mn pop. in 2021, down by 30.58% from the year prior – and equivalent to an indicator rank of 66.



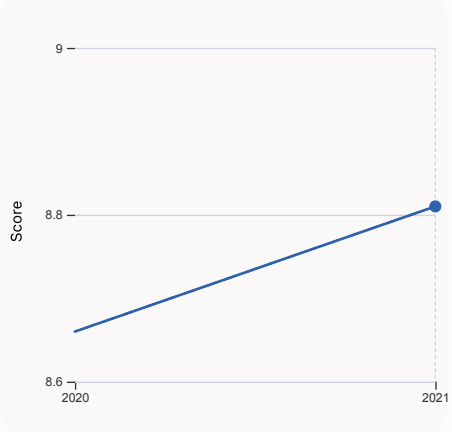
2.3.2 Gross expenditure on R&D, % GDP

was equal to 0.294% GDP in 2021, down by 0.11 percentage points from the year prior – and equivalent to an indicator rank of 76.



2.3.4 QS university ranking, top 3

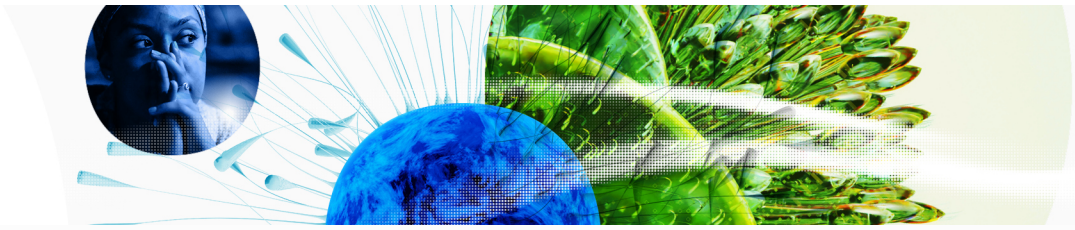
was equal to an average score of 19.87 for the top 3 universities in 2022, down by 2.12% from the year prior – and equivalent to an indicator rank of 53.

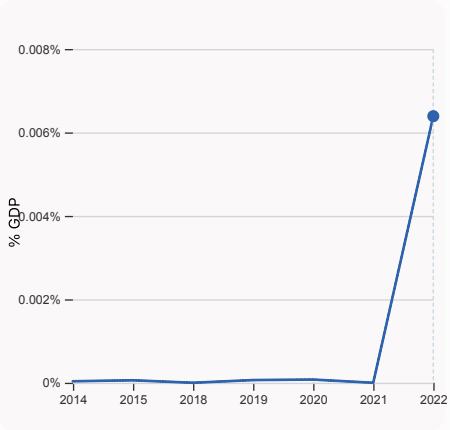


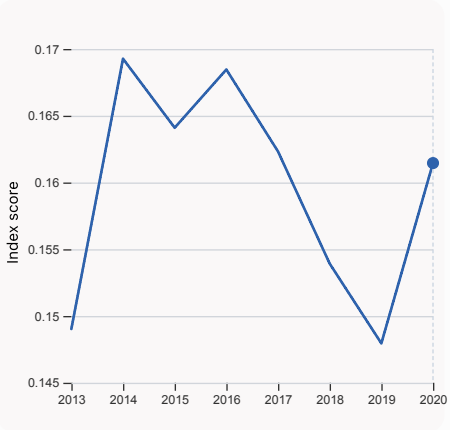
3.1.1 ICT access

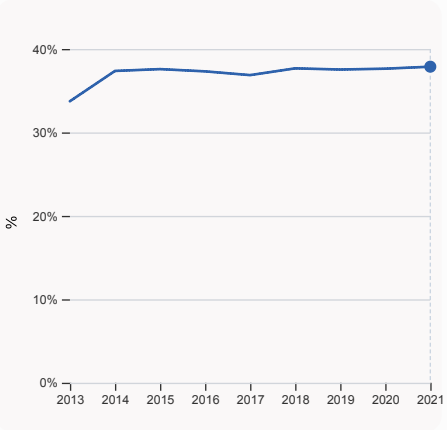
was equal to a score of 8.81 in 2021, up by 1.73% from the year prior – and equivalent to an indicator rank of 68.

Global Innovation Index 2023









4.2.4 VC received, value, % GDP

was equal to 0.00639 % GDP in 2022.

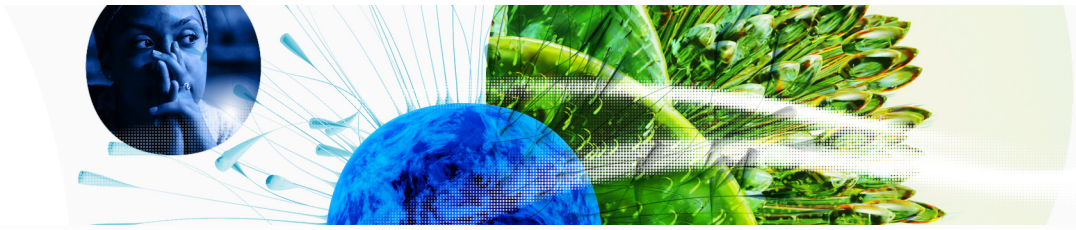
4.3.2 Domestic industry diversification

was equal to an index score of 0.161 in 2020, up by 9.13% from the year prior – and equivalent to an indicator rank of 54.

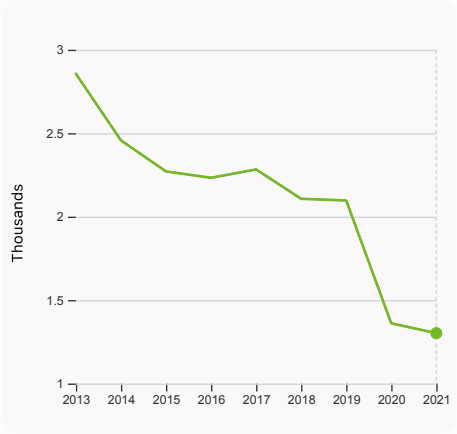
5.1.1 Knowledge-intensive employment, %

was equal to 37.88% in 2021, up by 0.24 percentage points from the year prior – and equivalent to an indicator rank of 36.

Global Innovation Index 2023

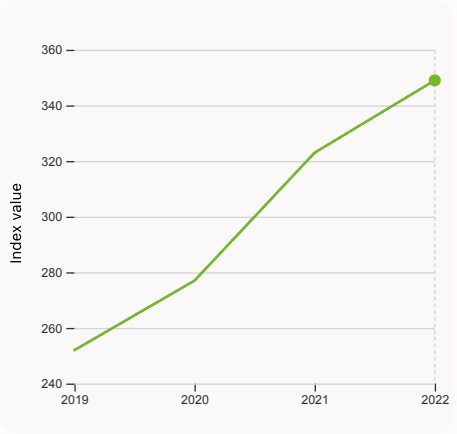


> Innovation outputs in Ukraine



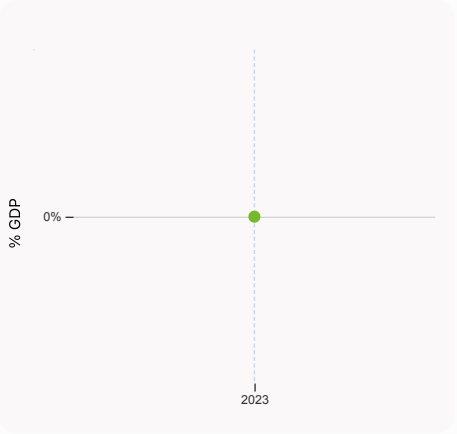
6.1.1 Patents by origin

was equal to 1.3 Thousands in 2021, down by 4.34% from the year prior – and equivalent to an indicator rank of 33.



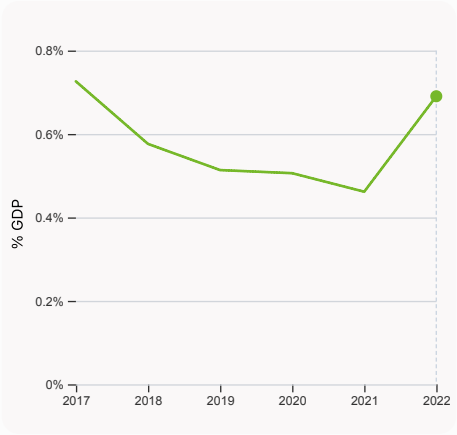
6.1.5 Citable documents H-index

was equal to an index value of 349 in 2022, up by 8.05% from the year prior – and equivalent to an indicator rank of 51.



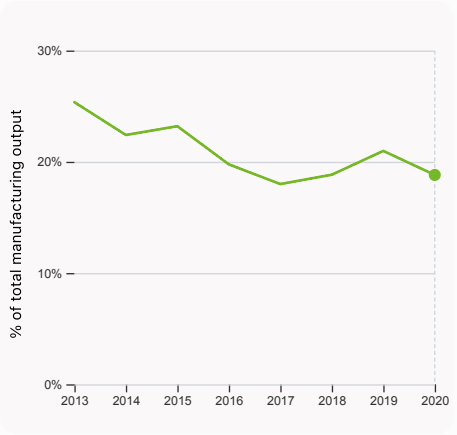
6.2.2 Unicorn valuation, % GDP

was equal to 0 % GDP in 2023 – and equivalent to an indicator rank of 48.



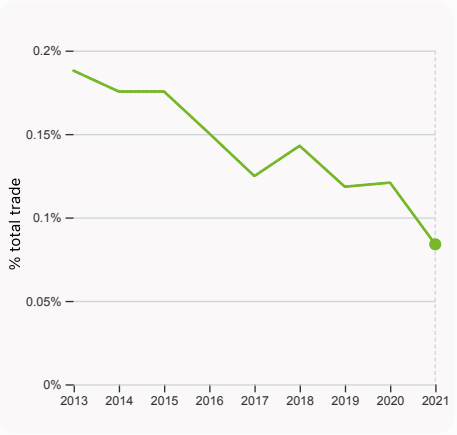
6.2.3 Software spending, % GDP

was equal to 0.69% GDP in 2022, up by 0.23 percentage points from the year prior – and equivalent to an indicator rank of 4.



6.2.4 High-tech manufacturing, %

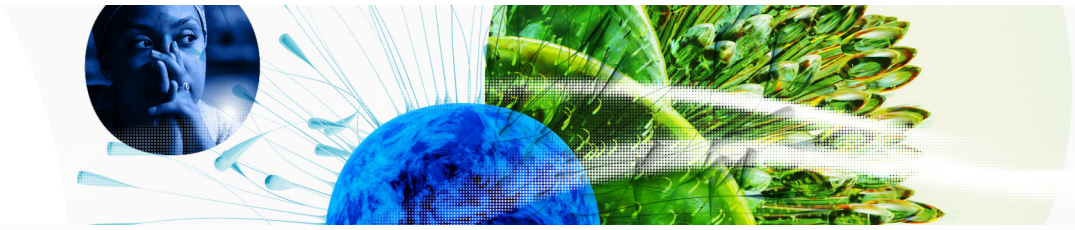
was equal to 18.82% of total manufacturing output in 2020, down by 2.16 percentage points from the year prior – and equivalent to an indicator rank of 65.



6.3.1 Intellectual property receipts, % total trade

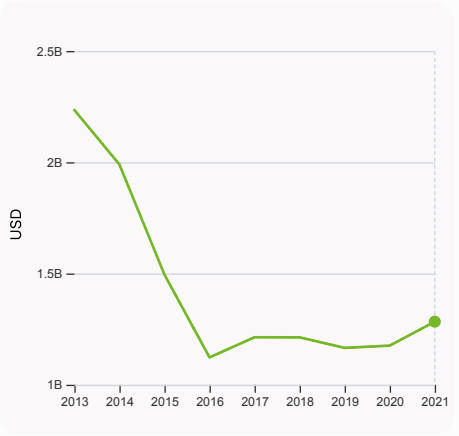
was equal to 0.084% total trade in 2021, down by 0.037 percentage points from the year prior – and equivalent to an indicator rank of 57.

Global Innovation Index 2023



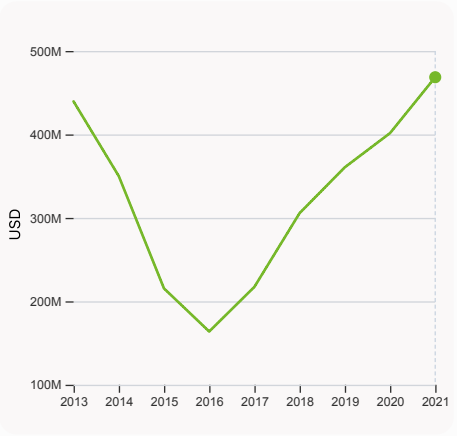
6.3.2 Production and export complexity

was equal to a score of 0.288 in 2020, up by 9.16% from the year prior – and equivalent to an indicator rank of 49.



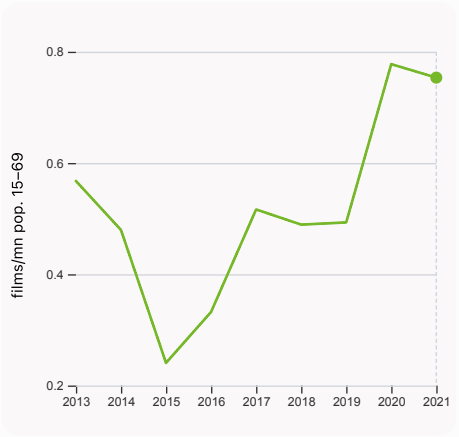
6.3.3 High-tech exports

was equal to 1,283,585,800 USD in 2021, up by 9.15% from the year prior – and equivalent to an indicator rank of 66.



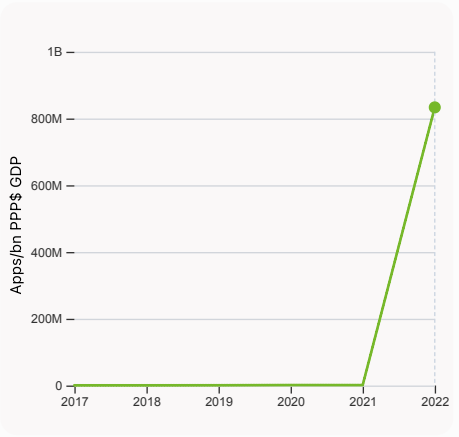
7.2.1 Cultural and creative services exports

was equal to 468,565,000 USD in 2021, up by 16.68% from the year prior – and equivalent to an indicator rank of 49.



7.2.2 National feature films/mn pop. 15-69

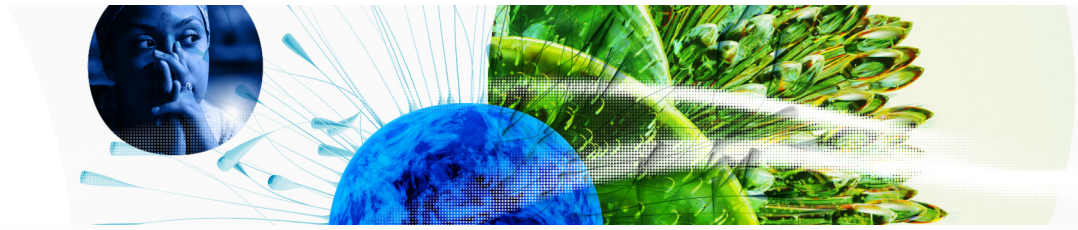
was equal to 0.754 films/mn pop. 15–69 in 2021, down by 3.11% from the year prior – and equivalent to an indicator rank of 66.



7.3.4 Mobile app creation/bn PPP$ GDP

was equal to 833,360,343 Apps/bn PPP$ GDP in 2022, up by 61265.96% from the year prior.

Global Innovation Index 2023



→ Ukraine's innovation top performers

> 2.3.4 QS university ranking of Ukraine's top universities

Rank	University	Score
541-550	V. N. KARAZIN KHARKIV NATIONAL UNIVERSITY	22.70
651-700	TARAS SHEVCHENKO NATIONAL UNIVERSITY OF KYIV	18.60
651-700	NATIONAL TECHNICAL UNIVERSITY KHARKIV POLYTECHNIC INSTITUTE	18.30

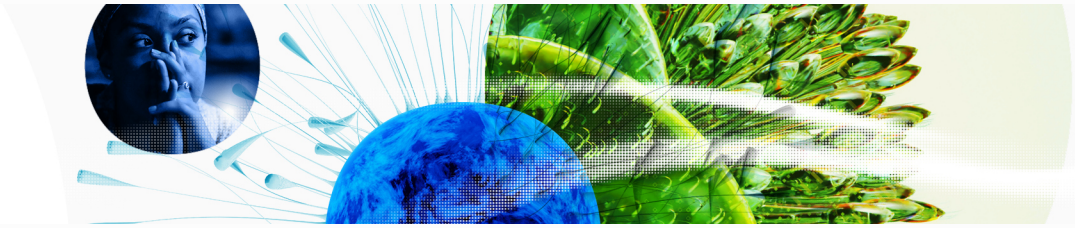
Source: QS Quacquarelli Symonds Ltd (https://www.topuniversities.com/university-rankings/world-university-rankings/2023).
Note: QS Quacquarelli Symonds Ltd annually assesses over 1,200 universities across the globe and scores them between [0,100]. Ranks can represent a single value "x", a tie "x=" or a range "x-y".

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

Rank	Brand	Industry	Brand Value, mn USD
1	KERNEL	Food	501.3
2	PRYLUKY	Tobacco	168.1

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

Global Innovation Index 2023



Ukraine

GII 2023 rank **55**

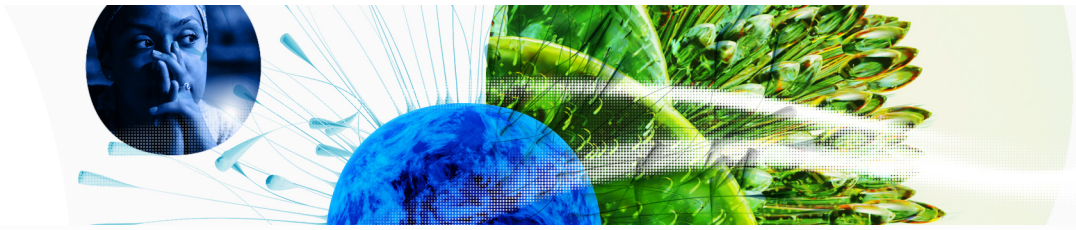
Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
42	78	Lower middle	EUR	39.7	n/a	n/a

	Score / Value	Rank
Institutions	**38.4**	**100**
1.1 Institutional environment	**17.2**	**126** ◇
1.1.1 Operational stability for businesses*	9.0	130 ○ ◇
1.1.2 Government effectiveness*	25.5	95
1.2 Regulatory environment	**58.9**	**77**
1.2.1 Regulatory quality*	34.9	87
1.2.2 Rule of law*	20.4	107
1.2.3 Cost of redundancy dismissal	13.0	41
1.3 Business environment	**39.2**	**88**
1.3.1 Policies for doing business†	39.2	85
1.3.2 Entrepreneurship policies and culture†	n/a	n/a
Human capital and research	**35.6**	**47**
2.1 Education	**60.9**	**31**
2.1.1 Expenditure on education, % GDP	5.6	24
2.1.2 Government funding/pupil, secondary, % GDP/cap	28.5	10 ●
2.1.3 School life expectancy, years	14.9	56
2.1.4 PISA scales in reading, maths and science	462.7	40
2.1.5 Pupil-teacher ratio, secondary	8.3	14 ●
2.2 Tertiary education	**38.2**	**37**
2.2.1 Tertiary enrolment, % gross	82.7	21
2.2.2 Graduates in science and engineering, %	25.7	43
2.2.3 Tertiary inbound mobility, %	4.9	50
2.3 Research and development (R&D)	**7.8**	**68**
2.3.1 Researchers, FTE/mn pop.	587.5	66
2.3.2 Gross expenditure on R&D, % GDP	0.3	76
2.3.3 Global corporate R&D investors, top 3, mn US$	0.0	40 ○ ◇
2.3.4 QS university ranking, top 3*	20.1	53
Infrastructure	**36.9**	**77**
3.1 Information and communication technologies (ICTs)	**72.6**	**59**
3.1.1 ICT access*	82.2	68
3.1.2 ICT use*	69.6	73
3.1.3 Government's online service*	79.5	34
3.1.4 E-participation*	59.3	57
3.2 General infrastructure	**16.3**	**105**
3.2.1 Electricity output, GWh/mn pop.	3,604.0	60
3.2.2 Logistics performance*	27.3	76
3.2.3 Gross capital formation, % GDP	13.8	124 ○ ◇
3.3 Ecological sustainability	**21.9**	**74**
3.3.1 GDP/unit of energy use	5.4	115 ○ ◇
3.3.2 Environmental performance*	52.0	43
3.3.3 ISO 14001 environment/bn PPP$ GDP	0.6	79
Market sophistication	**23.2**	**104**
4.1 Credit	**4.9**	**124** ◇
4.1.1 Finance for startups and scaleups†	n/a	n/a
4.1.2 Domestic credit to private sector, % GDP	28.2	101
4.1.3 Loans from microfinance institutions, % GDP	0.1	52 ○
4.2 Investment	**1.2**	**107**
4.2.1 Market capitalization, % GDP	4.3	75 ○
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.0	67
4.2.3 VC recipients, deals/bn PPP$ GDP	0.0	97 ○ ◇
4.2.4 VC received, value, % GDP	0.0	90 ○
4.3 Trade, diversification, and market scale	**63.5**	**40**
4.3.1 Applied tariff rate, weighted avg., %	1.7	52
4.3.2 Domestic industry diversification	88.7	54
4.3.3 Domestic market scale, bn PPP$	588.4	43

	Score / Value	Rank
Business sophistication	**32.4**	**48**
5.1 Knowledge workers	**44.6**	**42**
5.1.1 Knowledge-intensive employment, %	37.9	36
5.1.2 Firms offering formal training, %	24.3	67
5.1.3 GERD performed by business, % GDP	0.3	49
5.1.4 GERD financed by business, %	30.5	58
5.1.5 Females employed w/advanced degrees, %	30.0	2 ●
5.2 Innovation linkages	**19.4**	**77**
5.2.1 University-industry R&D collaboration†	44.7	63
5.2.2 State of cluster development†	30.0	94
5.2.3 GERD financed by abroad, % GDP	0.1	36
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	109
5.2.5 Patent families/bn PPP$ GDP	0.2	47
5.3 Knowledge absorption	**33.2**	**66**
5.3.1 Intellectual property payments, % total trade	0.9	45
5.3.2 High-tech imports, % total trade	9.2	48
5.3.3 ICT services imports, % total trade	1.1	77
5.3.4 FDI net inflows, % GDP	2.6	57
5.3.5 Research talent, % in businesses	27.3	46
Knowledge and technology outputs	**30.0**	**45**
6.1 Knowledge creation	**32.9**	**28**
6.1.1 Patents by origin/bn PPP$ GDP	2.2	33
6.1.2 PCT patents by origin/bn PPP$ GDP	0.2	44
6.1.3 Utility models by origin/bn PPP$ GDP	7.4	1 ●
6.1.4 Scientific and technical articles/bn PPP$ GDP	n/a	n/a
6.1.5 Citable documents H-index	17.0	51
6.2 Knowledge impact	**25.3**	**71**
6.2.1 Labor productivity growth, %	-3.4	129 ○ ◇
6.2.2 Unicorn valuation, % GDP	0.0	48 ○ ◇
6.2.3 Software spending, % GDP	0.7	4 ●
6.2.4 High-tech manufacturing, %	18.8	65
6.3 Knowledge diffusion	**31.8**	**48**
6.3.1 Intellectual property receipts, % total trade	0.1	57
6.3.2 Production and export complexity	58.5	49
6.3.3 High-tech exports, % total trade	1.6	66
6.3.4 ICT services exports, % total trade	8.6	6 ●
6.3.5 ISO 9001 quality/bn PPP$ GDP	2.5	79
Creative outputs	**34.6**	**37**
7.1 Intangible assets	**52.4**	**19**
7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
7.1.2 Trademarks by origin/bn PPP$ GDP	75.1	22 ●
7.1.3 Global brand value, top 5,000	n/a	n/a
7.1.4 Industrial designs by origin/bn PPP$ GDP	6.0	16 ●
7.2 Creative goods and services	**6.0**	**82**
7.2.1 Cultural and creative services exports, % total trade	0.6	49
7.2.2 National feature films/mn pop. 15-69	0.8	66
7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
7.2.4 Creative goods exports, % total trade	0.2	86
7.3 Online creativity	**27.6**	**44**
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	5.7	55
7.3.2 Country-code TLDs/th pop. 15-69	6.1	53
7.3.3 GitHub commits/mn pop. 15-69	20.8	43
7.3.4 Mobile app creation/bn PPP$ GDP	78.0	12 ●

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question, ◔ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/gii-ranking. Square brackets [ ] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Global Innovation Index 2023



→ Data availability

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

> Ukraine has missing data for five indicators and outdated data for eighteen indicators.

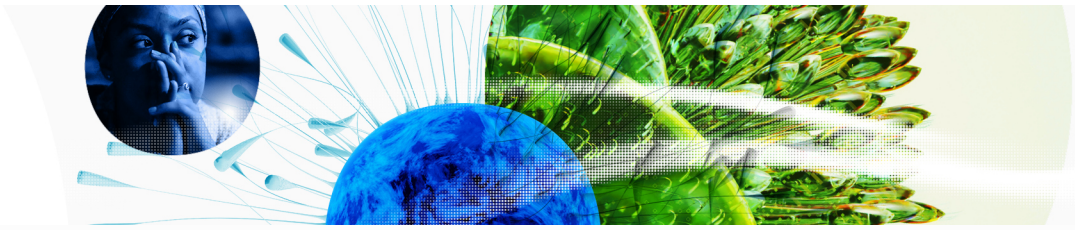
> Missing data for Ukraine

Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture	n/a	2022	Global Entrepreneurship Monitor
4.1.1	Finance for startups and scaleups	n/a	2022	Global Entrepreneurship Monitor
7.1.1	Intangible asset intensity, top 15, %	n/a	2022	Brand Finance
7.1.3	Global brand value, top 5,000	n/a	2023	Brand Finance; International Monetary Fund
7.2.3	Entertainment and media market/th pop. 15-69	n/a	2022	PwC, GEMO; United Nations, World Population Prospects; International Monetary Fund

> Outdated data for Ukraine

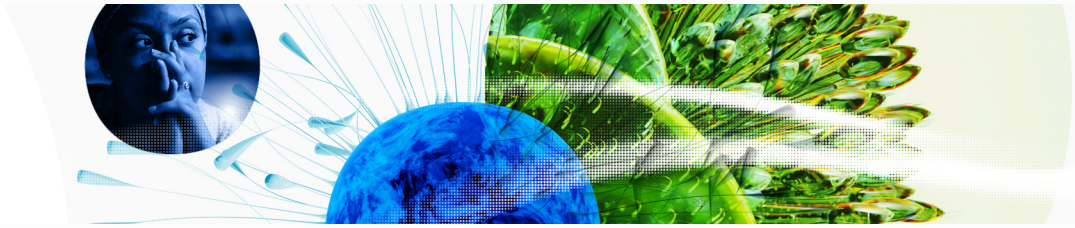
Code	Indicator name	Economy Year	Model Year	Source
2.1.3	School life expectancy, years	2014	2020	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2014	2020	UNESCO Institute for Statistics
3.2.3	Gross capital formation, % GDP	2021	2022	International Monetary Fund
4.2.1	Market capitalization, % GDP	2018	2020	World Federation of Exchanges; World Bank
4.2.2	Venture capital (VC) investors, deals/bn PPP$ GDP	2021	2022	Refinitiv; International Monetary Fund
4.2.3	VC recipients, deals/bn PPP$ GDP	2021	2022	Refinitiv; International Monetary Fund
4.2.4	VC received, value, % GDP	2021	2022	Refinitiv; International Monetary Fund
4.3.3	Domestic market scale, bn PPP$	2021	2022	International Monetary Fund
5.1.1	Knowledge-intensive employment, %	2021	2022	International Labour Organization
5.1.3	GERD performed by business, % GDP	2018	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.4	GERD financed by business, %	2018	2020	UNESCO Institute for Statistics; Eurostat;

Global Innovation Index 2023



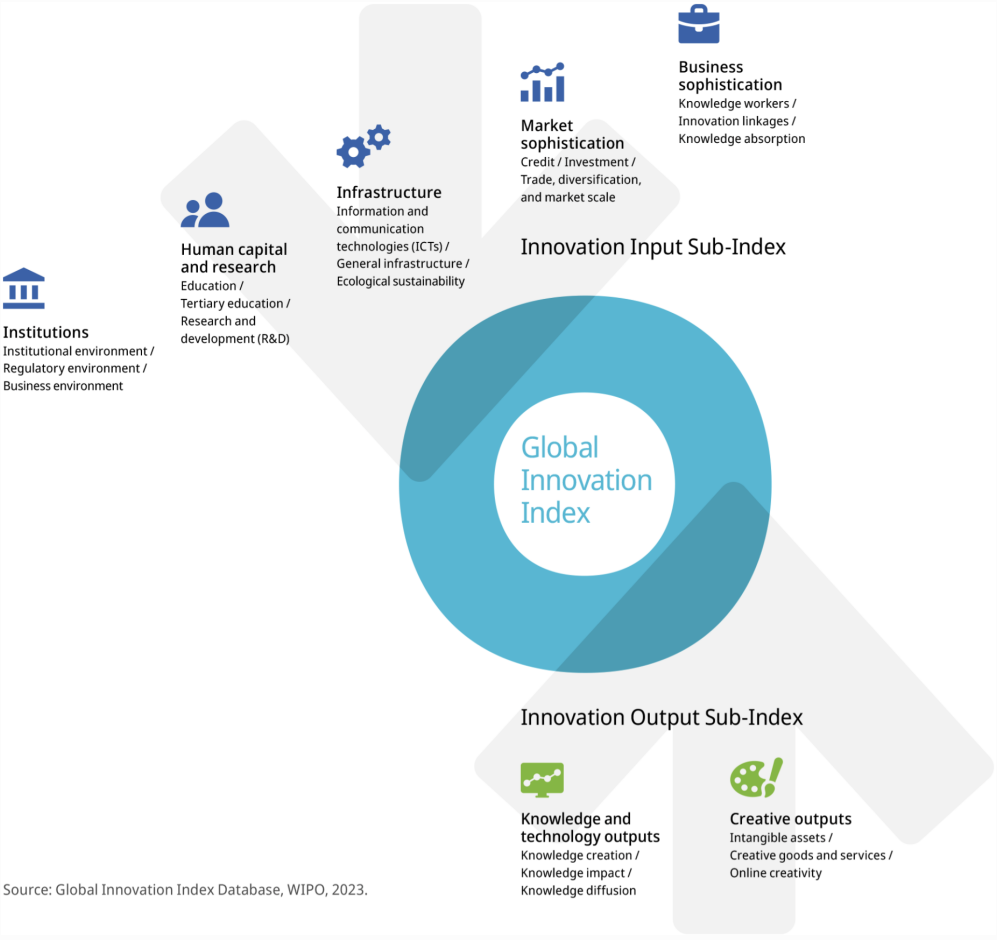
Code	Indicator name	Economy Year	Model Year	Source
				OECD; RICYT
5.1.5	Females employed w/advanced degrees, %	2021	2022	International Labour Organization
5.2.3	GERD financed by abroad, % GDP	2018	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	2021	2022	Refinitiv; International Monetary Fund
5.3.5	Research talent, % in businesses	2018	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
6.1.2	PCT patents by origin/bn PPP$ GDP	2021	2022	World Intellectual Property Organization; International Monetary Fund
6.1.4	Scientific and technical articles/bn PPP$ GDP	2021	2022	Clarivate; International Monetary Fund
7.3.4	Mobile app creation/bn PPP$ GDP	2021	2022	data.ia; International Monetary Fund

Global Innovation Index 2023



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, 2023.

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.