



UKRAINE

57th

Ukraine ranks 57th among the 132 economies featured in the GII 2022.

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.

The following table shows the rankings of Ukraine over the past three years, noting that 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 2022 is between ranks 48 and 59.

Rankings for Ukraine (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	45	71	37
2021	49	76	37
2022	57	75	48

- Ukraine performs better in innovation outputs than innovation inputs in 2022.
- This year Ukraine ranks 75th in innovation inputs, higher than last year but lower than 2020.
- As for innovation outputs, Ukraine ranks 48th. This position is lower than both 2021 and 2020.

4th

Ukraine ranks 4th among the 36 lower-middle-income group economies.

34th

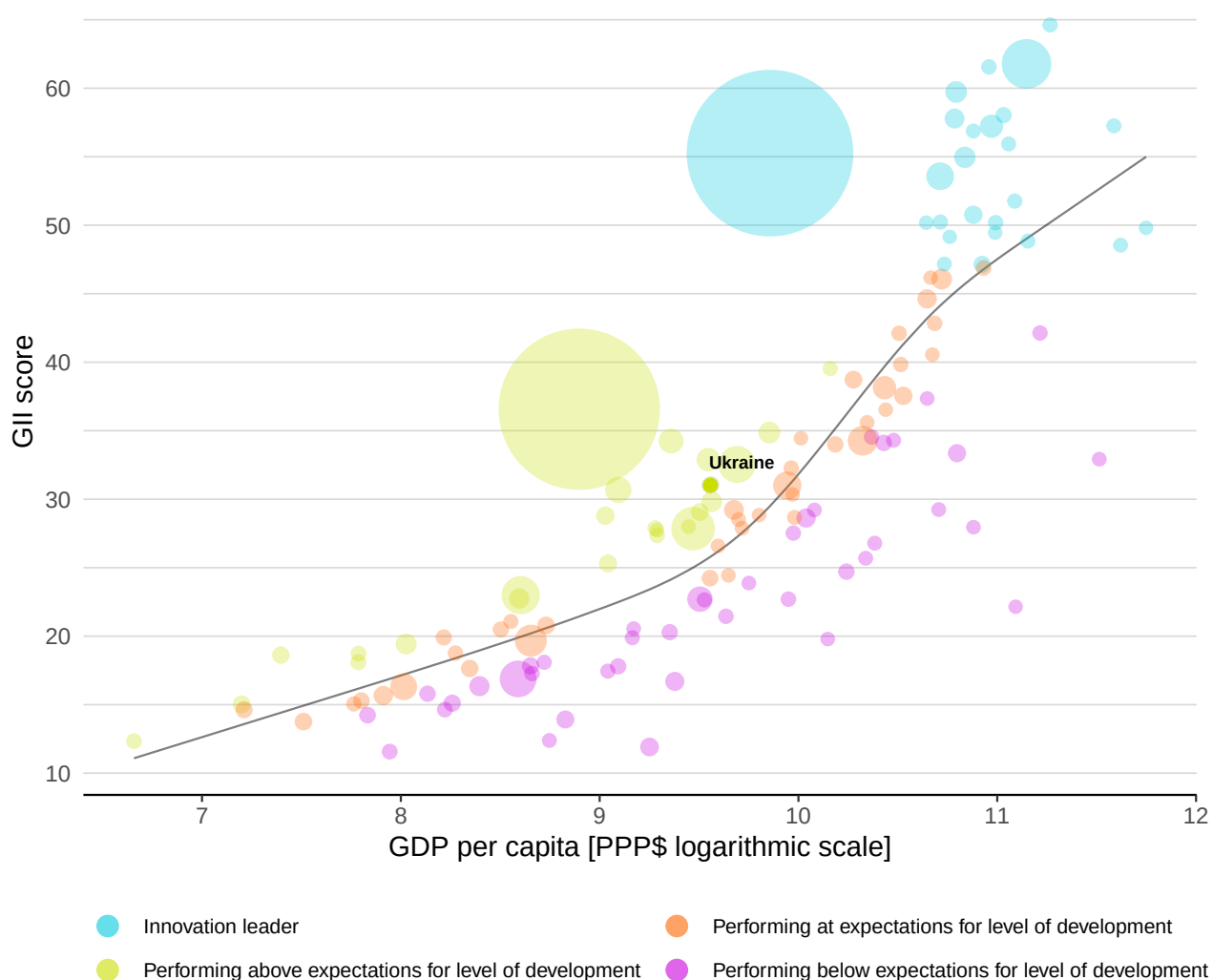
Ukraine ranks 34th among the 39 economies in Europe.

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's performance is above expectations for its level of development.

The positive relationship between innovation and development

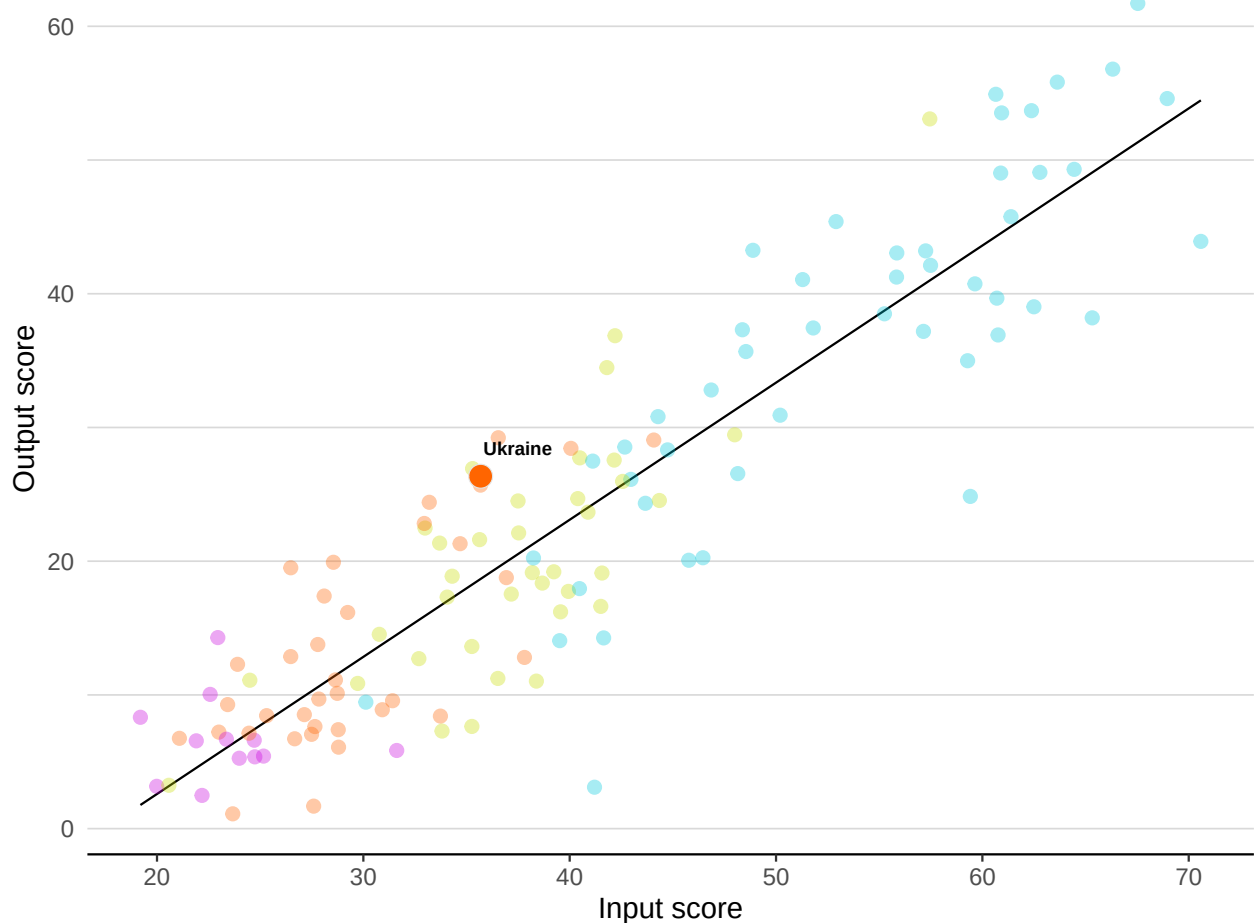


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

Innovation input to output performance



Income ● High income ● Upper middle ● Lower middle ● Low income — Fitted line

BENCHMARKING AGAINST OTHER LOWER MIDDLE-INCOME GROUP ECONOMIES AND EUROPE

The seven GII pillar scores for Ukraine



Lower-middle-income group economies

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

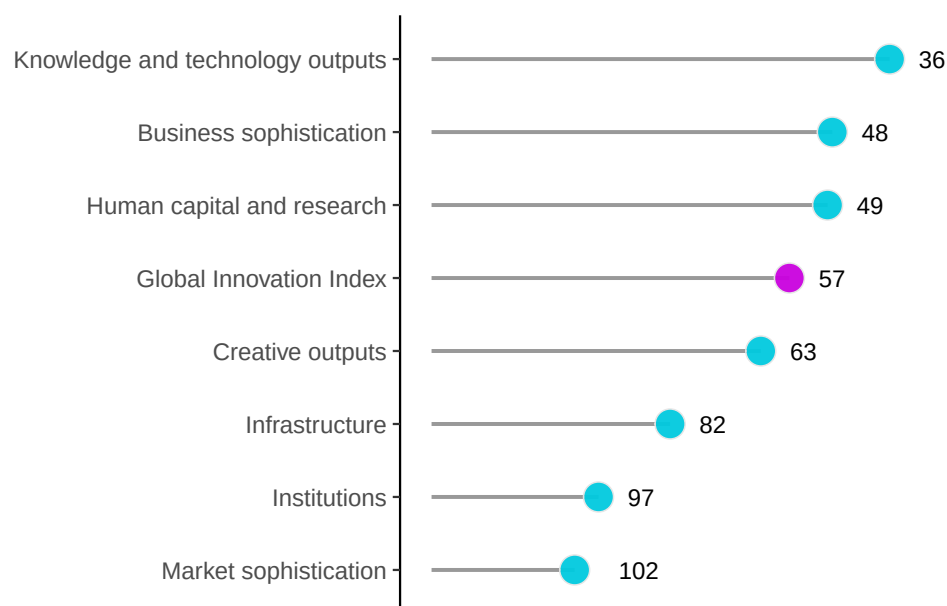
Europe

Ukraine performs below the regional average in all GII pillars.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Ukraine performs best in Knowledge and technology outputs and its weakest performance is in Market sophistication.

The seven GII pillar ranks for Ukraine



Note: The highest possible ranking in each pillar is 1.

The full WIPO Intellectual Property Statistics profile for Ukraine can be found at:

https://www.wipo.int/ipstats/en/statistics/country_profile/profile.jsp?code=UA.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the indicator strengths and weaknesses of Ukraine in the GII 2022.

Strengths and weaknesses for Ukraine

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
2.1.2	Government funding/pupil, secondary, % GDP/cap	12	1.1.1	Political and operational stability	121
2.1.5	Pupil-teacher ratio, secondary	11	2.3.3	Global corporate R&D investors, top 3, mn USD	38
2.2.1	Tertiary enrolment, % gross	19	3.2.3	Gross capital formation, % GDP	125
5.1.5	Females employed w/advanced degrees, %	2	3.3.1	GDP/unit of energy use	116
6.1.3	Utility models by origin/bn PPP\$ GDP	1	4.1.3	Loans from microfinance institutions, % GDP	53
6.2.3	Software spending, % GDP	9	4.2.1	Market capitalization, % GDP	78
6.3.4	ICT services exports, % total trade	7	4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	99
7.1.2	Trademarks by origin/bn PPP\$ GDP	26	4.2.4	Venture capital received, value, % GDP	88
7.1.4	Industrial designs by origin/bn PPP\$ GDP	19	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	122
7.3.4	Mobile app creation/bn PPP\$ GDP	13	7.2.2	National feature films/mn pop. 15–69	69

Ukraine

57

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
48	75	Lower middle	EUR	43.5	584.1	14,146
		Score/Value	Rank			
 Institutions		47.4	97	 Business sophistication		32.3 48 ◆
1.1	Political environment	46.5	107	5.1	Knowledge workers	45.2 42 ◆
1.1.1	Political and operational stability*	50.9	121 ○ ◇	5.1.1	Knowledge-intensive employment, %	37.6 38 ◆
1.1.2	Government effectiveness*	42.0	90	5.1.2	Firms offering formal training, %	24.3 66
1.2	Regulatory environment	61.6	75	5.1.3	GERD performed by business, % GDP	0.3 50 ◆
1.2.1	Regulatory quality*	37.5	91	5.1.4	GERD financed by business, %	30.5 60
1.2.2	Rule of law*	28.7	103	5.1.5	Females employed w/advanced degrees, %	30.2 2 ● ◆
1.2.3	Cost of redundancy dismissal	13.0	41	5.2	Innovation linkages	21.3 78
1.3	Business environment	34.1	[99]	5.2.1	University-industry R&D collaboration†	41.5 73
1.3.1	Policies for doing business†	34.1	108	5.2.2	State of cluster development and depth†	39.9 104
1.3.2	Entrepreneurship policies and culture*	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	0.1 36 ◆
 Human capital and research		36.6	49 ◆	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0 122 ○
2.1	Education	61.9	26 ● ◆	5.2.5	Patent families/bn PPP\$ GDP	0.2 46 ◆
2.1.1	Expenditure on education, % GDP	5.4	27 ◆	5.3	Knowledge absorption	30.6 63
2.1.2	Government funding/pupil, secondary, % GDP/cap	29.4	12 ● ◆	5.3.1	Intellectual property payments, % total trade	0.9 47 ◆
2.1.3	School life expectancy, years	14.9	56 ◆	5.3.2	High-tech imports, % total trade	9.4 47
2.1.4	PISA scales in reading, maths and science	462.7	40 ◆	5.3.3	ICT services imports, % total trade	1.2 79
2.1.5	Pupil-teacher ratio, secondary	8.1	11 ● ◆	5.3.4	FDI net inflows, % GDP	2.6 56
2.2	Tertiary education	38.3	40 ◆	5.3.5	Research talent, % in businesses	27.3 46
2.2.1	Tertiary enrolment, % gross	82.7	19 ● ◆	 Knowledge and technology outputs		32.9 36 ◆
2.2.2	Graduates in science and engineering, %	24.3	41	6.1	Knowledge creation	30.4 29 ◆
2.2.3	Tertiary inbound mobility, %	4.0	57	6.1.1	Patents by origin/bn PPP\$ GDP	2.5 29
2.3	Research and development (R&D)	9.6	59	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.2 49 ◆
2.3.1	Researchers, FTE/mn pop.	846.2	54	6.1.3	Utility models by origin/bn PPP\$ GDP	9.3 1 ● ◆
2.3.2	Gross expenditure on R&D, % GDP	0.4	68	6.1.4	Scientific and technical articles/bn PPP\$ GDP	8.7 97
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.1.5	Citable documents H-index	16.5 51
2.3.4	QS university ranking, top 3*	20.3	48 ◆	6.2	Knowledge impact	32.8 48 ◆
 Infrastructure		38.7	82 ◆	6.2.1	Labor productivity growth, %	2.7 25
3.1	Information and communication technologies (ICTs)	74.9	63 ◆	6.2.2	New businesses/th pop. 15–64	1.7 65
3.1.1	ICT access*	86.6	66 ◆	6.2.3	Software spending, % GDP	0.6 9 ● ◆
3.1.2	ICT use*	63.8	62 ◆	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	3.0 76
3.1.3	Government's online service*	68.2	72	6.2.5	High-tech manufacturing, %	21.0 61
3.1.4	E-participation*	81.0	46 ◆	6.3	Knowledge diffusion	35.4 42 ◆
3.2	General infrastructure	19.6	111	6.3.1	Intellectual property receipts, % total trade	0.1 50
3.2.1	Electricity output, GWh/mn pop.	3,193.1	60 ◆	6.3.2	Production and export complexity	48.6 47 ◆
3.2.2	Logistics performance*	36.3	65	6.3.3	High-tech exports, % total trade	1.9 64
3.2.3	Gross capital formation, % GDP	10.3	125 ○ ◇	6.3.4	ICT services exports, % total trade	8.5 7 ● ◆
3.3	Ecological sustainability	21.5	86	 Creative outputs		19.8 63
3.3.1	GDP/unit of energy use	5.4	116 ○ ◇	7.1	Intangible assets	29.7 62
3.3.2	Environmental performance*	49.6	43 ◆	7.1.1	Intangible asset intensity, top 15, %	n/a n/a
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.6	78	7.1.2	Trademarks by origin/bn PPP\$ GDP	70.6 26 ● ◆
 Market sophistication		23.4	102	7.1.3	Global brand value, top 5,000, % GDP	3.1 71
4.1	Credit	5.3	124 ○	7.1.4	Industrial designs by origin/bn PPP\$ GDP	5.9 19 ●
4.1.1	Finance for startups and scaleups*	n/a	n/a	7.2	Creative goods and services	8.9 87
4.1.2	Domestic credit to private sector, % GDP	28.4	97	7.2.1	Cultural and creative services exports, % total trade	0.7 43
4.1.3	Loans from microfinance institutions, % GDP	0.1	53 ○	7.2.2	National feature films/mn pop. 15–69	0.5 69 ○
4.2	Investment	1.4	107 ○	7.2.3	Entertainment and media market/th pop. 15–69	n/a n/a
4.2.1	Market capitalization, % GDP	4.3	78 ○	7.2.4	Printing and other media, % manufacturing	0.8 64
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	62	7.2.5	Creative goods exports, % total trade	0.2 82
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	99 ○ ◇	7.3	Online creativity	11.0 42 ◆
4.2.4	Venture capital received, value, % GDP	0.0	88 ○	7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.5 55 ◆
4.3	Trade, diversification, and market scale	63.6	37 ◆	7.3.2	Country-code TLDs/th pop. 15–69	5.1 55 ◆
4.3.1	Applied tariff rate, weighted avg., %	1.7	52 ◆	7.3.3	GitHub commit pushes received/mn pop. 15–69	14.3 37 ◆
4.3.2	Domestic industry diversification	88.7	47	7.3.4	Mobile app creation/bn PPP\$ GDP	20.1 13 ● ◆
4.3.3	Domestic market scale, bn PPP\$	584.1	39			

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/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

DATA AVAILABILITY

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

Missing data for Ukraine

Code	Indicator name	Economy year	Model year	Source
1.3.2	Entrepreneurship policies and culture	n/a	2021	Global Entrepreneurship Monitor
4.1.1	Finance for startups and scaleups	n/a	2021	Global Entrepreneurship Monitor
7.1.1	Intangible asset intensity, top 15, %	n/a	2021	Brand Finance
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2021	PwC, GEMO

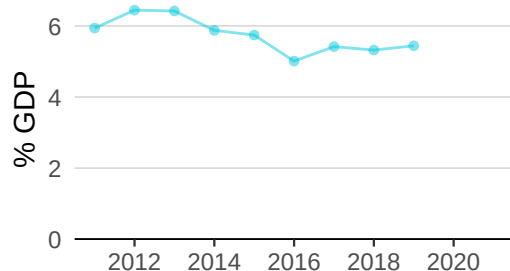
Outdated data for Ukraine

Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	2019	2020	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	2014	2019	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2014	2019	UNESCO Institute for Statistics
4.2.1	Market capitalization, % GDP	2018	2020	World Federation of Exchanges
5.1.1	Knowledge-intensive employment, %	2020	2021	International Labour Organization
5.1.3	GERD performed by business, % GDP	2018	2020	UNESCO Institute for Statistics
5.1.4	GERD financed by business, %	2018	2019	UNESCO Institute for Statistics
5.1.5	Females employed w/advanced degrees, %	2020	2021	International Labour Organization
5.2.3	GERD financed by abroad, % GDP	2018	2019	UNESCO Institute for Statistics
5.3.5	Research talent, % in businesses	2018	2020	UNESCO Institute for Statistics
6.2.2	New businesses/th pop. 15–64	2017	2020	World Bank, Entrepreneurship Database

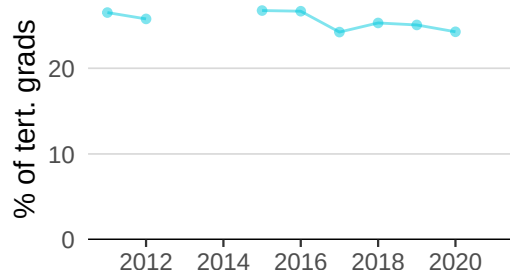
UKRAINE'S INNOVATION SYSTEM

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

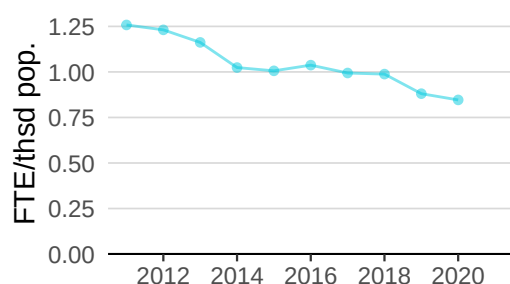
Innovation inputs



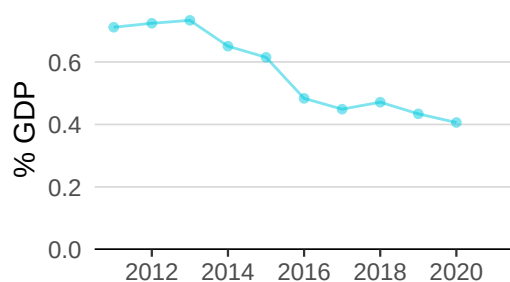
2.1.1 Expenditure on education was equal to 5.4% GDP in 2019—up by 2 percentage points from the year prior—and equivalent to an indicator rank of 27.



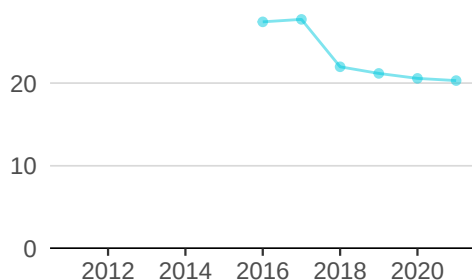
2.2.2 Graduates in science and engineering was equal to 24.3% of tert. grads in 2020—down by 3 percentage points from the year prior—and equivalent to an indicator rank of 41.



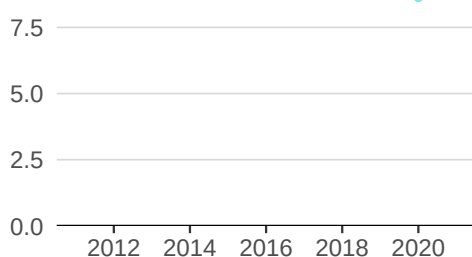
2.3.1 Researchers was equal to 0.8 FTE/thsd pop. in 2020—down by 4 percentage points from the year prior—and equivalent to an indicator rank of 54.



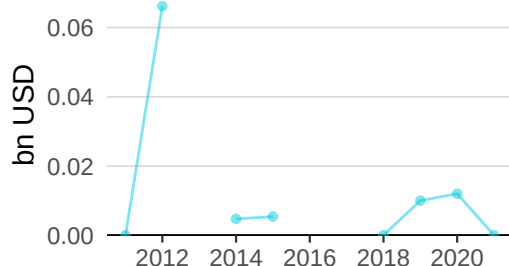
2.3.2 Gross expenditure on R&D was equal to 0.4% GDP in 2020—down by 6 percentage points from the year prior—and equivalent to an indicator rank of 68.



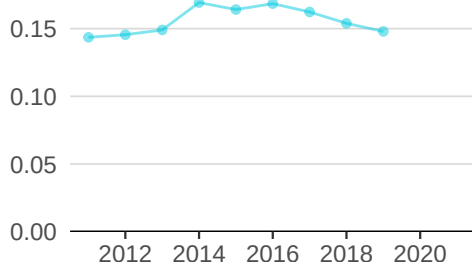
2.3.4 QS university ranking was equal to 20.3 in 2021—down by 1 percentage point from the year prior—and equivalent to an indicator rank of 48.



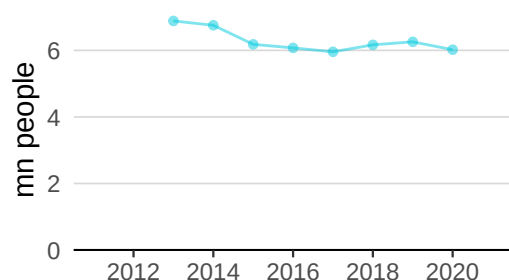
3.1.1 ICT access was equal to 8.7 in 2020 and equivalent to an indicator rank of 66.



4.2.4 Venture capital received was equal to 0.0 bn USD in 2021—down by 100 percentage points from the year prior—and equivalent to an indicator rank of 88.

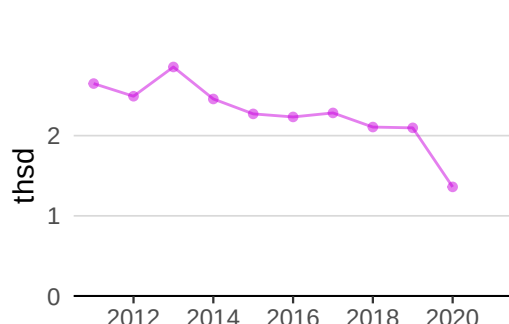


4.3.2 Domestic industry diversification was equal to 0.1 in 2019—down by 4 percentage points from the year prior—and equivalent to an indicator rank of 47.

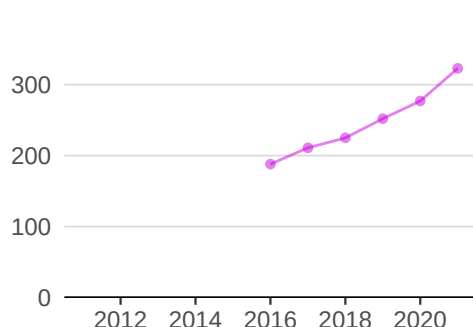


5.1.1 Knowledge-intensive employment was equal to 6.0 mn people in 2020—down by 4 percentage points from the year prior—and equivalent to an indicator rank of 38.

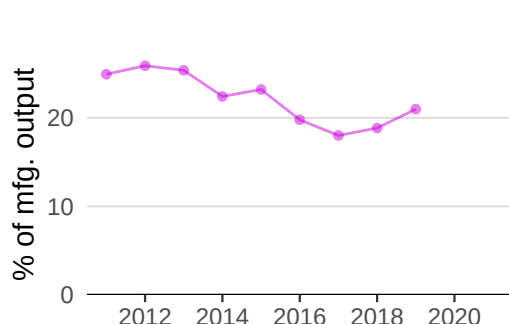
Innovation outputs



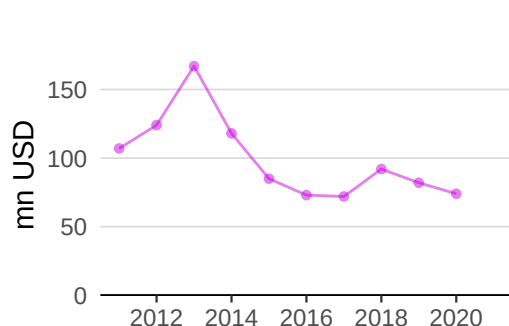
6.1.1 Patents by origin was equal to 1.4 thsd in 2020—down by 35 percentage points from the year prior—and equivalent to an indicator rank of 29.



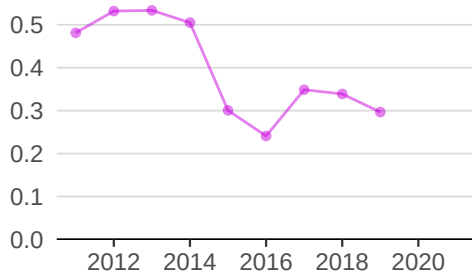
6.1.5 Citable documents H-index was equal to 323.0 in 2021—up by 17 percentage points from the year prior—and equivalent to an indicator rank of 51.



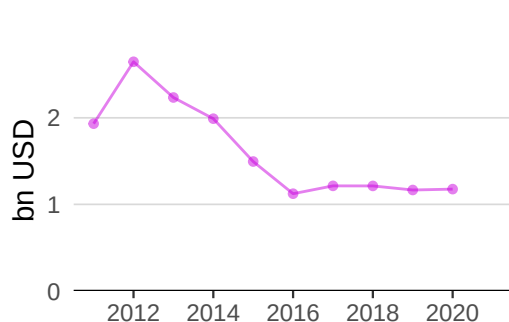
6.2.5 High-tech manufacturing was equal to 21.0% of mfg. output in 2019—up by 11 percentage points from the year prior—and equivalent to an indicator rank of 61.



6.3.1 Intellectual property receipts was equal to 74.0 mn USD in 2020—down by 10 percentage points from the year prior—and equivalent to an indicator rank of 50.



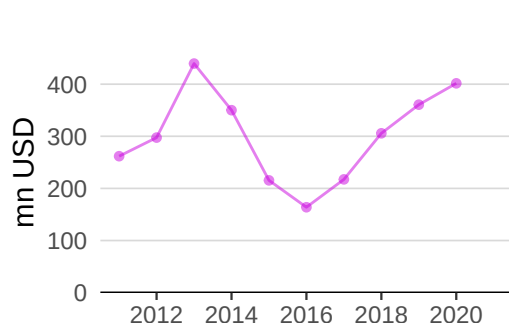
6.3.2 Production and export complexity was equal to 0.3 in 2019—down by 12 percentage points from the year prior—and equivalent to an indicator rank of 47.



6.3.3 High-tech exports was equal to 1.2 bn USD in 2020—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 64.



7.1.3 Global brand value was equal to 556.6 mn USD in 2021—up by 27 percentage points from the year prior—and equivalent to an indicator rank of 71.



7.2.1 Cultural and creative services exports was equal to 401.6 mn USD in 2020—up by 11 percentage points from the year prior—and equivalent to an indicator rank of 43.

UKRAINE'S INNOVATION TOP PERFORMERS

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank
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No observations

Source: European Commission's Joint Research Centre (<https://iri.jrc.ec.europa.eu/scoreboard/2021-eu-industrial-rd-investment-scoreboard>).

2.3.4 QS university ranking

University	Score	Rank
V.N. KARAZIN KHARKIV NATIONAL UNIVERSITY	23.2	511-520
TARAS SHEVCHENKO NATIONAL UNIVERSITY OF KYIV	19.3	601-650
NATIONAL TECHNICAL UNIVERSITY "KHARKIV POLYTECHNIC INSTITUTE"	18.4	651-700

Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2022>).

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".

7.1.1 Intangible asset intensity, top 15

Firm	Rank
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No observations

Source: Brand Finance (<https://brandirectory.com/reports/gift-2021>).

7.1.3 Global brand value, top 5,000

Brand	Industry	Rank
KERNEL	Food	1
KYIVSTAR	Telecoms	2

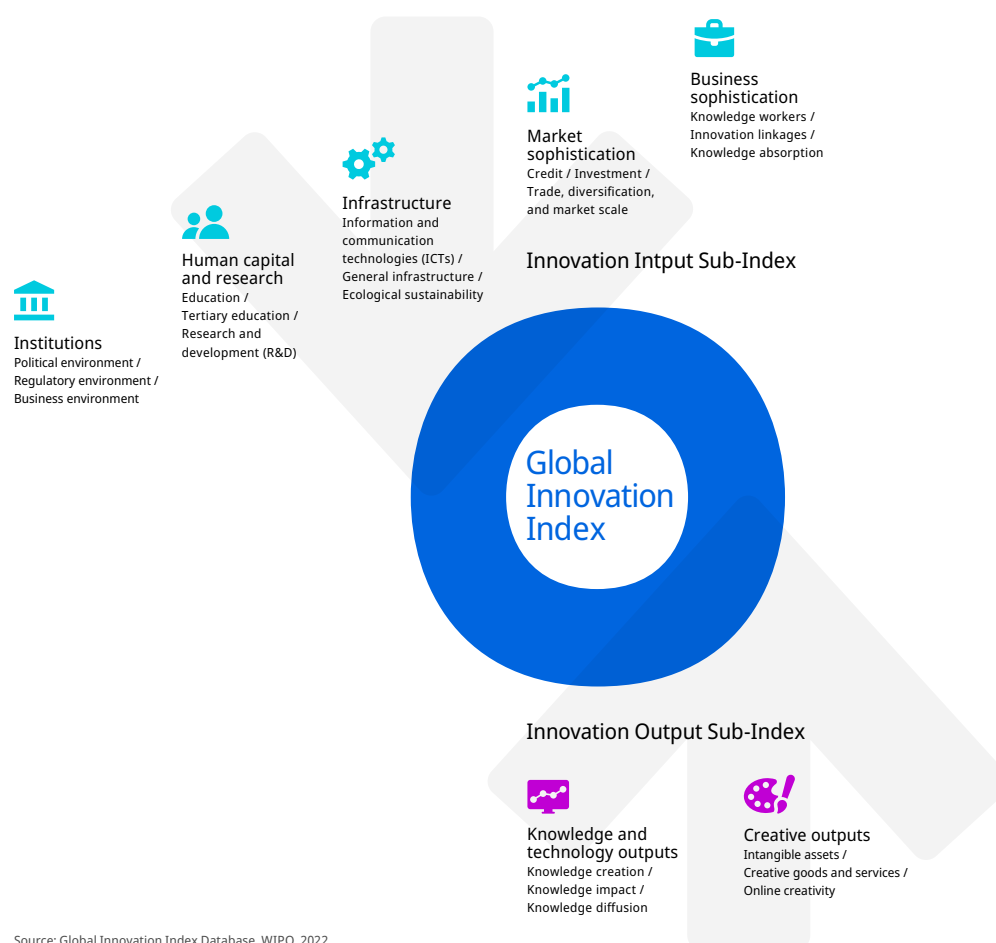
Source: Brand Finance (<https://brandirectory.com>).

Note: Rank corresponds to within economy ranks.

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.



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.