

# GLOBAL INNOVATION INDEX 2019

## UKRAINE

**47th**

Ukraine ranks 47th among the 129 economies featured in the GII 2019.

The Global Innovation Index (GII) is a ranking of world economies based on 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 the GII model influence year-on-year comparisons of the GII ranks. The confidence interval for Ukraine's ranking in the GII 2019 is between 41 and 50.

### Ukraine's Rankings, 2017 - 2019

	GII	Innovation Inputs	Innovation Outputs
<b>2019</b>	47	82	36
<b>2018</b>	43	75	35
<b>2017</b>	50	77	40

- Ukraine performs better in Innovation Outputs than Inputs.
- This year Ukraine ranks 82nd in Innovation Inputs, worse than last year and compared to 2017.
- As for Innovation Outputs, Ukraine ranks 36th. This position is worse than last year, but better compared to 2017.

**2nd**

Ukraine ranks 2nd among the 26 lower middle-income economies.

**32nd**

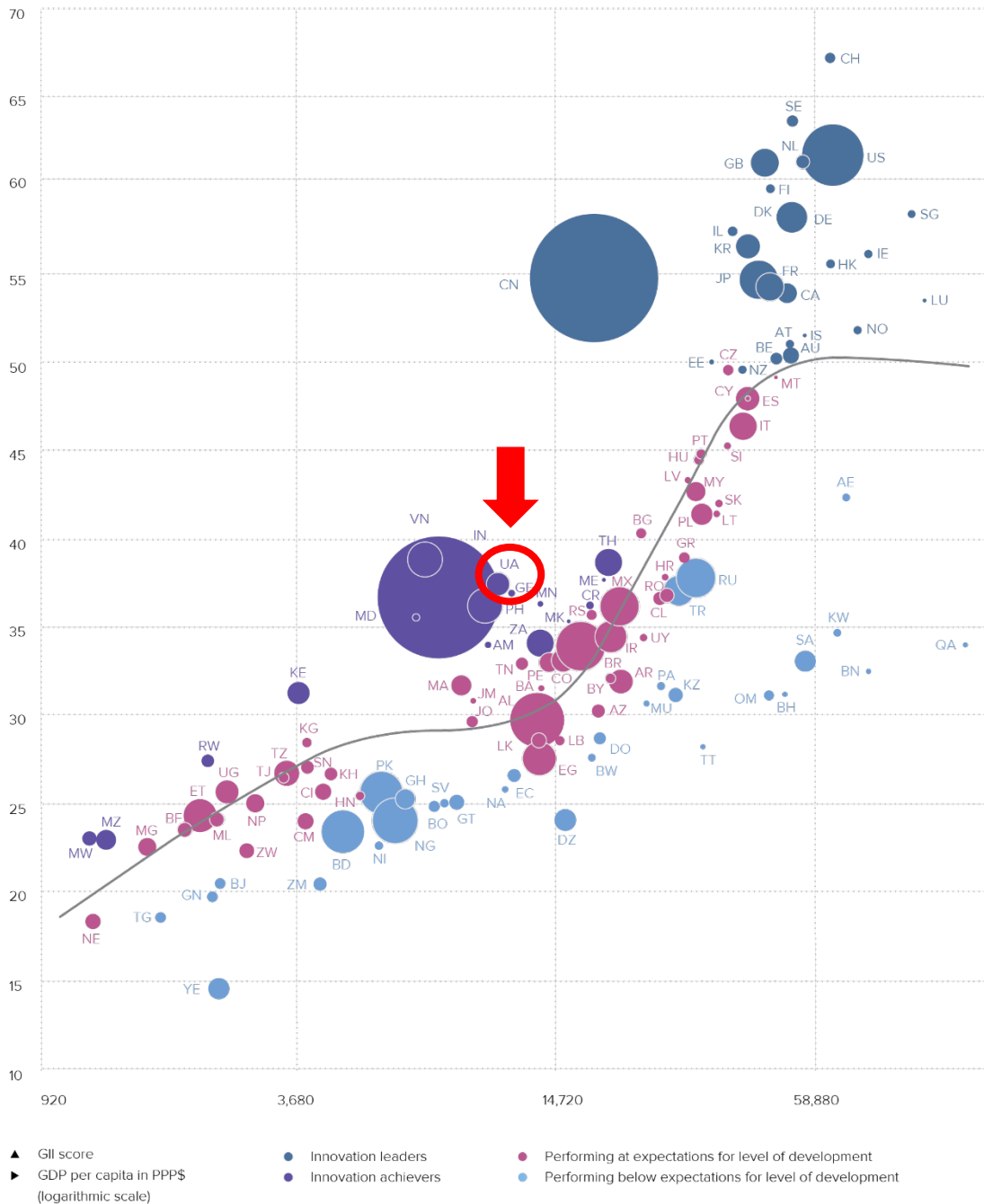
Ukraine ranks 32nd among the 39 economies in Europe.

# 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 considered Innovation under-performers relative to GDP.

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

## GII scores and GDP per capita in PPP US\$ (bubbles sized by population)

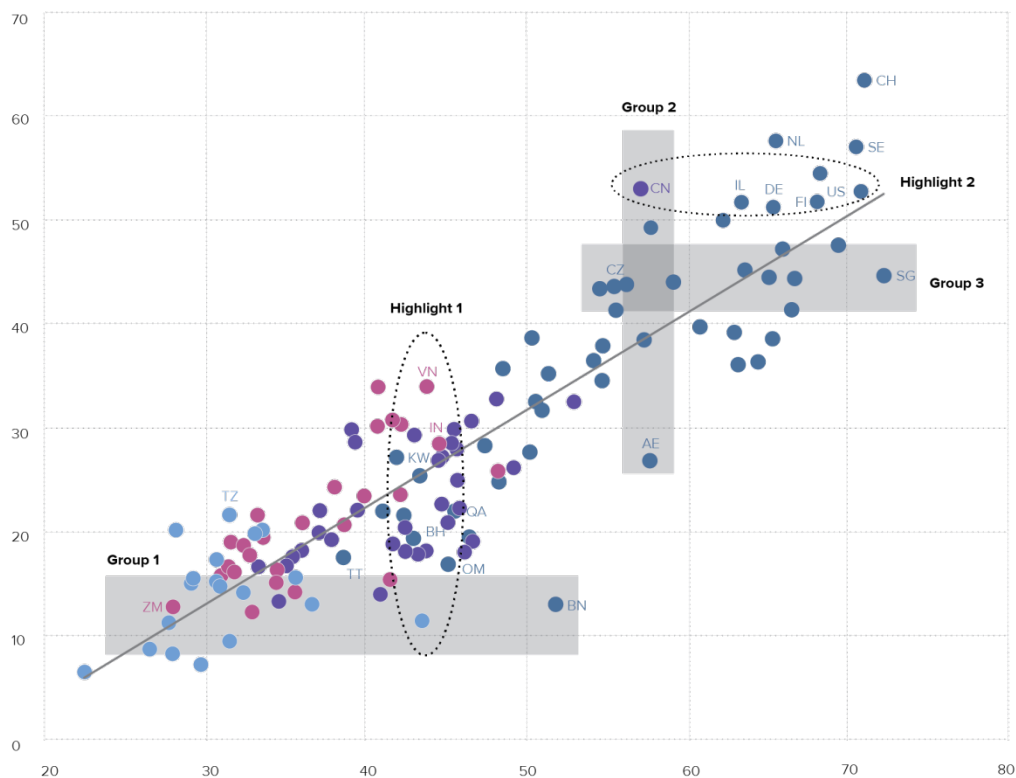


# EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and innovation outputs, indicating which economies best translate innovation inputs into innovation outputs. Economies appearing above the line are effectively translating their costly innovation investments into more and higher-quality outputs. In contrast, those below the line are not effectively translating innovation inputs into outputs.

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

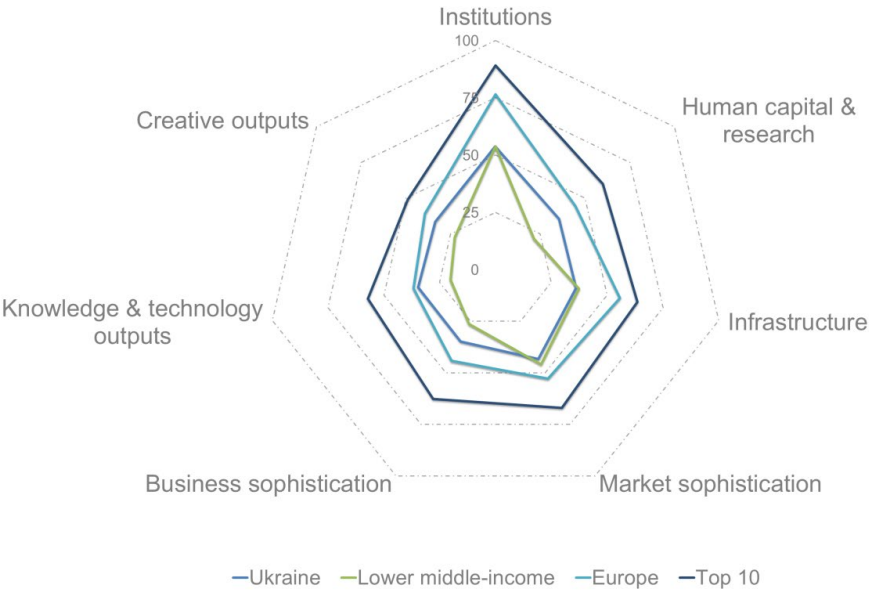
**Innovation input/output performance by income group, 2019**



- ▲ Output score
  - ▶ Input score
  - High income
  - Upper-middle income
  - Lower-middle income
  - Low income
  - Fitted values
- 
- |                         |                   |                        |                                |
|-------------------------|-------------------|------------------------|--------------------------------|
| AE United Arab Emirates | CZ Czech Republic | NL Netherlands         | TZ United Republic of Tanzania |
| BH Bahrain              | DE Germany        | OM Oman                | US United States of America    |
| BN Brunei Darussalam    | FI Finland        | QA Qatar               | VN Viet Nam                    |
| CH Switzerland          | IL Israel         | SE Sweden              | ZM Zambia                      |
| CN China                | IN India          | SG Singapore           |                                |
|                         | KW Kuwait         | TT Trinidad and Tobago |                                |

# BENCHMARKING UKRAINE TO OTHER LOWER MIDDLE-INCOME ECONOMIES AND THE EUROPE REGION

Ukraine's scores in the seven GII pillars



## Lower middle-income economies

Ukraine has high scores in, Institutions, Human capital & research, Business sophistication, Knowledge & technology outputs and Creative outputs which are above the average of the lower middle-income group.

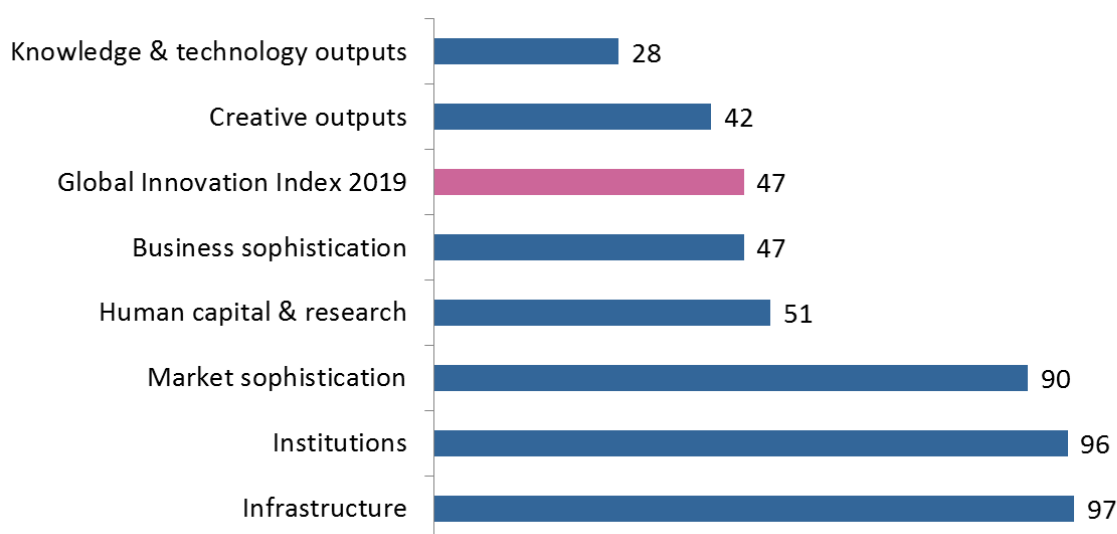
## Europe Region

Compared to other economies in Europe, Ukraine performs below average in all the seven GII pillars.

Top ranks are found in areas such as Tertiary education, Knowledge creation, and Intangible assets where the country ranks in the top 40 worldwide.

## OVERVIEW OF UKRAINE'S RANKINGS IN THE 7 GII AREAS

Ukraine performs the best in Knowledge & technology outputs and its weakest performance is in Infrastructure.



\*The highest possible ranking in each pillar is 1.

## UKRAINE'S INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of Ukraine's strengths and weaknesses in the GII 2019.

### Strengths

Code	Indicator name	Rank
2.1.5	Pupil-teacher ratio, secondary	3
2.2.1	Tertiary enrolment, % gross	14
5.1.5	Females employed w/advanced degrees, %	2
5.2.3	GERD financed by abroad, %	15
6.1	Knowledge creation	17
6.1.1	Patents by origin/bn PPP\$ GDP	17
6.1.3	Utility models by origin/bn PPP\$ GDP	1
6.2.3	Computer software spending, % GDP	19
6.3.3	ICT services exports, % total trade	11
7.1	Intangible assets	17
7.1.1	Trademarks by origin/bn PPP\$ GDP	6
7.1.2	Industrial designs by origin/bn PPP\$ GDP	8

### Weaknesses

Code	Indicator name	Rank
1.1	Political environment	110
1.1.1	Political & operational stability*	125
1.2.2	Rule of law*	107
1.3.2	Ease of resolving insolvency*	115
2.3.3	Global R&D companies, top 3, in mn US\$	43
3.3	Ecological sustainability	120
3.3.1	GDP/unit of energy use	115
4.1.3	Microfinance gross loans, % GDP	79
4.2	Investment	115
4.2.3	Venture capital deals/bn PPP\$ GDP	62
5.2.4	JV-strategic alliance deals/bn PPP\$ GDP	88
7.1.3	ICTs & business model creation†	109
7.2.2	National feature films/mn pop. 15-69	94

## **STRENGTHS**

- GII strengths for Ukraine are found in four of the seven GII pillars.
- Most of these relative strengths are in Knowledge & technology outputs (28) where Ukraine's relative strengths are sub-pillar Knowledge creation (17) and indicators Patents by origin (17), Computer software spending (19), ICT services exports (11) and Utility models by origin, in which this economy ranks 1st in the world.
- In Creative outputs (42), GII strengths for Ukraine are sub-pillar Intangible assets (17) and indicators Trademarks by origin (6) and Industrial designs by origin (8).
- In Human capital & research (51), Ukraine's strengths are indicators Tertiary enrolment (14) and Pupil-teacher ratio, where it ranks 3rd worldwide.
- In Business sophistication (47), two strengths are found in indicators R&D financed by abroad (15) and Females employed with advanced degrees – where it achieves the 2nd position.

## **WEAKNESSES**

- Ukraine's weaknesses in the GII are found in six of the seven GII pillars, and mostly on the innovation input side of the GII.
- In Institutions (96), Ukraine exhibits weaknesses in sub-pillar Political environment (110) as well as in indicators Political & operational stability (125), Rule of law (107), and Ease of resolving insolvency (115).
- In Human capital & research (51), only one indicator, Global R&D companies (43), is a GII weakness for Ukraine.
- In Infrastructure (97), Ukraine has GII weaknesses in sub-pillar Ecological sustainability (120) and in indicator GDP per unit of energy use (115).
- In Market sophistication (90), relative weaknesses are found in sub-pillar Investment (115) as well as in two indicators: Microfinance gross loans (79) and Venture capital deals (62).
- In Business sophistication (47), Ukraine presents only one GII weakness in indicator Joint Ventures – strategic alliance deals (88).
- In Creative outputs (42), two indicators – ICTs & business model creation (109) and National feature films (94) – are GII weaknesses for Ukraine.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2018 rank
<b>36</b>	<b>82</b>	<b>Lower middle</b>	<b>EUR</b>	<b>44.0</b>	<b>391.5</b>	<b>9,283.4</b>	<b>43</b>
				Score/Value	Rank		
<b>INSTITUTIONS</b> .....				<b>53.9</b>	<b>96</b>		
<b>1.1</b>	<b>Political environment</b> .....		<b>38.8</b>	<b>110</b>	○		
1.1.1	Political and operational stability*.....		45.6	125	○	◇	
1.1.2	Government effectiveness*.....		35.4	95			
<b>1.2</b>	<b>Regulatory environment</b> .....		<b>61.4</b>	<b>78</b>			
1.2.1	Regulatory quality*.....		33.3	94			
1.2.2	Rule of law*.....		27.6	107	○		
1.2.3	Cost of redundancy dismissal, salary weeks.....		13.0	42			
<b>1.3</b>	<b>Business environment</b> .....		<b>61.4</b>	<b>99</b>			
1.3.1	Ease of starting a business*.....		91.1	48			
1.3.2	Ease of resolving insolvency*.....		31.7	115	○	◇	
<b>HUMAN CAPITAL &amp; RESEARCH</b> .....				<b>35.6</b>	<b>51</b>	◇	
<b>2.1</b>	<b>Education</b> .....		<b>55.1</b>	<b>43</b>	◆		
2.1.1	Expenditure on education, % GDP.....		5.0	48			
2.1.2	Government funding/pupil, secondary, % GDP/cap... ..		25.7	23			
2.1.3	School life expectancy, years.....		15.0	52	◆		
2.1.4	PISA scales in reading, maths, & science.....		n/a	n/a			
2.1.5	Pupil-teacher ratio, secondary.....		7.2	3	●	◆	
<b>2.2</b>	<b>Tertiary education</b> .....		<b>40.6</b>	<b>37</b>	◆		
2.2.1	Tertiary enrolment, % gross.....		83.4	14	●	◆	
2.2.2	Graduates in science & engineering, %.....		24.2	33			
2.2.3	Tertiary inbound mobility, %.....		3.2	62			
<b>2.3</b>	<b>Research &amp; development (R&amp;D)</b> .....		<b>11.2</b>	<b>54</b>			
2.3.1	Researchers, FTE/mn pop.....		1,119.5	50	◆		
2.3.2	Gross expenditure on R&D, % GDP.....		0.4	67			
2.3.3	Global R&D companies, avg. exp. top 3, mn US\$.....		0.0	43	○	◇	
2.3.4	QS university ranking, average score top 3*.....		22.0	46	◆		
<b>INFRASTRUCTURE</b> .....				<b>36.0</b>	<b>97</b>		
<b>3.1</b>	<b>Information &amp; communication technologies (ICTs)</b> .....		<b>58.0</b>	<b>81</b>			
3.1.1	ICT access*.....		66.5	65	◆		
3.1.2	ICT use*.....		39.9	90			
3.1.3	Government's online service*.....		56.9	92			
3.1.4	E-participation*.....		68.5	73			
<b>3.2</b>	<b>General infrastructure</b> .....		<b>26.2</b>	<b>95</b>			
3.2.1	Electricity output, kWh/mn pop.....		3,620.1	55	◆		
3.2.2	Logistics performance*.....		35.9	65			
3.2.3	Gross capital formation, % GDP.....		18.8	99			
<b>3.3</b>	<b>Ecological sustainability</b> .....		<b>23.9</b>	<b>120</b>	○		
3.3.1	GDP/unit of energy use.....		3.4	115	○	◇	
3.3.2	Environmental performance*.....		52.9	89			
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP..		0.6	80			
<b>MARKET SOPHISTICATION</b> .....				<b>43.3</b>	<b>90</b>		
<b>4.1</b>	<b>Credit</b> .....		<b>30.5</b>	<b>91</b>			
4.1.1	Ease of getting credit*.....		75.0	29			
4.1.2	Domestic credit to private sector, % GDP.....		38.4	86			
4.1.3	Microfinance gross loans, % GDP.....		0.0	79	○		
<b>4.2</b>	<b>Investment</b> .....		<b>31.6</b>	<b>115</b>	○		
4.2.1	Ease of protecting minority investors*.....		58.3	68			
4.2.2	Market capitalization, % GDP.....		22.2	58			
4.2.3	Venture capital deals/bn PPP\$ GDP.....		0.0	62	○		
<b>4.3</b>	<b>Trade, competition, &amp; market scale</b> .....		<b>67.8</b>	<b>42</b>			
4.3.1	Applied tariff rate, weighted avg., %.....		1.9	51	◆		
4.3.2	Intensity of local competition*.....		64.4	83			
4.3.3	Domestic market scale, bn PPP\$.....		391.5	47			
<b>BUSINESS SOPHISTICATION</b> .....				<b>34.8</b>	<b>47</b>	◇	
<b>5.1</b>	<b>Knowledge workers</b> .....		<b>45.4</b>	<b>45</b>	◆		
5.1.1	Knowledge-intensive employment, %.....		36.9	33			
5.1.2	Firms offering formal training, % firms.....		22.6	69			
5.1.3	GERD performed by business, % GDP.....		0.3	50	◆		
5.1.4	GERD financed by business, %.....		30.1	59			
5.1.5	Females employed w/advanced degrees, %.....		29.9	2	●	◆	
<b>5.2</b>	<b>Innovation linkages</b> .....		<b>27.4</b>	<b>55</b>			
5.2.1	University/industry research collaboration*.....		41.3	64			
5.2.2	State of cluster development*.....		37.3	98			
5.2.3	GERD financed by abroad, %.....		24.4	15	●	◆	
5.2.4	JV-strategic alliance deals/bn PPP\$ GDP.....		0.0	88	○		
5.2.5	Patent families 2+ offices/bn PPP\$ GDP.....		0.2	41	◆		
<b>5.3</b>	<b>Knowledge absorption</b> .....		<b>31.7</b>	<b>73</b>			
5.3.1	Intellectual property payments, % total trade.....		0.7	52			
5.3.2	High-tech imports, % total trade.....		8.8	46			
5.3.3	ICT services imports, % total trade.....		0.9	79			
5.3.4	FDI net inflows, % GDP.....		3.2	52			
5.3.5	Research talent, % in business enterprise.....		25.1	49			
<b>KNOWLEDGE &amp; TECHNOLOGY OUTPUTS</b> .....				<b>34.6</b>	<b>28</b>	◇	
<b>6.1</b>	<b>Knowledge creation</b> .....		<b>42.5</b>	<b>17</b>	●		
6.1.1	Patents by origin/bn PPP\$ GDP.....		6.2	17	◆		
6.1.2	PCT patents by origin/bn PPP\$ GDP.....		0.4	38	◆		
6.1.3	Utility models by origin/bn PPP\$ GDP.....		24.3	1	●	◆	
6.1.4	Scientific & technical articles/bn PPP\$ GDP.....		9.2	54			
6.1.5	Citable documents H-index.....		15.0	49			
<b>6.2</b>	<b>Knowledge impact</b> .....		<b>40.1</b>	<b>47</b>			
6.2.1	Growth rate of PPP\$ GDP/worker, %.....		3.2	22			
6.2.2	New businesses/th pop. 15-64.....		1.5	60			
6.2.3	Computer software spending, % GDP.....		0.5	19	●	◆	
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP.....		3.5	70			
6.2.5	High- & medium-high-tech manufactures, %.....		0.2	56			
<b>6.3</b>	<b>Knowledge diffusion</b> .....		<b>21.3</b>	<b>47</b>			
6.3.1	Intellectual property receipts, % total trade.....		0.2	43			
6.3.2	High-tech net exports, % total trade.....		2.0	53			
6.3.3	ICT services exports, % total trade.....		4.8	11	●	◆	
6.3.4	FDI net outflows, % GDP.....		0.1	96			
<b>CREATIVE OUTPUTS</b> .....				<b>33.5</b>	<b>42</b>	◇	
<b>7.1</b>	<b>Intangible assets</b> .....		<b>55.8</b>	<b>17</b>	●		
7.1.1	Trademarks by origin/bn PPP\$ GDP.....		128.6	6	●	◆	
7.1.2	Industrial designs by origin/bn PPP\$ GDP.....		13.4	8	●	◆	
7.1.3	ICTs & business model creation*.....		49.1	109	○		
7.1.4	ICTs & organizational model creation*.....		55.6	58			
<b>7.2</b>	<b>Creative goods &amp; services</b> .....		<b>8.8</b>	<b>91</b>			
7.2.1	Cultural & creative services exports, % total trade.....		0.4	58			
7.2.2	National feature films/mn pop. 15-69.....		0.6	94	○		
7.2.3	Entertainment & Media market/th pop. 15-69.....		n/a	n/a			
7.2.4	Printing & other media, % manufacturing.....		1.0	62			
7.2.5	Creative goods exports, % total trade.....		0.2	82			
<b>7.3</b>	<b>Online creativity</b> .....		<b>13.6</b>	<b>43</b>	◆		
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69.....		4.5	57	◆		
7.3.2	Country-code TLDs/th pop. 15-69.....		4.7	51	◆		
7.3.3	Wikipedia edits/mn pop. 15-69.....		31.1	38	◆		
7.3.4	Mobile app creation/bn PPP\$ GDP.....		24.3	19	◆		

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 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.

## DATA AVAILABILITY

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

### Missing data

Code	Indicator name	Country year	Model year	Source
2.1.4	PISA scales in reading, maths & science	n/a	2015	OECD Programme for International Student Assessment (PISA)
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	2017	PwC

### Outdated data

Code	Indicator name	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	2017	UNESCO Institute for Statistics
4.1.3	Microfinance gross loans, % GDP	2015	2017	Microfinance Information Exchange
4.2.2	Market capitalization, % GDP	2011	2017	World Federation of Exchanges

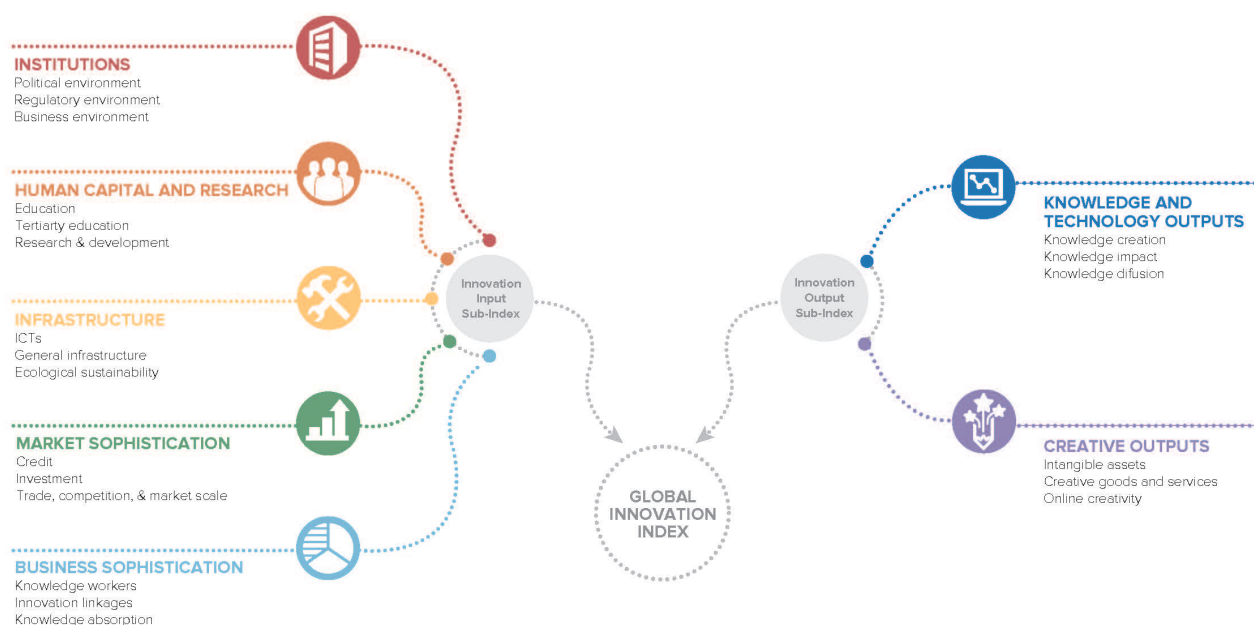


# ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. In 2019, the GII presents its 12<sup>th</sup> edition devoted to the theme **Creating Healthy Lives—The Future of Medical Innovation**.

Recognizing that innovation is a key driver of economic development, the GII aims to provide a rich innovation ranking and 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 countries that incorporate the GII into their innovation agendas.

## Framework of the Global Innovation Index 2019



The Index is a ranking of the innovation capabilities and results of world economies. It measures innovation based on criteria that includes 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 containing three sub-pillars.

