

GLOBAL INNOVATION INDEX 2019

THE UNITED ARAB EMIRATES

36th

The United Arab Emirates ranks 36th 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 the United Arab Emirates 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 the United Arab Emirates' ranking in the GII 2019 is between 36 and 41.

The United Arab Emirates' Rankings, 2017 - 2019

	GII	Innovation Inputs	Innovation Outputs
2019	36	24	58
2018	38	24	54
2017	35	23	56

- The United Arab Emirates performs better in Innovation Inputs than Outputs.
- This year the United Arab Emirates ranks 24th in Innovation Inputs, same as last year and worse compared to 2017.
- As for Innovation Outputs, the United Arab Emirates ranks 58th. This position is worse than last year and compared to 2017.

34th

The United Arab Emirates ranks 34th among the 50 high-income economies.

3rd

The United Arab Emirates ranks 3rd among the 19 economies in Northern Africa and Western Asia.

The United Arab Emirates is moving closer to the top 35. It achieves the third spot in its region - Northern Africa and Western Asia - for the fourth consecutive year.

The United Arab Emirates' improvement this year is the result of multiple factors, which are to a great extent related to its relative performance and less so to new GII data or methods (page 9).

Four of the seven GII areas improve this year. The most notable gains are found in indicators such as Ease of starting a business, Global R&D companies, National feature films, and Creative goods' exports, as well as several indicators that measure the quality of its infrastructures.

The United Arab Emirates ranks in the top 10 in a number of indicators, including Tertiary inbound mobility, R&D financed by business, and Research talent (pages 6 and 7).

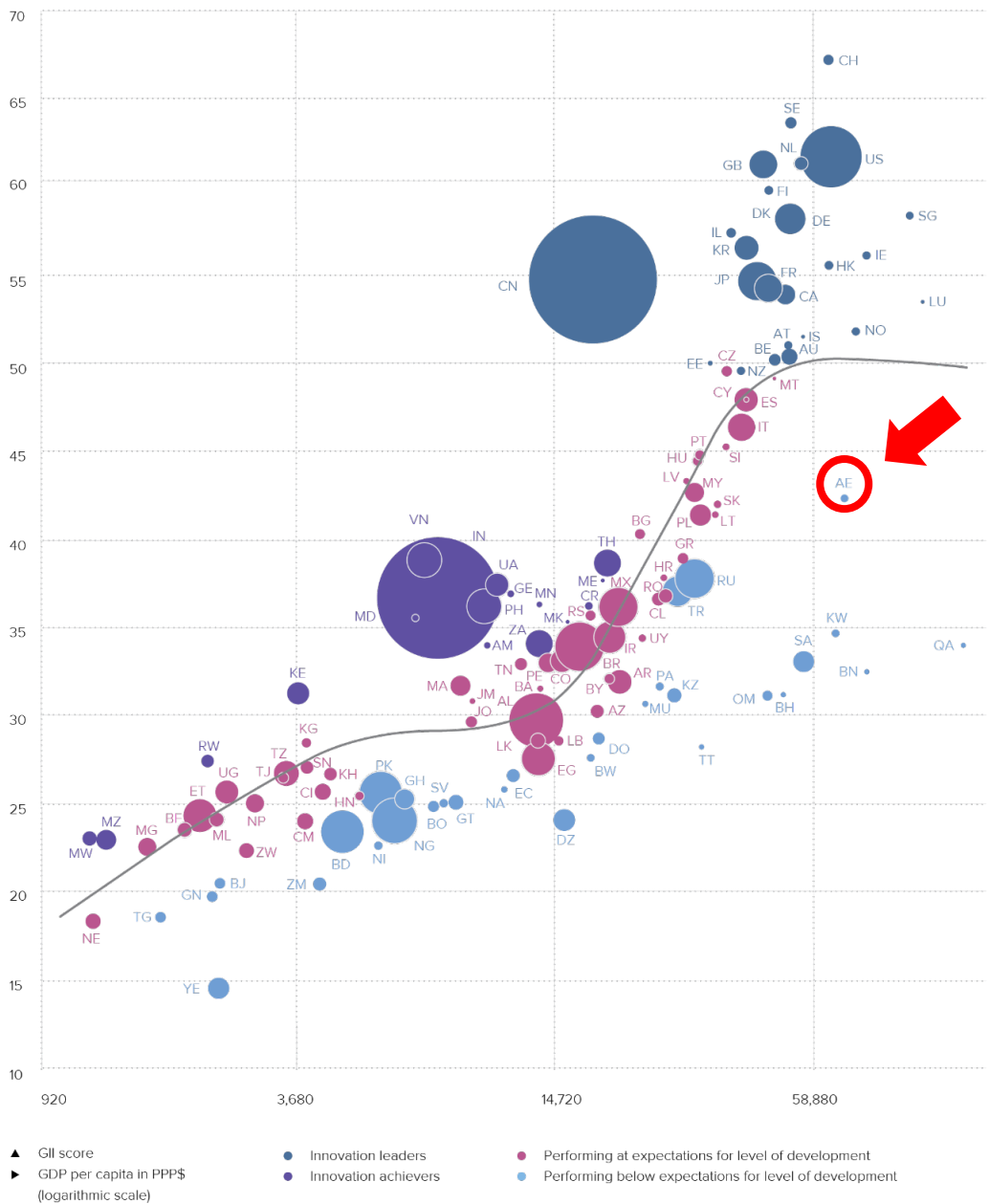
The economy also presents areas for further improvement, such as indicators Knowledge-intensive employment, Patents by origin, Scientific and technical articles, and High-technology exports (pages 6 and 7).

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, the United Arab Emirates performs below its expected level of development.

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

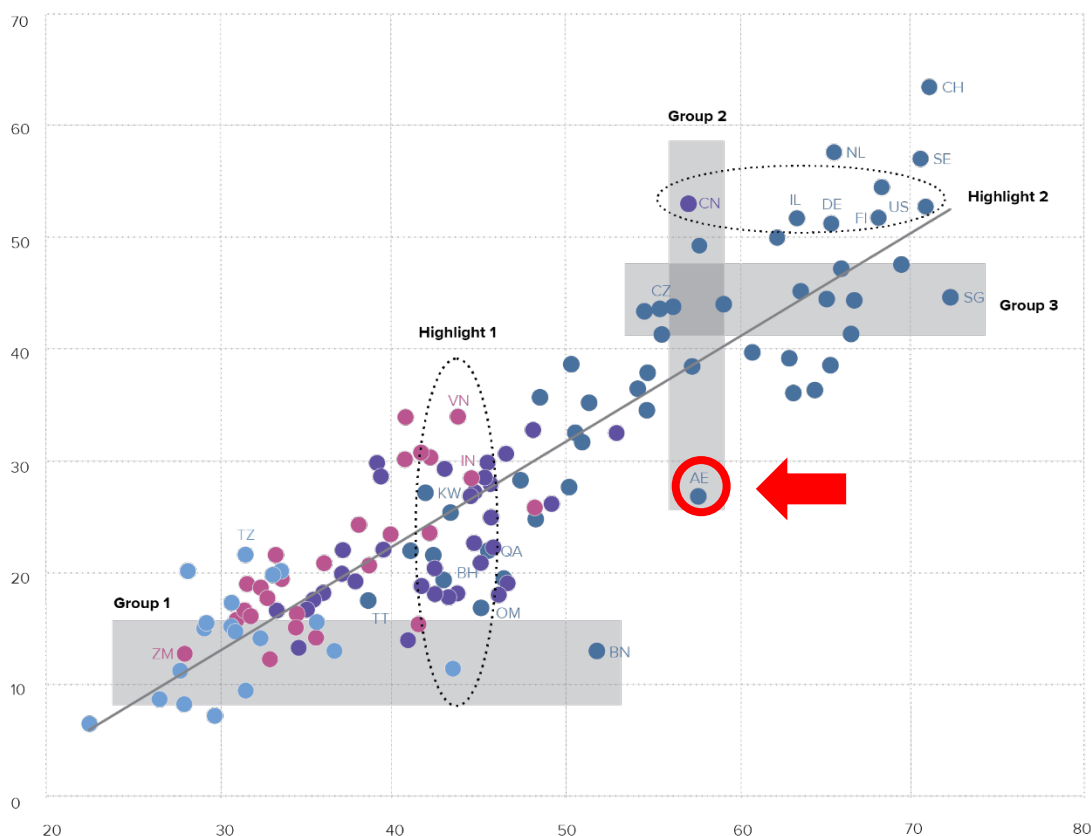


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

The United Arab Emirates produces less innovation outputs relative to its level of innovation investments.

Innovation input/output performance by income group, 2019

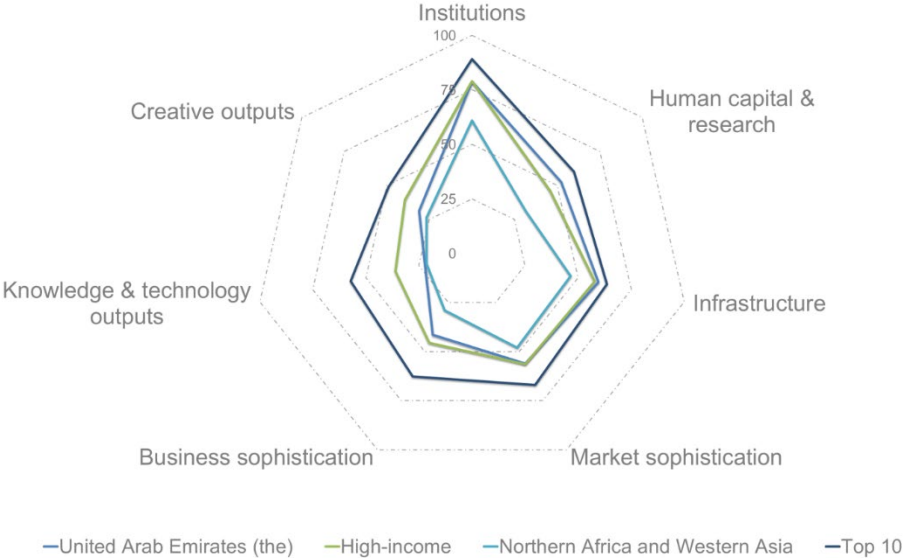


- ▲ Output score
- ▶ Input score
- High income
- Upper-middle income
- Lower-middle income
- Low income
- Fitted values

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 THE UNITED ARAB EMIRATES TO OTHER HIGH-INCOME ECONOMIES AND THE NORTHERN AFRICA AND WESTERN ASIA REGION

The United Arab Emirates' scores in the seven GII pillars



High-income economies

The United Arab Emirates has high scores in 2 out of the 7 GII pillars: Human capital & research and Infrastructure, which are above the average of the high-income group.

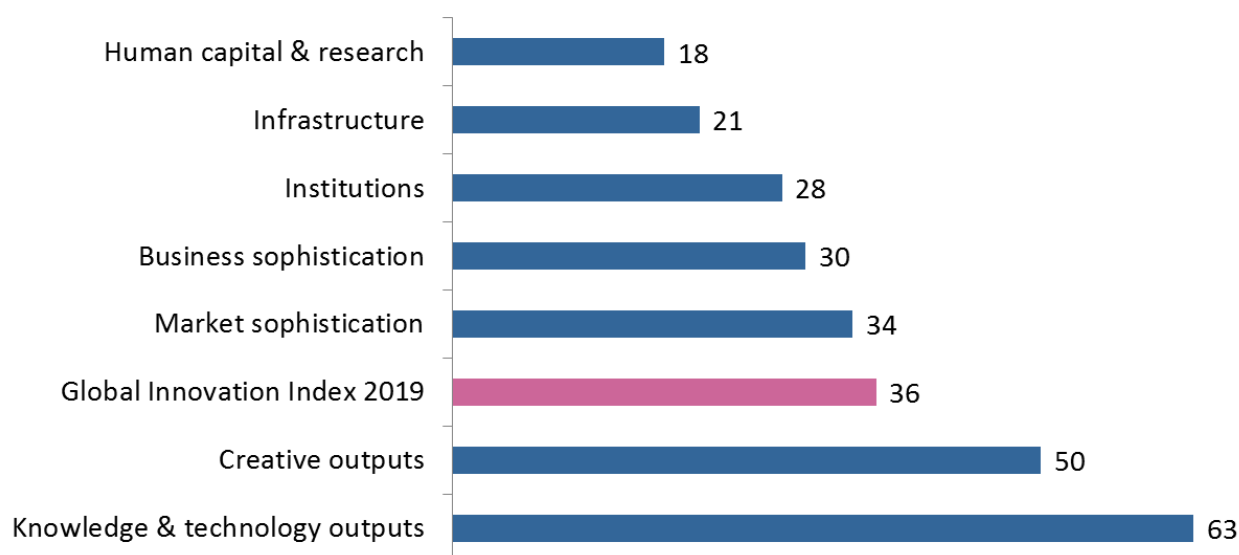
Northern Africa and Western Asia Region

Compared to other economies in the Northern Africa and Western Asia region, the United Arab Emirates performs above average in all of the 7 GII pillars.

Top ranks are found in areas such as Tertiary education, Information & communication technologies (ICTs), General infrastructure, and Creative goods & services, where the country ranks in the top 15 worldwide.

OVERVIEW OF THE UNITED ARAB EMIRATES' RANKINGS IN THE 7 GII AREAS

The United Arab Emirates performs the best in Human capital & research and its weakest performance is in Knowledge & technology outputs.



*The highest possible ranking in each pillar is 1.

THE UNITED ARAB EMIRATES' INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the United Arab Emirates' strengths and weaknesses in the GII 2019.

Strengths

Code	Indicator name	Rank
1.2.3	Cost of redundancy dismissal, salary weeks	1
2.2	Tertiary education	6
2.2.3	Tertiary inbound mobility, %	1
3.1	Information & communication technologies (ICTs)	14
3.1.2	ICT use*	13
3.1.3	Government's online service*	14
3.2	General infrastructure	12
3.2.1	Electricity output, kWh/mn pop	8
3.2.2	Logistics performance*	11
5.1.4	GERD financed by business, %	5
5.2.2	State of cluster development†	10
5.3.5	Research talent, % in business enterprise	8
6.3.4	FDI net outflows, % GDP, 3-year average	13
7.2	Creative goods & services	13
7.2.5	Creative goods exports, % total trade	13

Weaknesses

Code	Indicator name	Rank
2.1.3	School life expectancy, years	72
3.3.1	GDP/unit of energy use	72
4.3.1	Applied tariff rate, weighted mean, %	81
5.1.1	Knowledge-intensive employment, %	79
5.1.5	Females employed w/advanced degrees, %	73
6.1	Knowledge creation	88
6.1.1	Patents by origin/bn PPP\$ GDP	106
6.1.4	Scientific & technical articles/bn PPP\$ GDP	101
6.3.2	High-tech net exports, % total trade	107
7.1.1	Trademarks by origin/bn PPP\$ GDP	107
7.1.2	Industrial designs by origin/bn PPP\$ GDP	108

STRENGTHS

- The United Arab Emirates' strengths are found in six of the seven GII pillars.
- Several of these strengths are in Infrastructure (21). Here sub-pillar Information & communication technologies (ICTs) and indicators ICT use (13) and Government's online service (14) are also strengths. Sub-pillar General infrastructure (12) is another GII strength, along with two of its indicators Electricity output (8) and Logistics performance (11).
- In Institutions (28), the only strength is indicator Cost of redundancy dismissal, where the country ranks 1st globally.
- In Human capital & research (18), GII strengths are sub-pillar Tertiary education (6) and indicator Tertiary inbound mobility, where the United Arab Emirates ranks 1st.
- In Business sophistication (30), indicators R&D financed by business (5), State of cluster development (10), and Research talent (8) are all GII strengths.
- In Knowledge & technology outputs (63), indicator FDI outflows (13) is a relative strength for the United Arab Emirates.
- Sub-pillar Creative goods & services (13) and its indicator Creative goods exports (13) are relative strengths in Creative outputs (50).

WEAKNESSES

- The United Arab Emirates' weaknesses in the GII are found in six of the seven GII pillars.
- Most of the GII weaknesses are concentrated in Knowledge & technology outputs (63), the worst ranked GII pillar for the United Arab Emirates. Here weaknesses are sub-pillar Knowledge creation (88) and indicators Patents by origin (106), Scientific & technical articles (101), and High-tech exports (107).
- In Business sophistication (30), another two relative weaknesses are found in indicators: Knowledge-intensive employment (79) and Females employed with advanced degrees (73).
- In Creative outputs (50), two indicators – Trademarks by origin (107) and Industrial designs by origin (108) – are signaled as GII weaknesses for the United Arab Emirates.
- The other relative weaknesses for this economy are indicators School life expectancy (72) in Human capital & research (18); GDP per unit of energy use (72) in Infrastructure (21); and Applied tariff rate (81) in market sophistication (34).

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2018 rank
58	24	High	NAWA	9.5	732.9	69,381.7	38
INSTITUTIONS 78.8 28				BUSINESS SOPHISTICATION 41.5 30			
1.1	Political environment	80.5	20	5.1	Knowledge workers	40.7	55
1.1.1	Political and operational stability*	80.7	35	5.1.1	Knowledge-intensive employment, %	18.4	79 ○ ◇
1.1.2	Government effectiveness*	80.4	19	5.1.2	Firms offering formal training, % firms	n/a	n/a
1.2	Regulatory environment	84.2	24	5.1.3	GERD performed by business, % GDP	0.7	26
1.2.1	Regulatory quality*	69.1	32	5.1.4	GERD financed by business, %	74.3	5 ● ◆
1.2.2	Rule of law*	67.5	34	5.1.5	Females employed w/advanced degrees, %	8.8	73 ○ ◇
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1 ● ◆	5.2	Innovation linkages	41.9	24
1.3	Business environment	71.9	58	5.2.1	University/industry research collaboration*	55.7	28
1.3.1	Ease of starting a business*	94.1	22	5.2.2	State of cluster development*	69.1	10 ● ◆
1.3.2	Ease of resolving insolvency*	49.7	67	5.2.3	GERD financed by abroad, %	n/a	n/a
HUMAN CAPITAL & RESEARCH 52.4 18				5.2.4	JV-strategic alliance deals/bn PPP\$ GDP	0.1	16
2.1	Education	61.9	[17]	5.2.5	Patent families 2+ offices/bn PPP\$ GDP	0.0	67
2.1.1	Expenditure on education, % GDP	n/a	n/a	5.3	Knowledge absorption	42.0	34
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.1	Intellectual property payments, % total trade	0.7	54
2.1.3	School life expectancy, years	13.6	72 ○ ◇	5.3.2	High-tech imports, % total trade	9.4	38
2.1.4	PISA scales in reading, maths, & science	474.3	37	5.3.3	ICT services imports, % total trade	0.9	74
2.1.5	Pupil-teacher ratio, secondary	9.5	23	5.3.4	FDI net inflows, % GDP	2.6	67
2.2	Tertiary education	57.5	6 ● ◆	5.3.5	Research talent, % in business enterprise	62.2	8 ●
2.2.1	Tertiary enrolment, % gross	n/a	n/a	KNOWLEDGE & TECHNOLOGY OUTPUTS ... 22.2 63			
2.2.2	Graduates in science & engineering, %	22.0	50	6.1	Knowledge creation	6.4	88 ○ ◇
2.2.3	Tertiary inbound mobility, %	48.6	1 ● ◆	6.1.1	Patents by origin/bn PPP\$ GDP	0.1	106 ○
2.3	Research & development (R&D)	37.7	28	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	60
2.3.1	Researchers, FTE/mn pop	2,406.6	35	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP	1.0	36	6.1.4	Scientific & technical articles/bn PPP\$ GDP	3.1	101 ○ ◇
2.3.3	Global R&D companies, avg. exp. top 3, mn US\$	69.7	18	6.1.5	Citable documents H-index	10.5	62
2.3.4	QS university ranking, average score top 3*	31.2	37	6.2	Knowledge impact	34.9	73
INFRASTRUCTURE 59.4 21				6.2.1	Growth rate of PPP\$ GDP/worker, %	1.6	48
3.1	Information & communication technologies (ICTs)	88.7	14 ●	6.2.2	New businesses/th pop. 15-64	2.6	42
3.1.1	ICT access*	84.8	15	6.2.3	Computer software spending, % GDP	0.3	50
3.1.2	ICT use*	81.3	13 ●	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	6.0	52
3.1.3	Government's online service*	94.4	14 ●	6.2.5	High- & medium-high-tech manufactures, %	0.2	57
3.1.4	E-participation*	94.4	17	6.3	Knowledge diffusion	25.2	37
3.2	General infrastructure	52.7	12 ●	6.3.1	Intellectual property receipts, % total trade	1.0	19
3.2.1	Electricity output, kWh/mn pop	13,980.2	8 ●	6.3.2	High-tech net exports, % total trade	0.1	107 ○ ◇
3.2.2	Logistics performance*	88.5	11 ● ◆	6.3.3	ICT services exports, % total trade	1.8	59
3.2.3	Gross capital formation, % GDP	22.5	69	6.3.4	FDI net outflows, % GDP	4.0	13 ●
3.3	Ecological sustainability	36.8	71 ○ ◇	CREATIVE OUTPUTS 31.2 50			
3.3.1	GDP/unit of energy use	8.2	72 ○	7.1	Intangible assets	40.5	66 ○ ◇
3.3.2	Environmental performance*	58.9	67 ○ ◇	7.1.1	Trademarks by origin/bn PPP\$ GDP	8.7	107 ○ ◇
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	2.5	40	7.1.2	Industrial designs by origin/bn PPP\$ GDP	0.1	108 ○
MARKET SOPHISTICATION 56.1 34				7.1.3	ICTs & business model creation*	71.7	29
4.1	Credit	53.5	27	7.1.4	ICTs & organizational model creation*	67.3	24
4.1.1	Ease of getting credit*	70.0	40	7.2	Creative goods & services	35.9	13 ●
4.1.2	Domestic credit to private sector, % GDP	78.8	38	7.2.1	Cultural & creative services exports, % total trade	n/a	n/a
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	7.2.2	National feature films/mn pop. 15-69	10.6	16
4.2	Investment	46.2	53	7.2.3	Entertainment & Media market/th pop. 15-69	19.5	28
4.2.1	Ease of protecting minority investors*	75.0	14 ◆	7.2.4	Printing & other media, % manufacturing	1.5	32
4.2.2	Market capitalization, % GDP	60.4	29	7.2.5	Creative goods exports, % total trade	4.2	13 ● ◆
4.2.3	Venture capital deals/bn PPP\$ GDP	0.0	32	7.3	Online creativity	7.9	57 ○ ◇
4.3	Trade, competition, & market scale	68.6	39	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	10.8	38
4.3.1	Applied tariff rate, weighted avg., %	4.8	81 ○ ◇	7.3.2	Country-code TLDs/th pop. 15-69	7.3	43
4.3.2	Intensity of local competition*	71.0	49	7.3.3	Wikipedia edits/mn pop. 15-69	9.9	63 ○ ◇
4.3.3	Domestic market scale, bn PPP\$	732.9	32	7.3.4	Mobile app creation/bn PPP\$ GDP	6.7	47

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 AND GII MODEL

The following tables list data that are missing or are outdated for the United Arab Emirates.

Two variables that were unavailable last year become available this year: Females employed with advanced degrees and High- and medium-high-tech manufactures. Indicator Cultural and creative services exports, which was available in the GII 2018, becomes unavailable in the GII 2019.

Missing data

Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	n/a	2015	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2015	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	n/a	2017	UNESCO Institute for Statistics
4.1.3	Microfinance gross loans, % GDP	n/a	2017	Microfinance Information Exchange
5.1.2	Firms offering formal training, % firms	n/a	2013	World Bank
5.2.3	GERD financed by abroad, %	n/a	2016	UNESCO Institute for Statistics
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2017	World Intellectual Property Organization
7.2.1	Cultural & creative services exports, % total trade	n/a	2017	World Trade Organization

Outdated data

Code	Indicator name	Country year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	2016	2017	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2016	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
2.3.2	Gross expenditure on R&D, % GDP	2016	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.3	GERD performed by business, % GDP	2016	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.4	GERD financed by business, %	2014	2016	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.3.2	High-tech imports, % total trade	2016	2017	United Nations, COMTRADE
5.3.5	Research talent, % in business enterprise	2016	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
6.3.2	High-tech net exports, % total trade	2016	2017	United Nations, COMTRADE
7.1.2	Industrial designs by origin/bn PPP\$ GDP	2014	2017	World Intellectual Property Organization
7.2.5	Creative goods exports, % total trade	2016	2017	United Nations, COMTRADE
7.3.3	Wikipedia edits/mn pop. 15–69	2014	2017	Wikimedia Foundation
7.3.3	Wikipedia edits/mn pop. 15–69	2014	2017	Wikimedia Foundation

Model changes

The table below provides a summary of the adjustments to the GII 2019 framework.

Changes to the GII 2019 framework

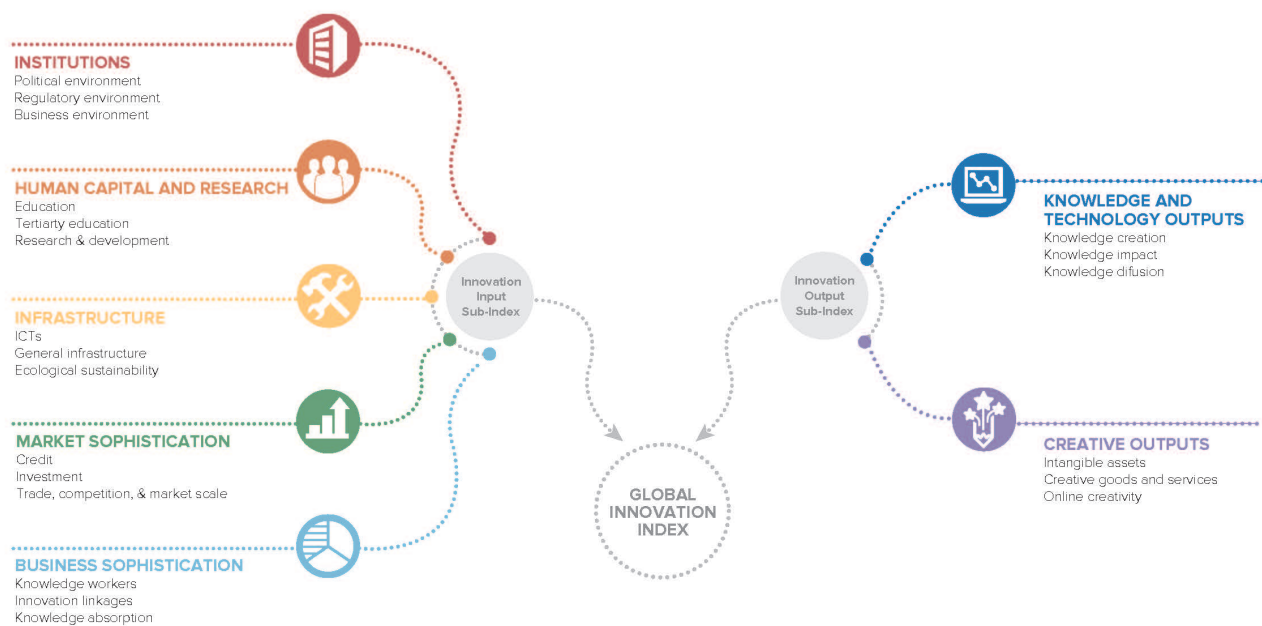
GII 2018	Adjustment	GII 2019
1.1.1	Political stability & safety	1.1.1
3.3.2	Environmental performance	3.3.2
5.3.1	Intellectual property payments, % total trade	5.3.1
5.3.2	High-tech imports, % total trade	5.3.2
6.2.1	Growth rate of PPP\$ GDP/worker, %	6.2.1
6.3.1	Intellectual property receipts, % total trade	6.3.1
7.3.4	Mobile app creation/bn PPP\$ GDP	7.3.4

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 GI presents its 12th edition devoted to the theme Creating Healthy Lives—The Future of Medical Innovation.

Recognizing that innovation is a key driver of economic development, the GI aims to provide a rich innovation ranking and analysis referencing around 130 economies. Over the last decade, the GI has established itself as both a leading reference on innovation and a “tool for action” for countries that incorporate the GI 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 GI has two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index, and seven pillars, each containing three sub-pillars.

