GLOBAL INNOVATION INDEX 2020

UNITED ARAB EMIRATES

34th The United Arab Emirates ranks 34th among the 131 economies featured in the GII 2020.

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 the United Arab Emirates (UAE) 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 the UAE in the GII 2020 is between ranks 33 and 41.

Rankings of the United Arab Emirates (2018–2020)

	GII	Innovation inputs	Innovation outputs
2020	34	22	55
2019	36	24	58
2018	38	24	54

- The UAE performs better in innovation inputs than innovation outputs in 2020.
- This year the UAE ranks 22nd in innovation inputs, higher than last year and higher compared to 2018.
- As for innovation outputs, the UAE ranks 55th. This position is higher than last year and lower compared to 2018.

32nd The UAE ranks 32nd among the 49 high-income group economies.

3rd The UAE ranks 3rd among the 19 economies in Northern Africa and Western Asia.

The UAE makes it into the top 35 this year. It has increased its rank in both the Innovation Input (22) and the Innovation Output (55) sub-indices, thanks to notable improvements in three pillars: Human capital & research (17), Business sophistication (22) and Creative outputs (34). It ranks in the top 30 for each of the five innovation input pillars and continues to lead in metrics related to Tertiary education, Information & communication technologies, General infrastructure, and Creative goods and services. Among the most important improvements are in the following indicators: Graduates in science and engineering (25), Knowledge intensive employment (41), High-tech imports (18) and Research talent in businesses (3).

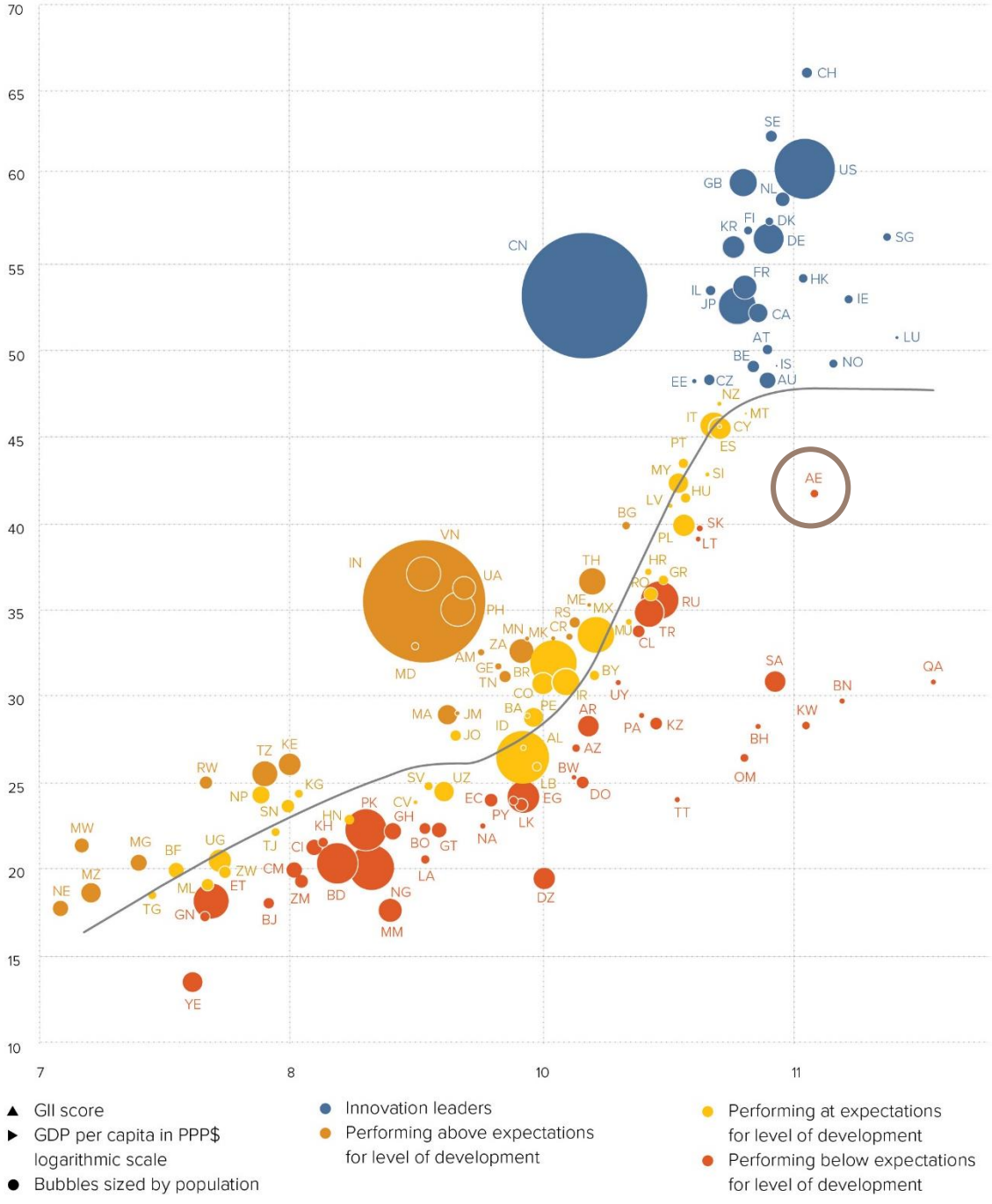
The UAE also ranks 16th in the new GII indicator Global brand value, thanks to its leading brand, the telecoms company Etisalat, as well as the Emirates airline and the Abu Dhabi National Oil Company.

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, the UAE is performing below expectations for its level of development.

The positive relationship between innovation and development

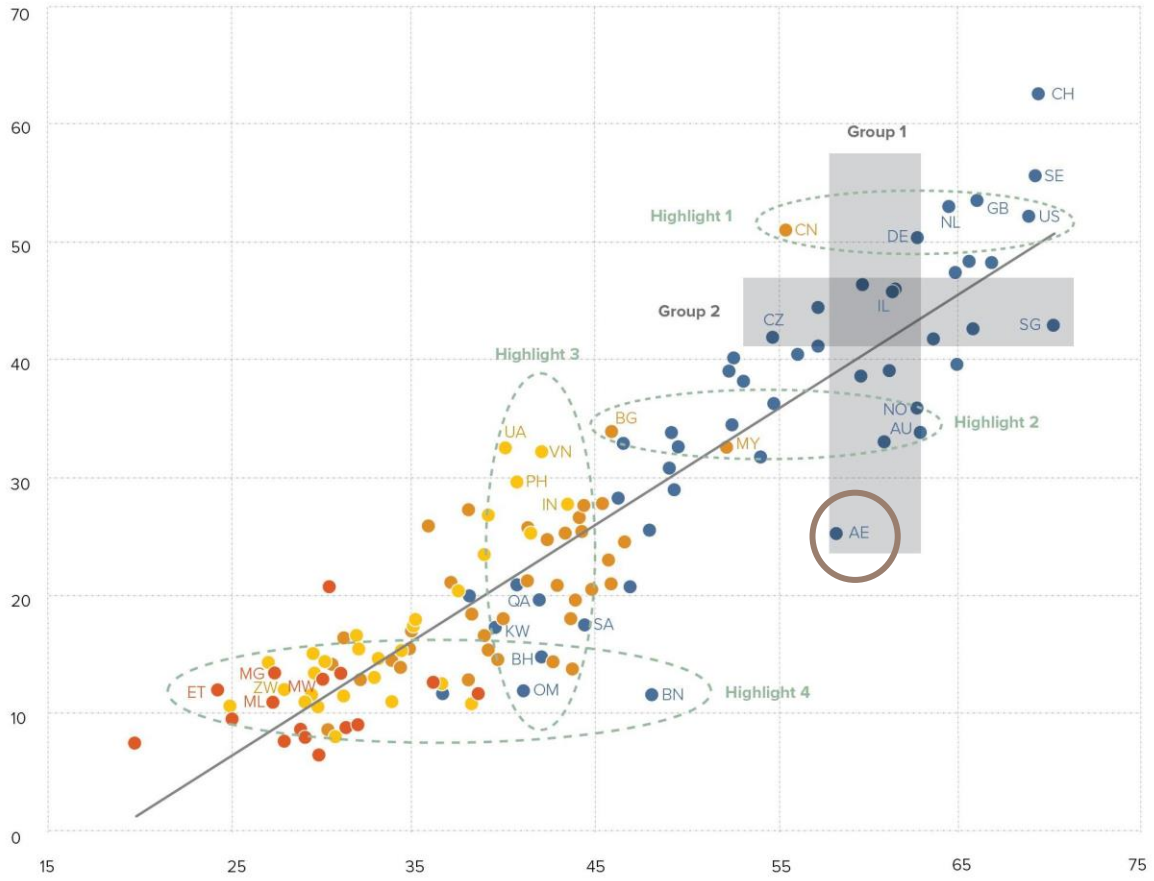


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

The UAE produces less innovation outputs relative to its level of innovation investments.

Innovation input to output performance, 2020



▲ Output score
► Input score

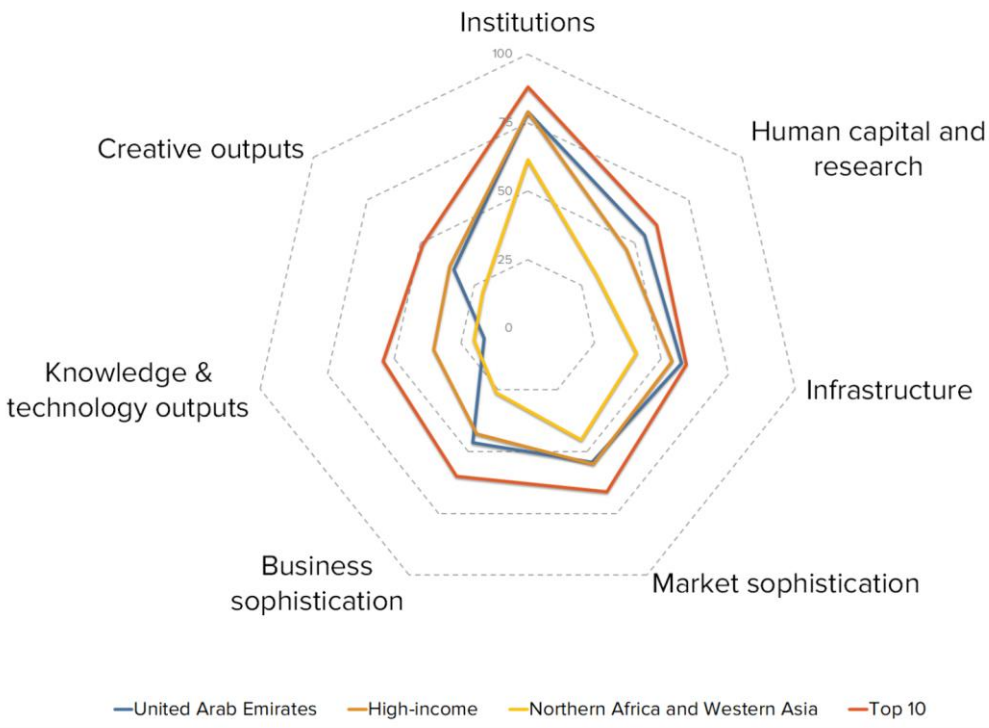
● High income group
● Upper middle-income group
● Lower middle-income group
● Low income group

— Fitted values

AU	Australia	IN	India	NL	Netherlands	CH	Switzerland
BH	Bahrain	IL	Israel	NO	Norway	UA	Ukraine
BN	Brunei Darussalam	KW	Kuwait	OM	Oman	AE	United Arab Emirates
BG	Bulgaria	MG	Madagascar	PH	Philippines	GB	United Kingdom
CN	China	MW	Malawi	QA	Qatar	US	United States of America
CZ	Czech Republic	ML	Mali	SA	Saudi Arabia	VN	Viet Nam
ET	Ethiopia	MY	Malaysia	SG	Singapore	ZW	Zimbabwe
DE	Germany			SE	Sweden		

BENCHMARKING THE UNITED ARAB EMIRATES AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND NORTHERN AFRICA AND WESTERN ASIA

Scores of the United Arab Emirates in the seven GII pillars



High-income group economies

The UAE has high scores in three of the seven GII pillars: Human capital & research, Infrastructure, and Business sophistication, each of which is above average for the high-income group of economies.

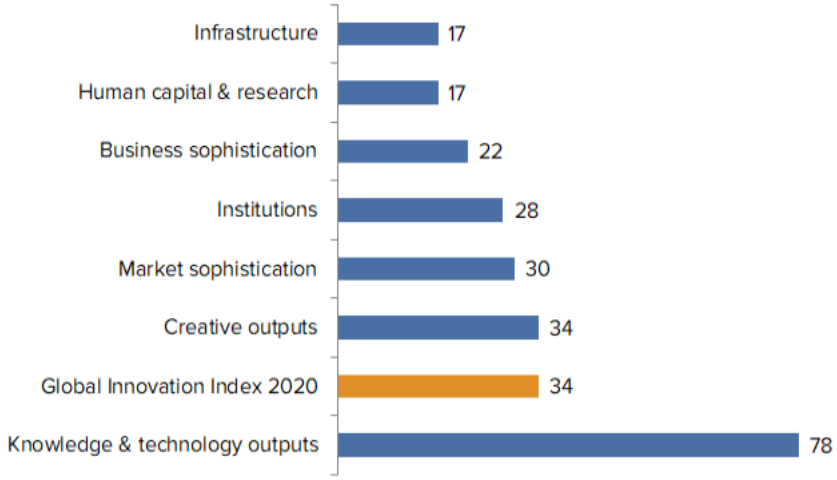
Conversely, the UAE scores below average for its income group in four pillars: Institutions, Market sophistication, Knowledge & technology outputs and Creative outputs.

Northern Africa and Western Asia

Compared to other economies in Northern Africa and Western Asia, the UAE performs above average in all seven GII pillars, with the exception of Knowledge & technology outputs, where it performs below the regional average.

OVERVIEW OF THE UNITED ARAB EMIRATES RANKINGS IN THE SEVEN GII AREAS

The UAE performs best in Infrastructure and Human capital & research and its weakest performance is in Knowledge & technology outputs.



*The highest possible ranking in each pillar is 1.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of the UAE in the GII 2020.

Strengths

Code	Indicator name	Rank
1.2.3	Cost of redundancy dismissal, salary weeks	1
2.2	Tertiary education	2
2.2.3	Tertiary inbound mobility, %	1
3.1	Information & communication technologies (ICTs)	11
3.1.1	ICT access*	13
3.1.2	ICT use*	12
3.1.3	Government's online service*	14
3.2	General infrastructure	5
3.2.1	Electricity output, GWh/mn pop	8
3.2.2	Logistics performance*	11
5.1.4	GERD financed by business, %	5
5.2.2	State of cluster development†	8
5.3.5	Research talent, % in business enterprise	3
7.2	Creative goods and services	2
7.2.5	Creative goods exports, % total trade	8

Weaknesses

Code	Indicator name	Rank
2.1.4	PISA scales in reading, maths & science	47
4.3.1	Applied tariff rate, weighted mean, %	83
5.1.5	Females employed w/advanced degrees, %	78
6	Knowledge & technology outputs	78
6.1	Knowledge creation	104
6.1.1	Patents by origin/bn PPP$ GDP	112
6.1.3	Utility models by origin/bn PPP$ GDP	71
6.1.4	Scientific & technical articles/bn PPP$ GDP	97
6.2.1	Growth rate of PPP$ GDP/worker, %	70
6.3.2	High-tech net exports, % total trade	100
7.1.1	Trademarks by origin/bn PPP$ GDP	113
7.1.3	Industrial designs by origin/bn PPP$ GDP	107

NOTES: * indicates an index; † indicates a survey question. Strengths and weaknesses are listed for pillars and/or sub-pillars where the data minimum coverage (DMC) requirements were not met. For the sake of caution, these ranks are shown in square brackets [ ] in the country profile. This is to ensure that incomplete data coverage does not lead to erroneous conclusions being made about strengths or weaknesses, in particular about strong or weak sub-pillar rankings.

STRENGTHS

GII strengths for the UAE are found in five of the seven GII pillars.

- Institutions (28): exhibits strength in the indicator Cost of redundancy dismissal (1).
- Human capital & research (17): shows strength in the sub-pillar Tertiary education (2), and in the indicator Tertiary inbound mobility (1).
- Infrastructure (17): demonstrates strengths in the sub-pillars Information & communication technologies (ICTs) (11) and General infrastructure (5), and also in the indicators ICT access (13), ICT use (12), Government's online service (14), Electricity output (8) and Logistics performance (11).
- Business sophistication (22): exhibits strengths in the indicators GERD financed by business (5), State of cluster development (8) and Research talent in business enterprise (3).
- Creative outputs (34): has strengths in the sub-pillar Creative goods and services (2) and in the indicator Creative goods exports (8).

WEAKNESSES

GII weaknesses for the UAE are found in five of the seven GII pillars.

- Human capital & research (17): has weaknesses in the indicator PISA scales in reading, mathematics & science (47).
- Market sophistication (30): shows weakness in the indicator Applied tariff rate (83).
- Business sophistication (22): the indicator Females employed with advanced degrees (78) is a weakness.
- Knowledge & technology outputs (78): exhibits weaknesses in the sub-pillar Knowledge creation (104) and in the indicators Patents (112), Utility models (71), Scientific & technical articles (97), Productivity growth (70) and High-tech net exports (100).
- Creative outputs (34): the indicators Trademarks (113) and Industrial designs (107) are weaknesses.

UNITED ARAB EMIRATES

GII 2020 rank

34

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2019 rank
55	22	High	NAWA	9.8	746.4	60,618.6	36

		Score/Value	Rank	
INSTITUTIONS		**78.8**	**28**	
1.1	**Political environment**	**80.9**	**21**	
1.1.1	Political and operational stability*	78.6	38	
1.1.2	Government effectiveness*	82.1	19	
1.2	**Regulatory environment**	**83.5**	**22**	
1.2.1	Regulatory quality*	66.4	34	
1.2.2	Rule of law*	67.7	33	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	● ◆
1.3	**Business environment**	**72.0**	**61**	
1.3.1	Ease of starting a business*	94.8	16	
1.3.2	Ease of resolving insolvency*	49.3	72	
HUMAN CAPITAL & RESEARCH		**54.6**	**17**	
2.1	**Education**	**58.6**	**[17]**	
2.1.1	Expenditure on education, % GDP	n/a	n/a	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	14.3	64	◇
2.1.4	PISA scales in reading, maths, & science	433.5	47	○
2.1.5	Pupil-teacher ratio, secondary	9.5	27	
2.2	**Tertiary education**	**66.4**	**2**	● ◆
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	27.7	25	
2.2.3	Tertiary inbound mobility, %	48.6	1	● ◆
2.3	**Research & development (R&D)**	**38.7**	**28**	
2.3.1	Researchers, FTE/mn pop	2,378.9	36	
2.3.2	Gross expenditure on R&D, % GDP	1.3	29	
2.3.3	Global R&D companies, avg. exp. top 3, mn $US	67.6	18	
2.3.4	QS university ranking, average score top 3*	32.8	36	
INFRASTRUCTURE		**57.5**	**17**	
3.1	**Information & communication technologies (ICTs)**	**89.5**	**11**	●
3.1.1	ICT access*	85.5	13	●
3.1.2	ICT use*	83.6	12	●
3.1.3	Government's online service*	94.4	14	●
3.1.4	E-participation*	94.4	17	
3.2	**General infrastructure**	**50.1**	**5**	● ◆
3.2.1	Electricity output, kWh/mn pop	14,314.2	8	●
3.2.2	Logistics performance*	88.5	11	● ◆
3.2.3	Gross capital formation, % GDP	28.7	30	
3.3	**Ecological sustainability**	**32.9**	**53**	
3.3.1	GDP/unit of energy use	9.2	66	
3.3.2	Environmental performance*	55.6	40	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.1	39	
MARKET SOPHISTICATION		**54.2**	**30**	
4.1	**Credit**	**52.1**	**27**	
4.1.1	Ease of getting credit*	70.0	44	
4.1.2	Domestic credit to private sector, % GDP	78.7	36	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**42.0**	**45**	
4.2.1	Ease of protecting minority investors*	80.0	13	◆
4.2.2	Market capitalization, % GDP	60.7	26	
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	25	
4.3	**Trade, competition, and market scale**	**68.5**	**39**	
4.3.1	Applied tariff rate, weighted avg., %	4.4	83	○ ◇
4.3.2	Intensity of local competition+	71.0	49	
4.3.3	Domestic market scale, bn PPP$	746.4	33	

		Score/Value	Rank	
BUSINESS SOPHISTICATION		**46.3**	**22**	
5.1	**Knowledge workers**	**50.4**	**27**	
5.1.1	Knowledge-intensive employment, %	32.6	41	
5.1.2	Firms offering formal training, %	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.8	26	
5.1.4	GERD financed by business, %	74.3	5	● ◆
5.1.5	Females employed w/advanced degrees, %	8.6	78	○ ◇
5.2	**Innovation linkages**	**39.9**	**26**	
5.2.1	University/industry research collaboration+	59.9	22	
5.2.2	State of cluster development+	69.5	8	● ◆
5.2.3	GERD financed by abroad, % GDP	n/a	n/a	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.1	18	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	62	
5.3	**Knowledge absorption**	**48.7**	**16**	
5.3.1	Intellectual property payments, % total trade	0.8	54	
5.3.2	High-tech imports, % total trade	13.2	18	
5.3.3	ICT services imports, % total trade	1.0	72	
5.3.4	FDI net inflows, % GDP	2.6	65	
5.3.5	Research talent, % in business enterprise	77.9	3	● ◆
KNOWLEDGE & TECHNOLOGY OUTPUTS		**16.2**	**78**	○ ◇
6.1	**Knowledge creation**	**5.6**	**104**	○ ◇
6.1.1	Patents by origin/bn PPP$ GDP	0.1	112	○
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	55	◇
6.1.3	Utility models by origin/bn PPP$ GDP	0.0	71	○ ◇
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.9	97	○ ◇
6.1.5	Citable documents H-index	12.2	61	
6.2	**Knowledge impact**	**21.9**	**72**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.7	70	○
6.2.2	New businesses/th pop. 15-64	3.0	48	
6.2.3	Computer software spending, % GDP	0.0	49	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4.6	57	
6.2.5	High- and medium-high-tech manufacturing, %	18.5	58	
6.3	**Knowledge diffusion**	**21.1**	**71**	
6.3.1	Intellectual property receipts, % total trade	1.0	19	
6.3.2	High-tech net exports, % total trade	0.2	100	○ ◇
6.3.3	ICT services exports, % total trade	1.9	56	
6.3.4	FDI net outflows, % GDP	2.6	26	
CREATIVE OUTPUTS		**34.4**	**34**	
7.1	**Intangible assets**	**33.1**	**42**	
7.1.1	Trademarks by origin/bn PPP$ GDP	6.5	113	○ ◇
7.1.2	Global brand value, top 5,000, % GDP	128.9	16	
7.1.3	Industrial designs by origin/bn PPP$ GDP	0.1	107	○
7.1.4	ICTs & organizational model creation+	67.3	24	
7.2	**Creative goods and services**	**53.8**	**2**	● ◆
7.2.1	Cultural & creative services exports, % total trade	n/a	n/a	
7.2.2	National feature films/mn pop. 15-69	10.6	18	
7.2.3	Entertainment & Media market/th pop. 15-69	24.9	27	
7.2.4	Printing and other media, % manufacturing	1.6	26	
7.2.5	Creative goods exports, % total trade	7.0	8	● ◆
7.3	**Online creativity**	**17.5**	**61**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	10.6	38	
7.3.2	Country-code TLDs/th pop. 15-69	7.8	44	
7.3.3	Wikipedia edits/mn pop. 15-69	47.9	64	◇
7.3.4	Mobile app creation/bn PPP$ GDP	6.4	51	

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 either missing or outdated for the United Arab Emirates.

Missing data

Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	n/a	2018	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2016	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	2018	Microfinance Information Exchange
5.1.2	Firms offering formal training, %	n/a	2018	World Bank
5.2.3	GERD financed by abroad, % GDP	n/a	2017	UNESCO Institute for Statistics
7.2.1	Cultural & creative services exports, % total trade	n/a	2018	World Trade Organization

Outdated data

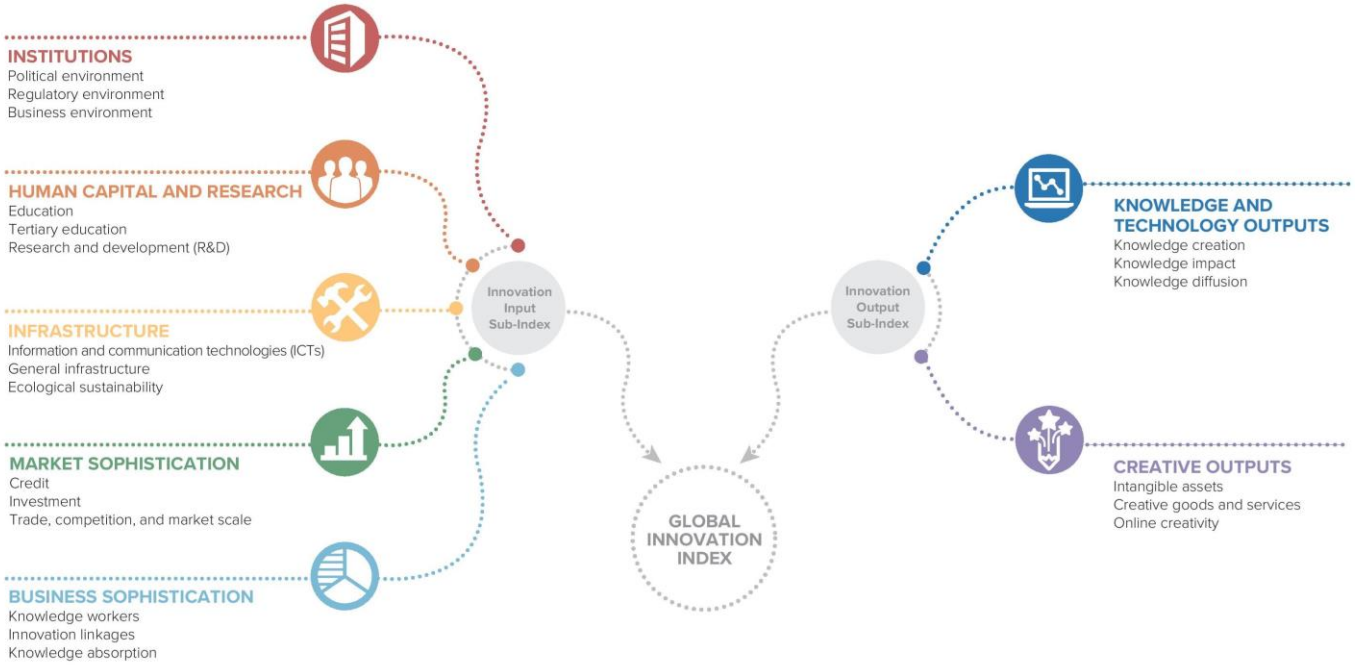
Code	Indicator name	Country year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	2016	2018	UNESCO Institute for Statistics
2.2.3	Tertiary inbound mobility, %	2016	2017	UNESCO Institute for Statistics
5.1.4	GERD financed by business, %	2014	2017	UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators
7.1.3	Industrial designs by origin/bn PPP$ GDP	2014	2018	World Intellectual Property Organization

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 2020, the GII presents its 13th edition devoted to the theme *Who Will Finance Innovation?*

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.

Framework of the Global Innovation Index 2020



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.