Global Innovation Index 2022

UNITED ARAB EMIRATES

31st The United Arab Emirates ranks 31st 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 the United Arab Emirates 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 United Arab Emirates in the GII 2022 is between ranks 30 and 36.

Rankings for the United Arab Emirates (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	34	22	55
2021	33	23	47
2022	31	18	52

- The United Arab Emirates performs better in innovation inputs than innovation outputs in 2022.
- This year the United Arab Emirates ranks 18th in innovation inputs, higher than both 2021 and 2020.
- As for innovation outputs, the United Arab Emirates ranks 52nd. This position is lower than last year but higher than 2020.

30th The United Arab Emirates ranks 30th among the 48 high-income group economies.

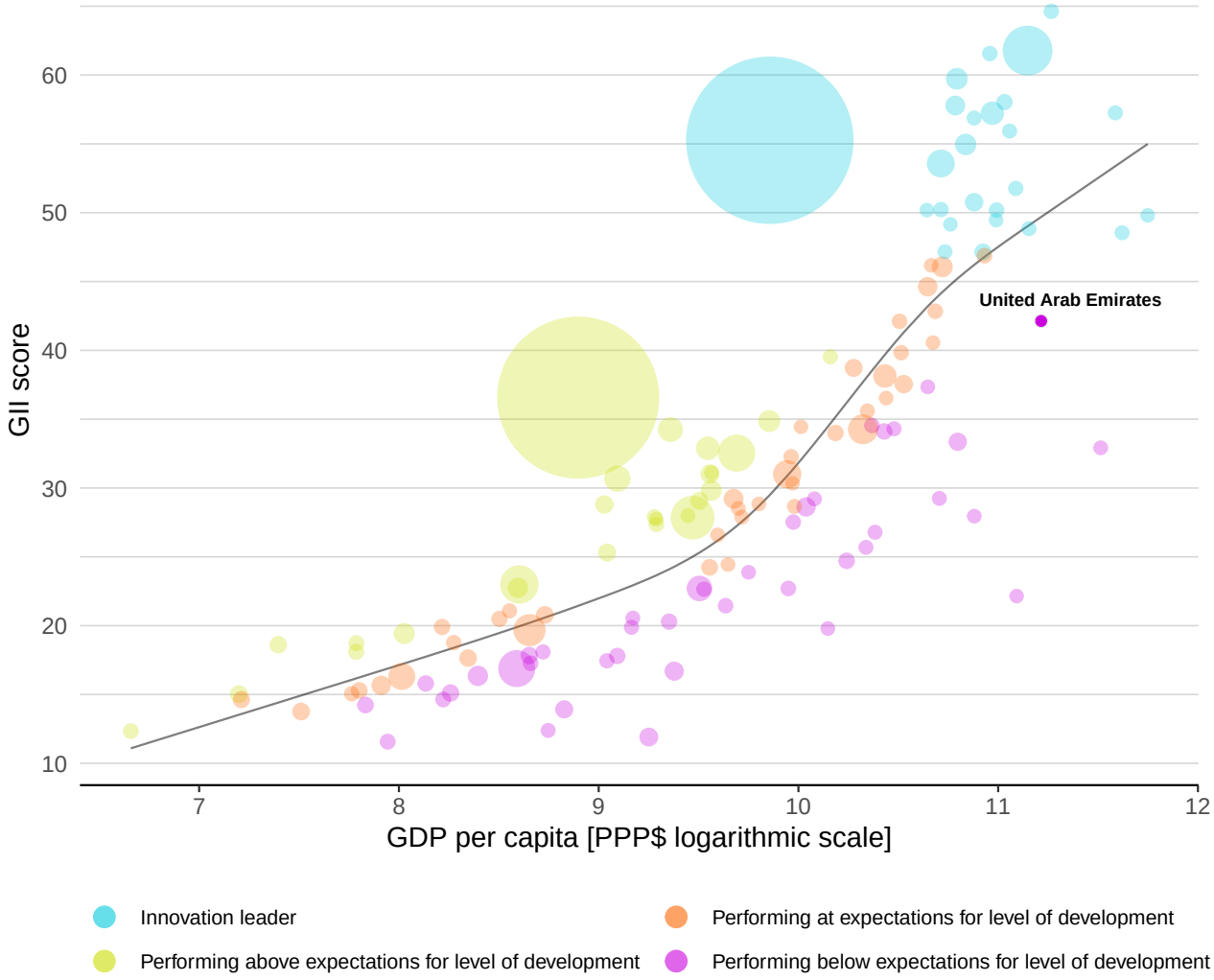
3rd The United Arab Emirates ranks 3rd among the 19 economies in Northern Africa and Western Asia.

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 United Arab Emirates's performance is below expectations for its level of development.

The positive relationship between innovation and development

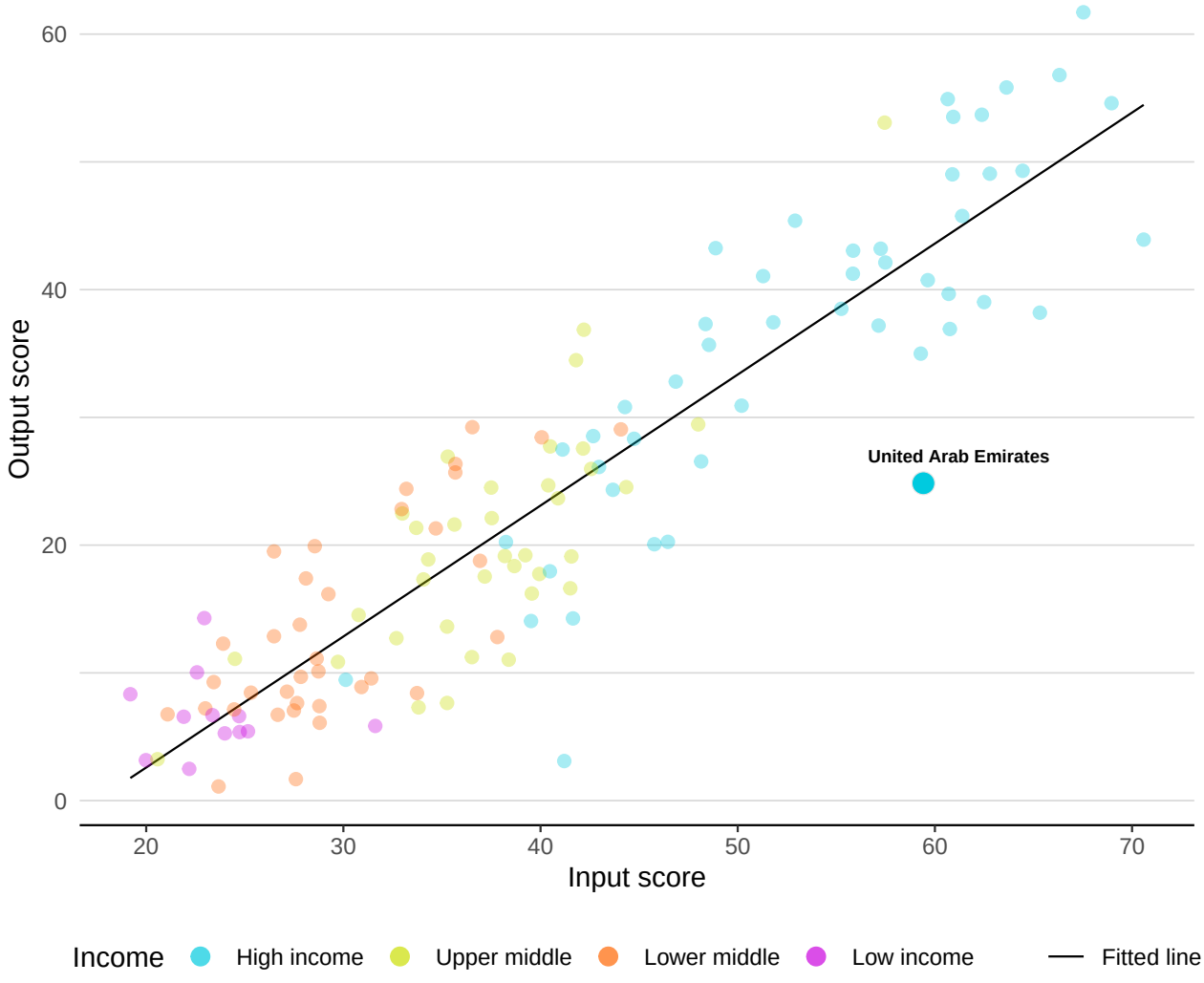


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

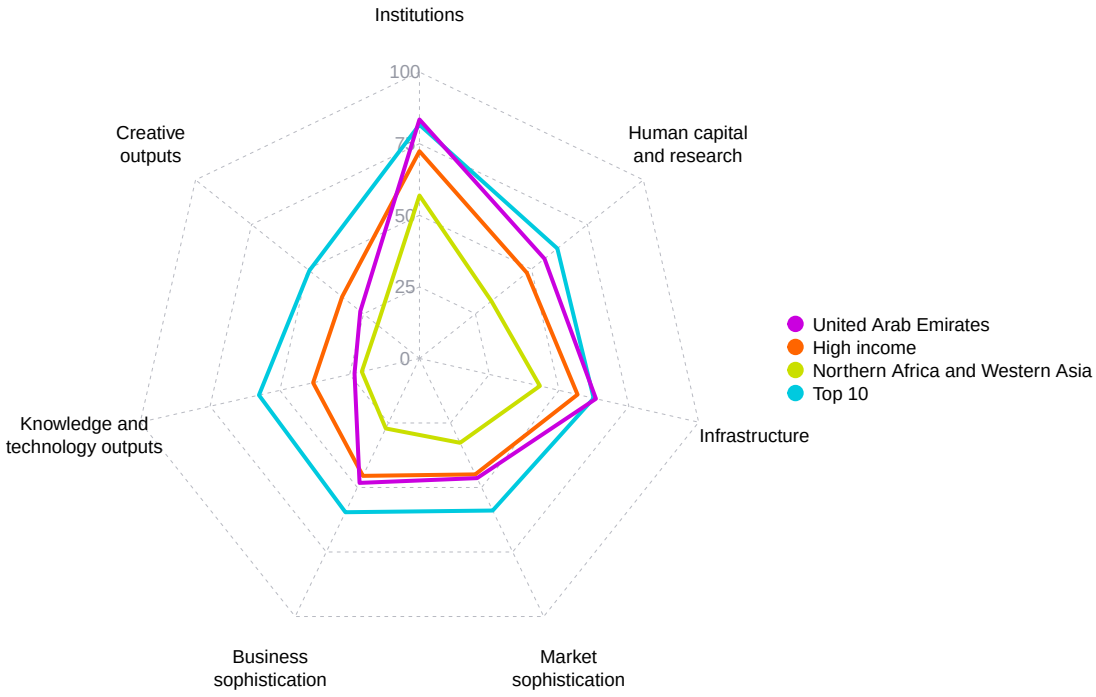
The United Arab Emirates produces less innovation outputs relative to its level of innovation investments.

Innovation input to output performance



BENCHMARKING AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND NORTHERN AFRICA AND WESTERN ASIA

The seven GII pillar scores for the United Arab Emirates



High-income group economies

The United Arab Emirates performs above the high-income group average in five pillars, namely: Institutions; Human capital and research; Infrastructure; Market sophistication; and, Business sophistication.

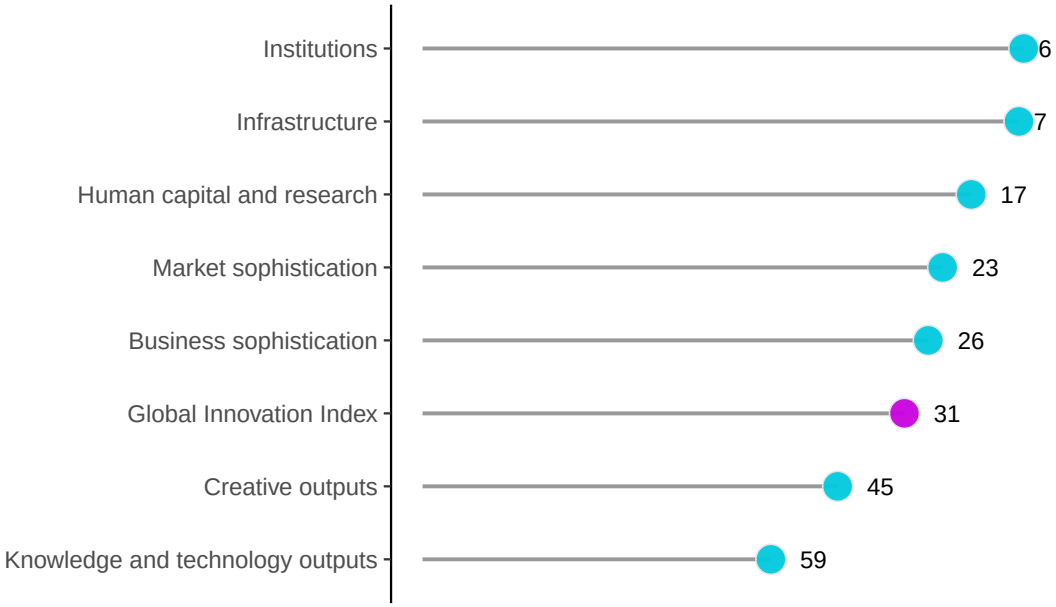
Northern Africa and Western Asia

The United Arab Emirates performs above the regional average in all GII pillars.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

The United Arab Emirates performs best in Institutions and its weakest performance is in Knowledge and technology outputs.

The seven GII pillar ranks for the United Arab Emirates



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

The full WIPO Intellectual Property Statistics profile for the United Arab Emirates can be found at:

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

INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths and weaknesses for the United Arab Emirates

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
1.2.3	Cost of redundancy dismissal	1	2.1.1	Expenditure on education, % GDP	84
1.3.1	Policies for doing business	6	5.1.5	Females employed w/advanced degrees, %	80
1.3.2	Entrepreneurship policies and culture	1	6.1.1	Patents by origin/bn PPP$ GDP	113
2.2.3	Tertiary inbound mobility, %	1	6.1.3	Utility models by origin/bn PPP$ GDP	76
3.1.1	ICT access	3	6.1.4	Scientific and technical articles/bn PPP$ GDP	88
3.2.1	Electricity output, GWh/mn pop.	8	6.2.1	Labor productivity growth, %	71
3.2.2	Logistics performance	11	6.3.2	Production and export complexity	80
5.1.4	GERD financed by business, %	5	7.1.2	Trademarks by origin/bn PPP$ GDP	110
5.2.2	State of cluster development and depth	5	7.1.4	Industrial designs by origin/bn PPP$ GDP	115
5.3.5	Research talent, % in businesses	2	7.2.2	National feature films/mn pop. 15–69	63
7.2.5	Creative goods exports, % total trade	11			

GII 2022 rank

United Arab Emirates

31

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
52	18	High	NAWA	10.0	699.4	74,245

		Score/ Value	Rank
Institutions		**83.5**	**6** ● ◆
1.1	**Political environment**	75.5	33
1.1.1	Political and operational stability*	72.7	46
1.1.2	Government effectiveness*	78.3	22
1.2	**Regulatory environment**	85.5	18
1.2.1	Regulatory quality*	72.0	30
1.2.2	Rule of law*	69.9	34
1.2.3	Cost of redundancy dismissal	8.0	1 ● ◆
1.3	**Business environment**	89.4	1 ● ◆
1.3.1	Policies for doing business†	78.8	6 ● ◆
1.3.2	Entrepreneurship policies and culture*	100.0	1 ● ◆
Human capital and research		**55.8**	**17**
2.1	**Education**	54.8	57
2.1.1	Expenditure on education, % GDP	3.9	84 ○
2.1.2	Government funding/pupil, secondary, % GDP/cap	26.6	17
2.1.3	School life expectancy, years	15.7	42
2.1.4	PISA scales in reading, maths and science	433.5	47 ◇
2.1.5	Pupil-teacher ratio, secondary	9.6	25
2.2	**Tertiary education**	71.5	1 ● ◆
2.2.1	Tertiary enrolment, % gross	53.7	60
2.2.2	Graduates in science and engineering, %	33.1	13 ◆
2.2.3	Tertiary inbound mobility, %	73.0	1 ● ◆
2.3	**Research and development (R&D)**	41.2	25
2.3.1	Researchers, FTE/mn pop.	2,442.5	34
2.3.2	Gross expenditure on R&D, % GDP	1.4	28
2.3.3	Global corporate R&D investors, top 3, mn USD	59.6	23
2.3.4	QS university ranking, top 3*	36.8	33
Infrastructure		**63.2**	**7** ● ◆
3.1	**Information and communication technologies (ICTs)**	90.2	13
3.1.1	ICT access*	98.2	3 ● ◆
3.1.2	ICT use*	78.7	25
3.1.3	Government's online service*	90.0	15
3.1.4	E-participation*	94.0	16
3.2	**General infrastructure**	64.6	4 ● ◆
3.2.1	Electricity output, GWh/mn pop.	14,170.9	8 ● ◆
3.2.2	Logistics performance*	88.8	11 ● ◆
3.2.3	Gross capital formation, % GDP	25.4	52
3.3	**Ecological sustainability**	34.8	42
3.3.1	GDP/unit of energy use	12.4	43
3.3.2	Environmental performance*	52.4	34
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.0	29
Market sophistication		**46.4**	**23**
4.1	**Credit**	40.8	27
4.1.1	Finance for startups and scaleups*	48.9	16
4.1.2	Domestic credit to private sector, % GDP	88.4	34
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a
4.2	**Investment**	35.8	20
4.2.1	Market capitalization, % GDP	65.4	28
4.2.2	Venture capital investors, deals/bn PPP$ GDP	0.2	19
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	0.1	18
4.2.4	Venture capital received, value, % GDP	0.0	11
4.3	**Trade, diversification, and market scale**	62.5	41
4.3.1	Applied tariff rate, weighted avg., %	3.3	75
4.3.2	Domestic industry diversification	93.2	32
4.3.3	Domestic market scale, bn PPP$	699.4	33

		Score/ Value	Rank
Business sophistication		**48.2**	**26**
5.1	**Knowledge workers**	50.2	29
5.1.1	Knowledge-intensive employment, %	41.7	27
5.1.2	Firms offering formal training, %	n/a	n/a
5.1.3	GERD performed by business, % GDP	0.8	31
5.1.4	GERD financed by business, %	74.3	5 ● ◆
5.1.5	Females employed w/advanced degrees, %	8.6	80 ○ ◇
5.2	**Innovation linkages**	47.8	19
5.2.1	University-industry R&D collaboration†	63.1	17
5.2.2	State of cluster development and depth†	69.9	5 ● ◆
5.2.3	GERD financed by abroad, % GDP	n/a	n/a
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.2	14
5.2.5	Patent families/bn PPP$ GDP	0.1	57 ◇
5.3	**Knowledge absorption**	46.6	22
5.3.1	Intellectual property payments, % total trade	0.7	56
5.3.2	High-tech imports, % total trade	13.9	17
5.3.3	ICT services imports, % total trade	1.4	66
5.3.4	FDI net inflows, % GDP	4.1	24
5.3.5	Research talent, % in businesses	77.9	2 ● ◆
Knowledge and technology outputs		**23.3**	**59** ◇
6.1	**Knowledge creation**	6.2	97 ○ ◇
6.1.1	Patents by origin/bn PPP$ GDP	0.1	113 ○
6.1.2	PCT patents by origin/bn PPP$ GDP	0.2	55
6.1.3	Utility models by origin/bn PPP$ GDP	0.0	76 ○ ◇
6.1.4	Scientific and technical articles/bn PPP$ GDP	10.0	88 ○ ◇
6.1.5	Citable documents H-index	13.2	59
6.2	**Knowledge impact**	27.1	67
6.2.1	Labor productivity growth, %	0.7	71 ○
6.2.2	New businesses/th pop. 15–64	2.3	53
6.2.3	Software spending, % GDP	0.3	44
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.8	49
6.2.5	High-tech manufacturing, %	26.4	47
6.3	**Knowledge diffusion**	36.4	40
6.3.1	Intellectual property receipts, % total trade	1.0	21
6.3.2	Production and export complexity	31.4	80 ○ ◇
6.3.3	High-tech exports, % total trade	10.9	16
6.3.4	ICT services exports, % total trade	2.6	51
Creative outputs		**26.4**	**45**
7.1	**Intangible assets**	33.5	54
7.1.1	Intangible asset intensity, top 15, %	63.9	34
7.1.2	Trademarks by origin/bn PPP$ GDP	9.7	110 ○ ◇
7.1.3	Global brand value, top 5,000, % GDP	131.5	12
7.1.4	Industrial designs by origin/bn PPP$ GDP	0.1	115 ○ ◇
7.2	**Creative goods and services**	30.3	30
7.2.1	Cultural and creative services exports, % total trade	n/a	n/a
7.2.2	National feature films/mn pop. 15–69	0.8	63 ○ ◇
7.2.3	Entertainment and media market/th pop. 15–69	23.3	26
7.2.4	Printing and other media, % manufacturing	1.3	31
7.2.5	Creative goods exports, % total trade	5.2	11 ● ◆
7.3	**Online creativity**	8.4	50 ◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	11.2	38
7.3.2	Country-code TLDs/th pop. 15–69	7.5	44
7.3.3	GitHub commit pushes received/mn pop. 15–69	5.1	57 ◇
7.3.4	Mobile app creation/bn PPP$ GDP	9.8	41

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 the United Arab Emirates.

Missing data for the United Arab Emirates

Code	Indicator name	Economy year	Model year	Source
4.1.3	Loans from microfinance institutions, % GDP	n/a	2020	International Monetary Fund, Financial Access Survey (FAS)
5.1.2	Firms offering formal training, %	n/a	2019	World Bank Enterprise Surveys
5.2.3	GERD financed by abroad, % GDP	n/a	2019	UNESCO Institute for Statistics
7.2.1	Cultural and creative services exports, % total trade	n/a	2020	World Trade Organization and United Nations Conference on Trade and Development

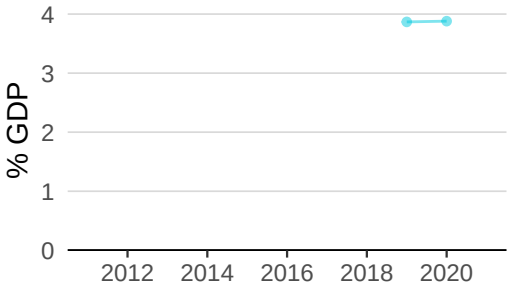
Outdated data for the United Arab Emirates

Code	Indicator name	Economy year	Model year	Source
3.2.1	Electricity output, GWh/mn pop.	2019	2020	International Energy Agency
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, %	2014	2019	UNESCO Institute for Statistics
5.1.5	Females employed w/advanced degrees, %	2018	2021	International Labour Organization
5.3.5	Research talent, % in businesses	2018	2020	UNESCO Institute for Statistics

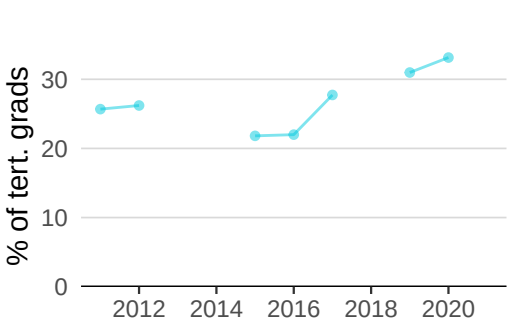
INNOVATION SYSTEM FOR THE UNITED ARAB EMIRATES

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

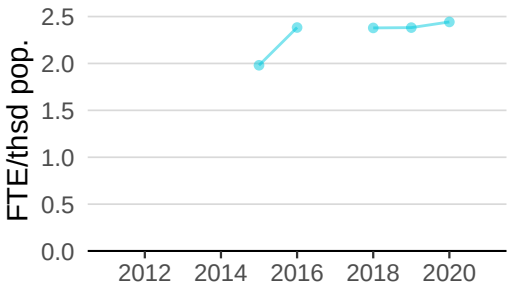
Innovation inputs



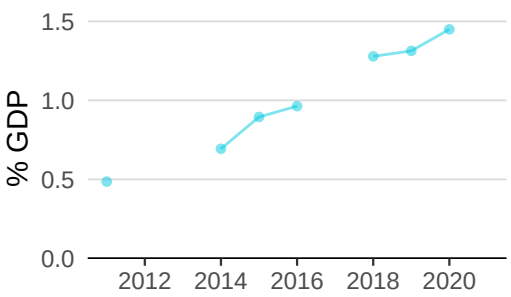
2.1.1 Expenditure on education was equal to 3.9% GDP in 2020–effectively unchanged from the year prior–and equivalent to an indicator rank of 84.



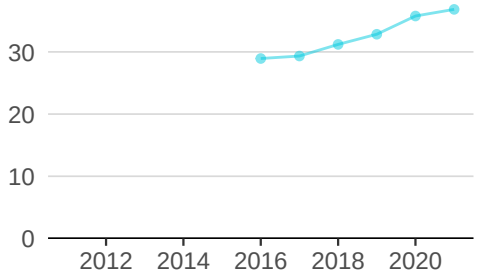
2.2.2 Graduates in science and engineering was equal to 33.1% of tert. grads in 2020–up by 7 percentage points from the year prior–and equivalent to an indicator rank of 13.



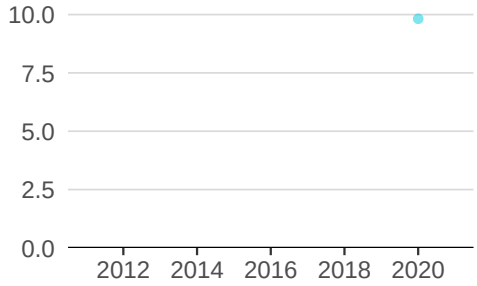
2.3.1 Researchers was equal to 2.4 FTE/thsd pop. in 2020–up by 3 percentage points from the year prior–and equivalent to an indicator rank of 34.



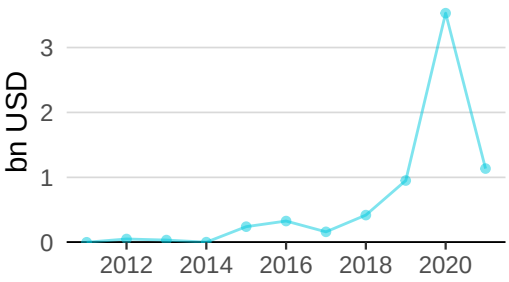
2.3.2 Gross expenditure on R&D was equal to 1.4% GDP in 2020–up by 10 percentage points from the year prior–and equivalent to an indicator rank of 28.



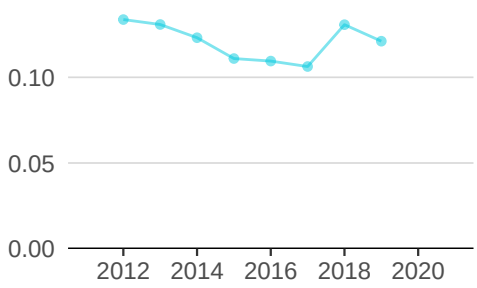
2.3.4 QS university ranking was equal to 36.8 in 2021–up by 3 percentage points from the year prior–and equivalent to an indicator rank of 33.



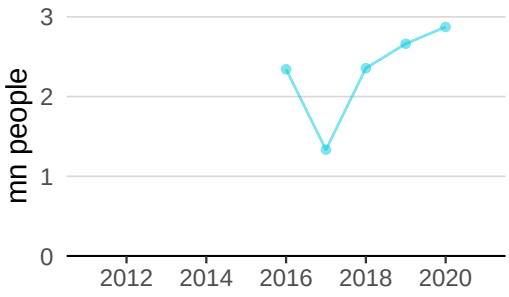
3.1.1 ICT access was equal to 9.8 in 2020 and equivalent to an indicator rank of 3.



4.2.4 Venture capital received was equal to 1.1 bn USD in 2021–down by 68 percentage points from the year prior–and equivalent to an indicator rank of 11.

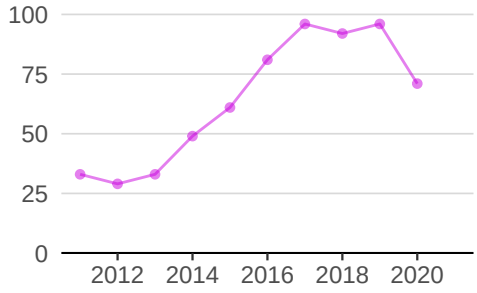


4.3.2 Domestic industry diversification was equal to 0.1 in 2019–down by 7 percentage points from the year prior–and equivalent to an indicator rank of 32.

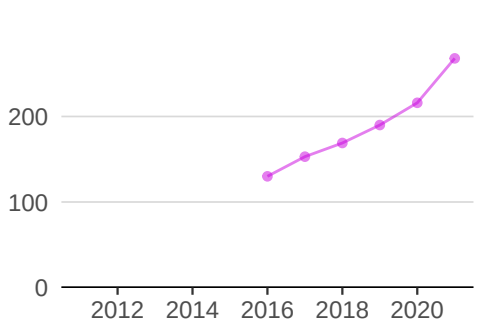


5.1.1 Knowledge-intensive employment was equal to 2.9 mn people in 2020–up by 8 percentage points from the year prior–and equivalent to an indicator rank of 27.

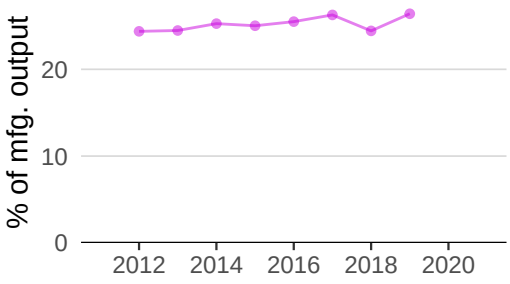
Innovation outputs



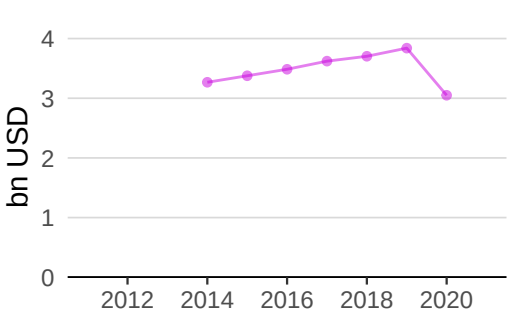
6.1.1 Patents by origin was equal to 71.0 in 2020–down by 26 percentage points from the year prior–and equivalent to an indicator rank of 113.



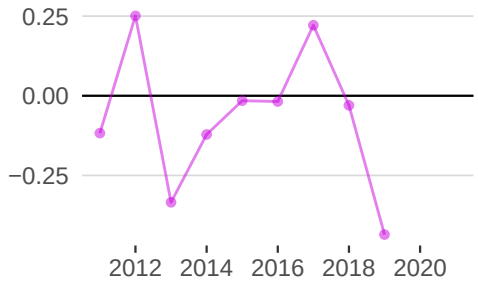
6.1.5 Citable documents H-index was equal to 268.0 in 2021–up by 24 percentage points from the year prior–and equivalent to an indicator rank of 59.



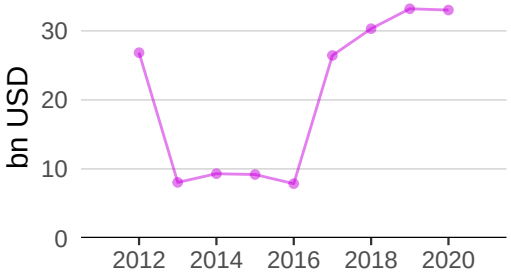
6.2.5 High-tech manufacturing was equal to 26.4% of mfg. output in 2019–up by 8 percentage points from the year prior–and equivalent to an indicator rank of 47.



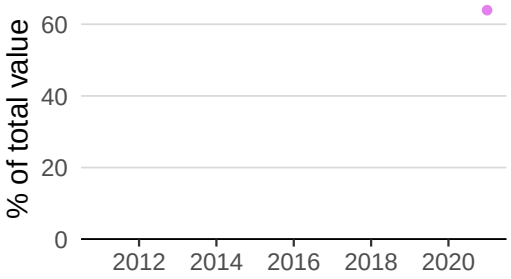
6.3.1 Intellectual property receipts was equal to 3.0 bn USD in 2020–down by 21 percentage points from the year prior–and equivalent to an indicator rank of 21.



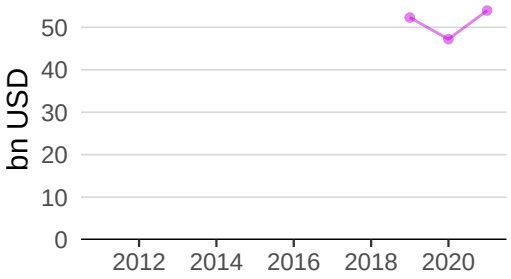
6.3.2 Production and export complexity was equal to -0.4 in 2019–down by 1353 percentage points from the year prior–and equivalent to an indicator rank of 80.



6.3.3 High-tech exports was equal to 33.0 bn USD in 2020–down by 1 percentage point from the year prior–and equivalent to an indicator rank of 16.



7.1.1 Intangible asset intensity was equal to 63.9% of total value in 2021 and equivalent to an indicator rank of 34.



7.1.3 Global brand value was equal to 53.9 bn USD in 2021–up by 14 percentage points from the year prior–and equivalent to an indicator rank of 12.

INNOVATION TOP PERFORMERS FOR THE UNITED ARAB EMIRATES

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank

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
KHALIFA UNIVERSITY	46.0	183=
UNITED ARAB EMIRATES UNIVERSITY	35.4	288=
AMERICAN UNIVERSITY OF SHARJAH	29.1	383=

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
ALPHA DHABI	1
EMIRATES TELECOM GROUP	2
ABU DHABI NATIONAL ENERGY	3

Source: Brand Finance (https://brandirectory.com/reports/gift-2021).
Note: Brand Finance only provides within economy ranks.

7.1.3 Global brand value, top 5,000

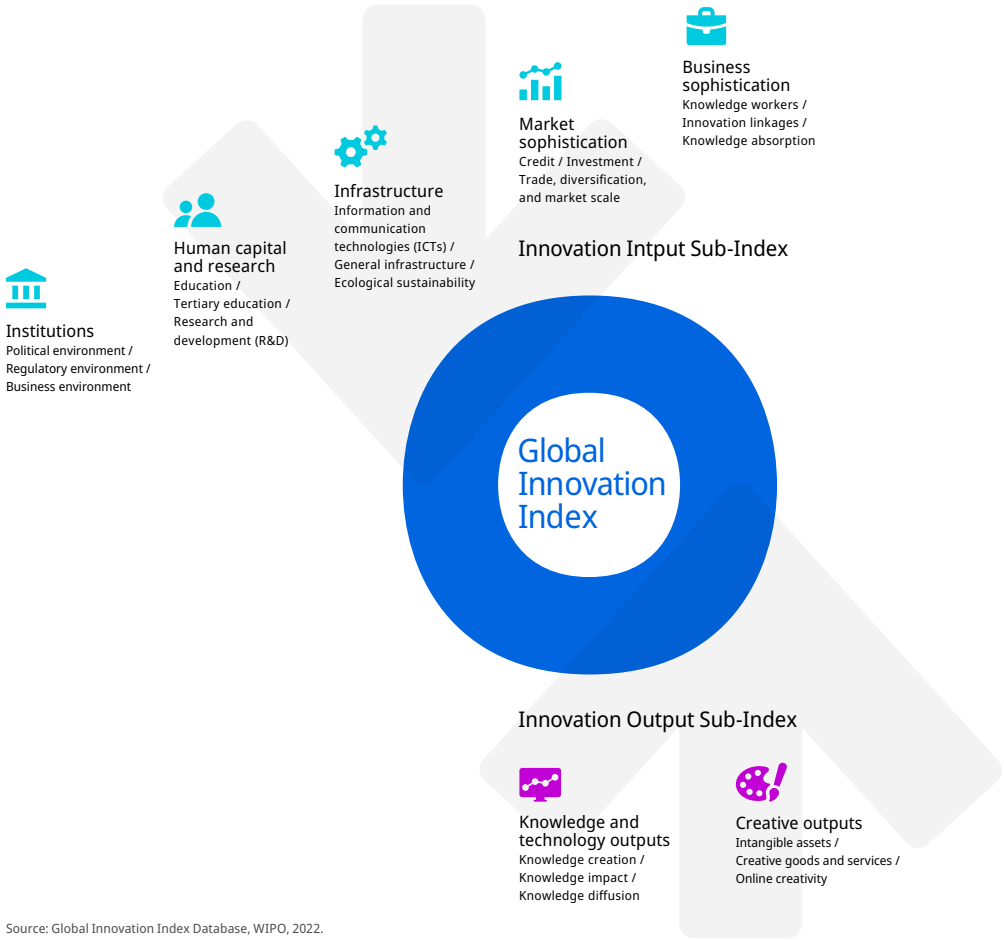
Brand	Industry	Rank
ADNOC	Oil & Gas	1
ETISALAT	Telecoms	2
EMIRATES	Airlines	3

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.



Source: Global Innovation Index Database, WIPO, 2022.

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.