Global Innovation Index 2022

# SAUDI ARABIA

**51st** Saudi Arabia ranks 51st 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 Saudi Arabia 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 Saudi Arabia in the GII 2022 is between ranks 50 and 58.

## Rankings for Saudi Arabia (2020–2022)

| GIIYR | GII | Innovation inputs | Innovation outputs |
|---|---|---|---|
| **2020** | 66 | 50 | 77 |
| **2021** | 66 | 59 | 72 |
| **2022** | 51 | 37 | 65 |

- Saudi Arabia performs better in innovation inputs than innovation outputs in 2022.
- This year Saudi Arabia ranks 37th in innovation inputs, higher than both 2021 and 2020.
- As for innovation outputs, Saudi Arabia ranks 65th. This position is higher than both 2021 and 2020.

**41st** Saudi Arabia ranks 41st among the 48 high-income group economies.

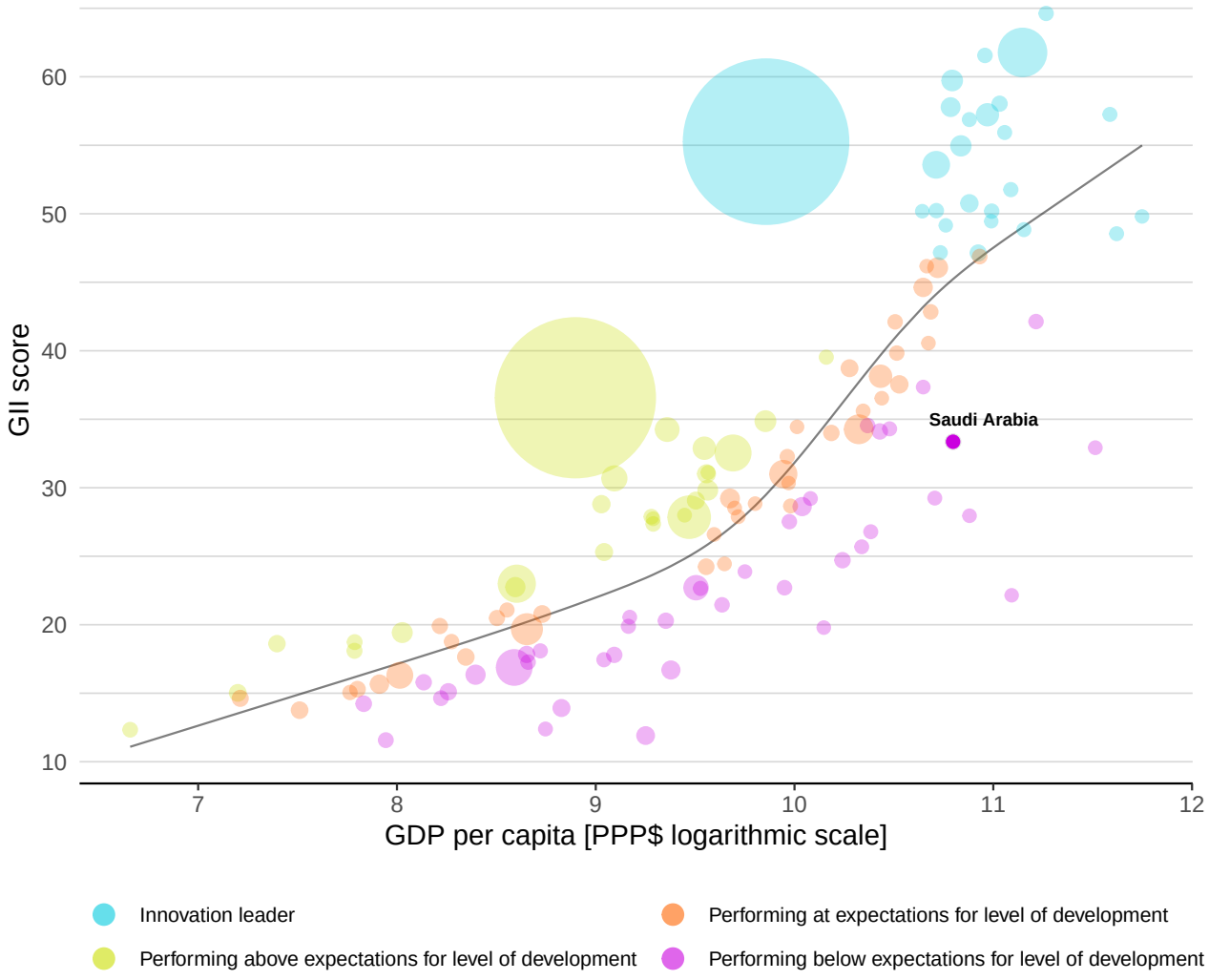
**5th** Saudi Arabia ranks 5th among the 19 economies in Northern Africa and Western Asia.

# 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, Saudi Arabia's performance is below expectations for its level of development.

## The positive relationship between innovation and development

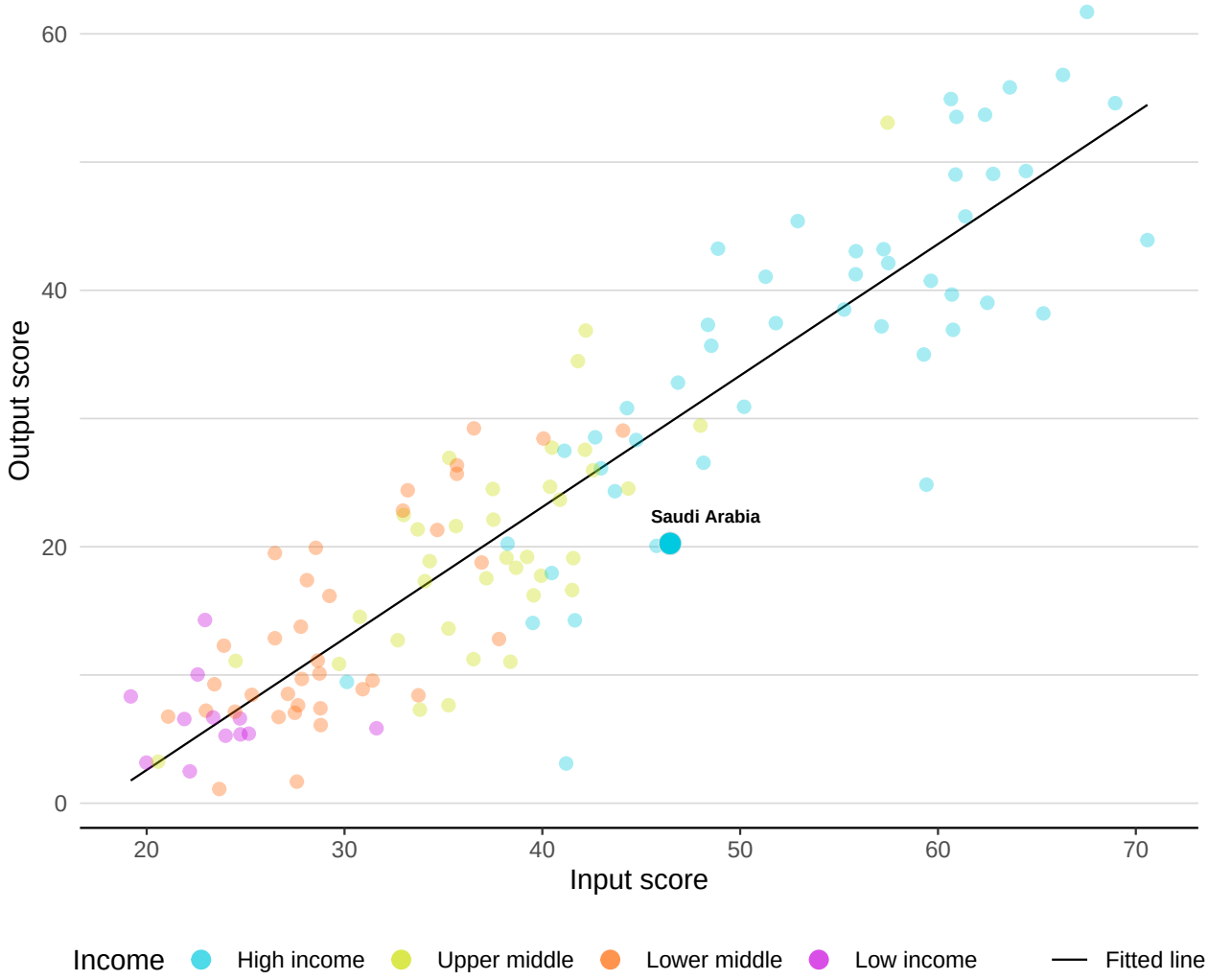


# EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

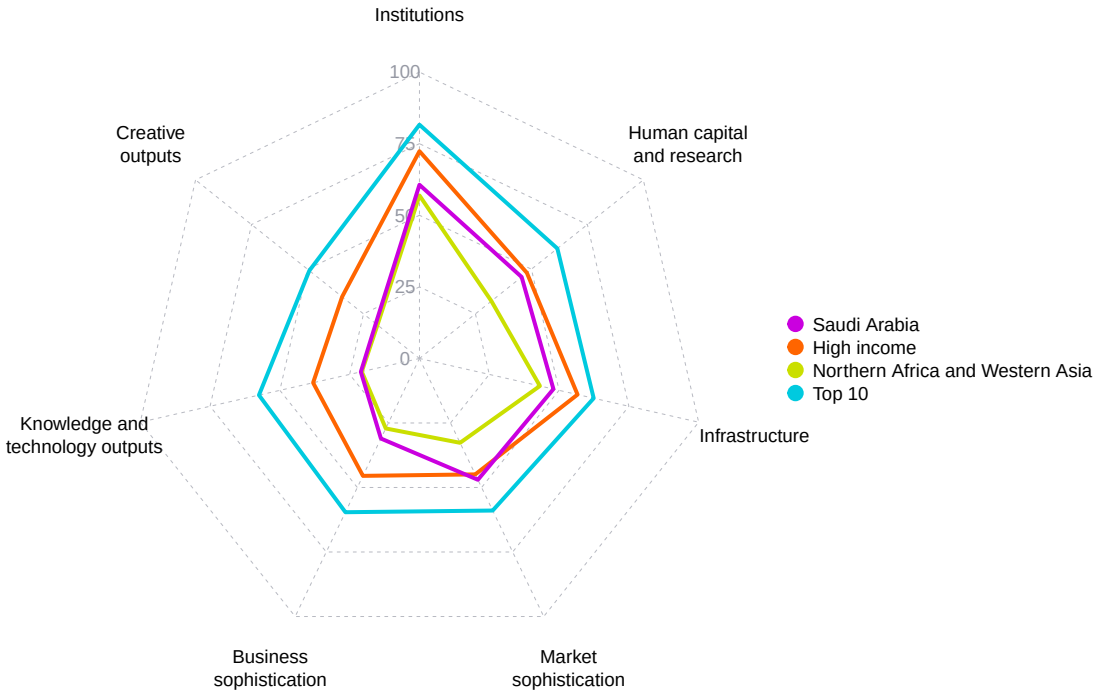
Saudi Arabia produces less innovation outputs relative to its level of innovation investments.

## Innovation input to output performance



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

## The seven GII pillar scores for Saudi Arabia




### High-income group economies

Saudi Arabia performs above the high-income group average in Market sophistication.

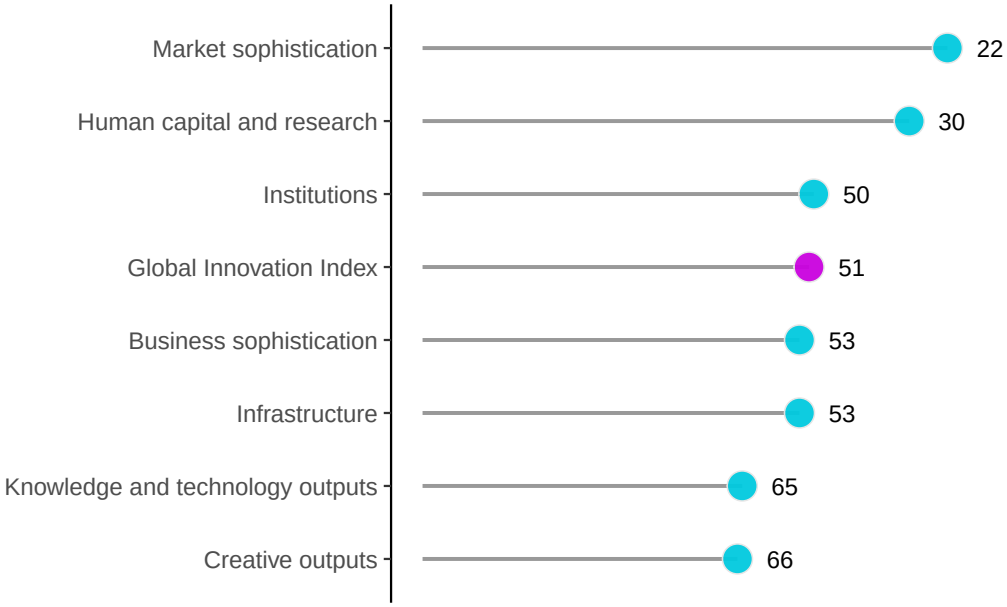
### Northern Africa and Western Asia

Saudi Arabia performs above the regional average in all GII pillars.

# OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Saudi Arabia performs best in Market sophistication and its weakest performance is in Creative outputs.

## The seven GII pillar ranks for Saudi Arabia




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

**The full WIPO Intellectual Property Statistics profile for Saudi Arabia can be found at:**

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

# INNOVATION STRENGTHS AND WEAKNESSES

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

## Strengths and weaknesses for Saudi Arabia

| Strengths | | | Weaknesses | | |
|---|---|---|---|---|---|
| **Code** | **Indicator name** | **Rank** | **Code** | **Indicator name** | **Rank** |
| 1.3.1 | Policies for doing business | 15 | 1.1.1 | Political and operational stability | 120 |
| 2.1.1 | Expenditure on education, % GDP | 3 | 1.2.3 | Cost of redundancy dismissal | 103 |
| 2.3.3 | Global corporate R&D investors, top 3, mn USD | 18 | 2.1.4 | PISA scales in reading, maths and science | 71 |
| 3.1.1 | ICT access | 6 | 3.3.1 | GDP/unit of energy use | 99 |
| 3.1.2 | ICT use | 13 | 5.3.4 | FDI net inflows, % GDP | 110 |
| 3.2.1 | Electricity output, GWh/mn pop. | 12 | 6.2.1 | Labor productivity growth, % | 115 |
| 4.2.1 | Market capitalization, % GDP | 4 | 6.2.2 | New businesses/th pop. 15–64 | 89 |
| 4.2.4 | Venture capital received, value, % GDP | 7 | 7.1.2 | Trademarks by origin/bn PPP$ GDP | 103 |
| 4.3.3 | Domestic market scale, bn PPP$ | 17 | 7.1.4 | Industrial designs by origin/bn PPP$ GDP | 93 |
| 5.2.2 | State of cluster development and depth | 13 | 7.2.1 | Cultural and creative services exports, % total trade | 98 |

GII 2022 rank

# Saudi Arabia

**51**

| Output rank | Input rank | Income | Region | Population (mn) | GDP, PPP$ (bn) | GDP per capita, PPP$ |
|---|---|---|---|---|---|---|
| 65 | 37 | High | NAWA | 35.3 | 1,734.2 | 48,908 |

| | | Score/ Value | Rank | |
|---|---|---|---|---|
| **Institutions** | | **60.6** | **50** | ◇ |
| **1.1** | **Political environment** | 52.8 | 90 | ◇ |
| 1.1.1 | Political and operational stability* | 52.7 | 120 | ○ ◇ |
| 1.1.2 | Government effectiveness* | 52.8 | 60 | ◇ |
| **1.2** | **Regulatory environment** | 60.4 | 79 | ◇ |
| 1.2.1 | Regulatory quality* | 51.5 | 59 | ◇ |
| 1.2.2 | Rule of law* | 52.3 | 54 | ◇ |
| 1.2.3 | Cost of redundancy dismissal | 23.7 | 103 | ○ ◇ |
| **1.3** | **Business environment** | 68.8 | 22 | |
| 1.3.1 | Policies for doing business† | 72.0 | 15 | ● |
| 1.3.2 | Entrepreneurship policies and culture* | 65.5 | 17 | |
| **Human capital and research** | | **45.6** | **30** | |
| **2.1** | **Education** | 61.9 | 25 | |
| 2.1.1 | Expenditure on education, % GDP | 7.8 | 3 | ● ◆ |
| 2.1.2 | Government funding/pupil, secondary, % GDP/cap | n/a | n/a | |
| 2.1.3 | School life expectancy, years | 16.1 | 34 | |
| 2.1.4 | PISA scales in reading, maths and science | 386.2 | 71 | ○ ◇ |
| 2.1.5 | Pupil-teacher ratio, secondary | 13.0 | 56 | |
| **2.2** | **Tertiary education** | 34.8 | 49 | |
| 2.2.1 | Tertiary enrolment, % gross | 70.6 | 34 | |
| 2.2.2 | Graduates in science and engineering, % | 23.3 | 45 | |
| 2.2.3 | Tertiary inbound mobility, % | 4.3 | 54 | |
| **2.3** | **Research and development (R&D)** | 40.2 | 28 | |
| 2.3.1 | Researchers, FTE/mn pop. | 453.2 | 71 | ◇ |
| 2.3.2 | Gross expenditure on R&D, % GDP | 0.5 | 62 | ◇ |
| 2.3.3 | Global corporate R&D investors, top 3, mn USD | 65.9 | 18 | ● |
| 2.3.4 | QS university ranking, top 3* | 47.4 | 23 | |
| **Infrastructure** | | **48.0** | **53** | ◇ |
| **3.1** | **Information and communication technologies (ICTs)** | 80.1 | 47 | |
| 3.1.1 | ICT access* | 97.0 | 6 | ● ◆ |
| 3.1.2 | ICT use* | 82.9 | 13 | ● |
| 3.1.3 | Government's online service* | 68.8 | 71 | ◇ |
| 3.1.4 | E-participation* | 71.4 | 66 | ◇ |
| **3.2** | **General infrastructure** | 44.7 | 28 | |
| 3.2.1 | Electricity output, GWh/mn pop. | 11,250.1 | 12 | ● |
| 3.2.2 | Logistics performance* | 44.7 | 54 | ◇ |
| 3.2.3 | Gross capital formation, % GDP | 24.9 | 55 | |
| **3.3** | **Ecological sustainability** | 19.2 | 99 | ○ ◇ |
| 3.3.1 | GDP/unit of energy use | 7.5 | 99 | ○ |
| 3.3.2 | Environmental performance* | 37.9 | 79 | ◇ |
| 3.3.3 | ISO 14001 environmental certificates/bn PPP$ GDP | 0.4 | 95 | ◇ |
| **Market sophistication** | | **47.0** | **22** | |
| **4.1** | **Credit** | 32.4 | 44 | |
| 4.1.1 | Finance for startups and scaleups* | 45.6 | 25 | |
| 4.1.2 | Domestic credit to private sector, % GDP | 54.0 | 66 | |
| 4.1.3 | Loans from microfinance institutions, % GDP | n/a | n/a | |
| **4.2** | **Investment** | 42.4 | 14 | ● |
| 4.2.1 | Market capitalization, % GDP | 237.9 | 4 | ● ◆ |
| 4.2.2 | Venture capital investors, deals/bn PPP$ GDP | 0.0 | 49 | |
| 4.2.3 | Venture capital recipients, deals/bn PPP$ GDP | 0.0 | 74 | |
| 4.2.4 | Venture capital received, value, % GDP | 0.0 | 7 | ● ◆ |
| **4.3** | **Trade, diversification, and market scale** | 66.3 | 26 | |
| 4.3.1 | Applied tariff rate, weighted avg., % | 4.2 | 87 | ◇ |
| 4.3.2 | Domestic industry diversification | 87.3 | 53 | |
| 4.3.3 | Domestic market scale, bn PPP$ | 1,734.2 | 17 | ● |

| | | Score/ Value | Rank | |
|---|---|---|---|---|
| **Business sophistication** | | **31.0** | **[53]** | |
| **5.1** | **Knowledge workers** | n/a | [n/a] | |
| 5.1.1 | Knowledge-intensive employment, % | n/a | n/a | |
| 5.1.2 | Firms offering formal training, % | n/a | n/a | |
| 5.1.3 | GERD performed by business, % GDP | n/a | n/a | |
| 5.1.4 | GERD financed by business, % | n/a | n/a | |
| 5.1.5 | Females employed w/advanced degrees, % | n/a | n/a | |
| **5.2** | **Innovation linkages** | 33.9 | 33 | |
| 5.2.1 | University-industry R&D collaboration† | 53.8 | 33 | |
| 5.2.2 | State of cluster development and depth† | 65.7 | 13 | ● |
| 5.2.3 | GERD financed by abroad, % GDP | n/a | n/a | |
| 5.2.4 | Joint venture/strategic alliance deals/bn PPP$ GDP | 0.0 | 64 | |
| 5.2.5 | Patent families/bn PPP$ GDP | 0.3 | 40 | |
| **5.3** | **Knowledge absorption** | 28.1 | [75] | |
| 5.3.1 | Intellectual property payments, % total trade | n/a | n/a | |
| 5.3.2 | High-tech imports, % total trade | 8.7 | 58 | |
| 5.3.3 | ICT services imports, % total trade | 0.8 | 94 | ◇ |
| 5.3.4 | FDI net inflows, % GDP | 0.6 | 110 | ○ |
| 5.3.5 | Research talent, % in businesses | n/a | n/a | |
| **Knowledge and technology outputs** | | **21.0** | **65** | ◇ |
| **6.1** | **Knowledge creation** | 18.7 | 50 | |
| 6.1.1 | Patents by origin/bn PPP$ GDP | 1.3 | 58 | |
| 6.1.2 | PCT patents by origin/bn PPP$ GDP | 0.5 | 34 | |
| 6.1.3 | Utility models by origin/bn PPP$ GDP | n/a | n/a | |
| 6.1.4 | Scientific and technical articles/bn PPP$ GDP | 21.1 | 42 | |
| 6.1.5 | Citable documents H-index | 25.8 | 37 | |
| **6.2** | **Knowledge impact** | 19.0 | 97 | ○ ◇ |
| 6.2.1 | Labor productivity growth, % | −3.8 | 115 | ○ ◇ |
| 6.2.2 | New businesses/th pop. 15–64 | 0.6 | 89 | ○ ◇ |
| 6.2.3 | Software spending, % GDP | 0.3 | 36 | |
| 6.2.4 | ISO 9001 quality certificates/bn PPP$ GDP | 1.4 | 96 | ◇ |
| 6.2.5 | High-tech manufacturing, % | 36.0 | 36 | |
| **6.3** | **Knowledge diffusion** | 25.3 | 59 | |
| 6.3.1 | Intellectual property receipts, % total trade | n/a | n/a | |
| 6.3.2 | Production and export complexity | 56.2 | 39 | |
| 6.3.3 | High-tech exports, % total trade | 0.7 | 82 | ◇ |
| 6.3.4 | ICT services exports, % total trade | 0.8 | 90 | |
| **Creative outputs** | | **19.5** | **66** | ◇ |
| **7.1** | **Intangible assets** | 32.2 | 56 | |
| 7.1.1 | Intangible asset intensity, top 15, % | 64.9 | 32 | |
| 7.1.2 | Trademarks by origin/bn PPP$ GDP | 12.5 | 103 | ○ ◇ |
| 7.1.3 | Global brand value, top 5,000, % GDP | 105.4 | 20 | |
| 7.1.4 | Industrial designs by origin/bn PPP$ GDP | 0.3 | 93 | ○ |
| **7.2** | **Creative goods and services** | 12.1 | 75 | ◇ |
| 7.2.1 | Cultural and creative services exports, % total trade | 0.0 | 98 | ○ ◇ |
| 7.2.2 | National feature films/mn pop. 15–69 | n/a | n/a | |
| 7.2.3 | Entertainment and media market/th pop. 15–69 | 16.5 | 28 | |
| 7.2.4 | Printing and other media, % manufacturing | 1.2 | 38 | |
| 7.2.5 | Creative goods exports, % total trade | 0.2 | 73 | |
| **7.3** | **Online creativity** | 1.7 | 89 | ◇ |
| 7.3.1 | Generic top-level domains (TLDs)/th pop. 15–69 | 2.7 | 68 | ◇ |
| 7.3.2 | Country-code TLDs/th pop. 15–69 | 0.9 | 90 | ◇ |
| 7.3.3 | GitHub commit pushes received/mn pop. 15–69 | 1.3 | 95 | ◇ |
| 7.3.4 | Mobile app creation/bn PPP$ GDP | 1.8 | 74 | |

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 Saudi Arabia.

## Missing data for Saudi Arabia

| Code | Indicator name | Economy year | Model year | Source |
|---|---|---|---|---|
| 2.1.2 | Government funding/pupil, secondary, % GDP/cap | n/a | 2018 | UNESCO Institute for Statistics |
| 4.1.3 | Loans from microfinance institutions, % GDP | n/a | 2020 | International Monetary Fund, Financial Access Survey (FAS) |
| 5.1.1 | Knowledge-intensive employment, % | n/a | 2021 | International Labour Organization |
| 5.1.2 | Firms offering formal training, % | n/a | 2019 | World Bank Enterprise Surveys |
| 5.1.3 | GERD performed by business, % GDP | n/a | 2020 | UNESCO Institute for Statistics |
| 5.1.4 | GERD financed by business, % | n/a | 2019 | UNESCO Institute for Statistics |
| 5.1.5 | Females employed w/advanced degrees, % | n/a | 2021 | International Labour Organization |
| 5.2.3 | GERD financed by abroad, % GDP | n/a | 2019 | UNESCO Institute for Statistics |
| 5.3.1 | Intellectual property payments, % total trade | n/a | 2020 | World Trade Organization and United Nations Conference on Trade and Development |
| 5.3.5 | Research talent, % in businesses | n/a | 2020 | UNESCO Institute for Statistics |
| 6.1.3 | Utility models by origin/bn PPP$ GDP | n/a | 2020 | World Intellectual Property Organization |
| 6.3.1 | Intellectual property receipts, % total trade | n/a | 2020 | World Trade Organization and United Nations Conference on Trade and Development |
| 7.2.2 | National feature films/mn pop. 15–69 | n/a | 2019 | OMDIA |

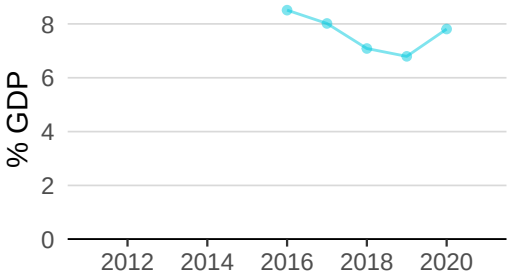
## Outdated data for Saudi Arabia

| Code | Indicator name | Economy year | Model year | Source |
|---|---|---|---|---|
| 3.2.1 | Electricity output, GWh/mn pop. | 2019 | 2020 | International Energy Agency |
| 4.1.2 | Domestic credit to private sector, % GDP | 2017 | 2020 | International Monetary Fund |
| 4.3.2 | Domestic industry diversification | 2018 | 2019 | United Nations Industrial Development Organization |
| 6.2.5 | High-tech manufacturing, % | 2018 | 2019 | United Nations Industrial Development Organization |
| 7.2.4 | Printing and other media, % manufacturing | 2018 | 2019 | United Nations Industrial Development Organization |

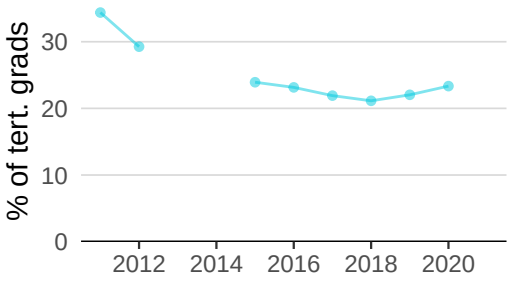
# SAUDI ARABIA'S INNOVATION SYSTEM

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

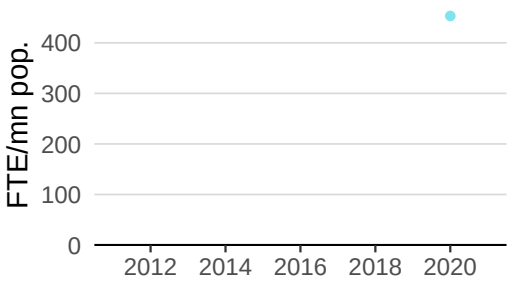
## Innovation inputs



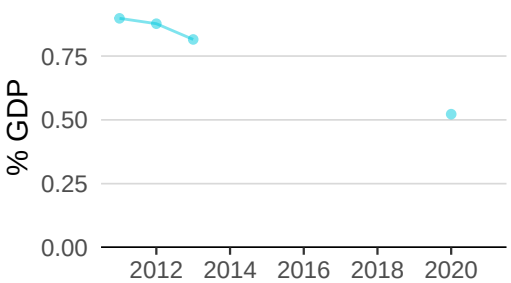

**2.1.1 Expenditure on education** was equal to 7.8% GDP in 2020–up by 15 percentage points from the year prior–and equivalent to an indicator rank of 3.



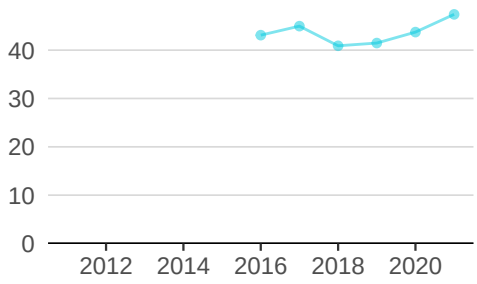

**2.2.2 Graduates in science and engineering** was equal to 23.3% of tert. grads in 2020–up by 6 percentage points from the year prior–and equivalent to an indicator rank of 45.



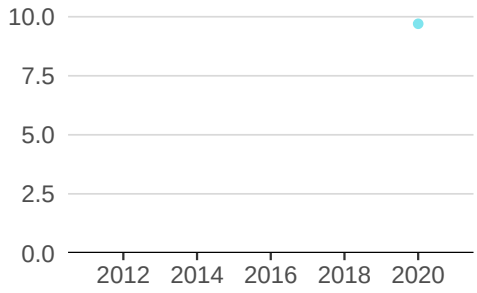

**2.3.1 Researchers** was equal to 453.2 FTE/mn pop. in 2020 and equivalent to an indicator rank of 71.



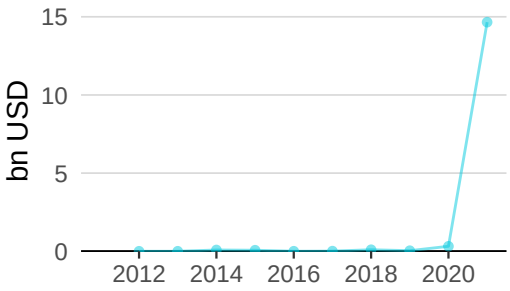

**2.3.2 Gross expenditure on R&D** was equal to 0.5% GDP in 2020 and equivalent to an indicator rank of 62.



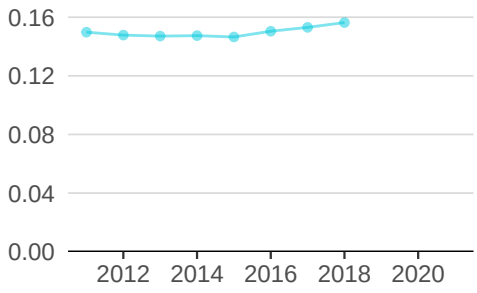

**2.3.4 QS university ranking** was equal to 47.4 in 2021–up by 8 percentage points from the year prior–and equivalent to an indicator rank of 23.




**3.1.1 ICT access** was equal to 9.7 in 2020 and equivalent to an indicator rank of 6.

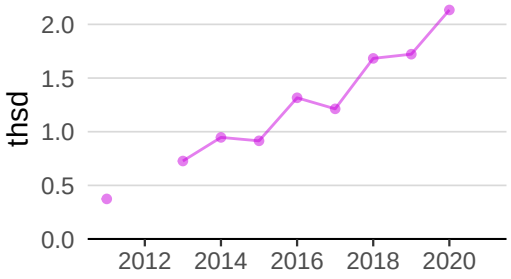



**4.2.4 Venture capital received** was equal to 14.7 bn USD in 2021–up by 4505 percentage points from the year prior–and equivalent to an indicator rank of 7.

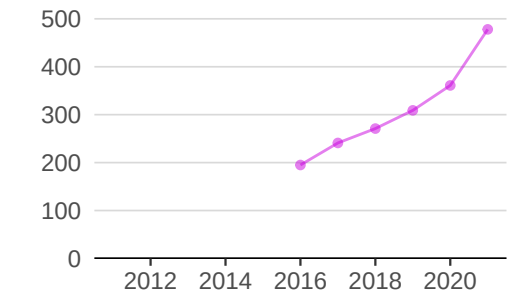



**4.3.2 Domestic industry diversification** was equal to 0.2 in 2018–up by 2 percentage points from the year prior–and equivalent to an indicator rank of 53.

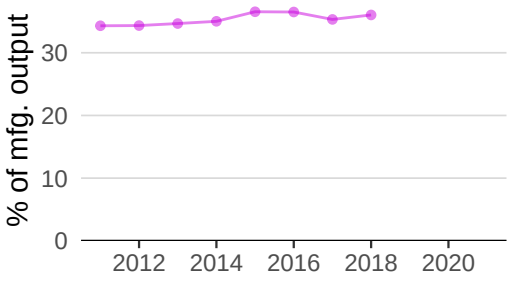
## Innovation outputs



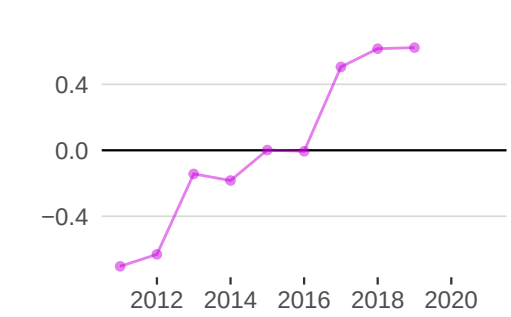

**6.1.1 Patents by origin** was equal to 2.1 thsd in 2020–up by 24 percentage points from the year prior–and equivalent to an indicator rank of 58.



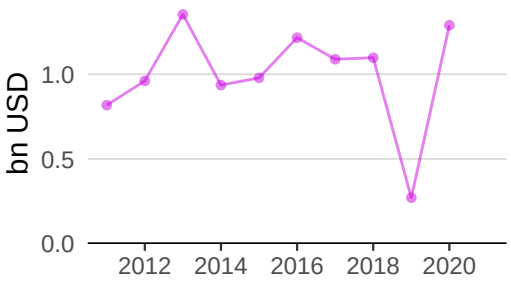

**6.1.5 Citable documents H-index** was equal to 478.0 in 2021–up by 32 percentage points from the year prior–and equivalent to an indicator rank of 37.



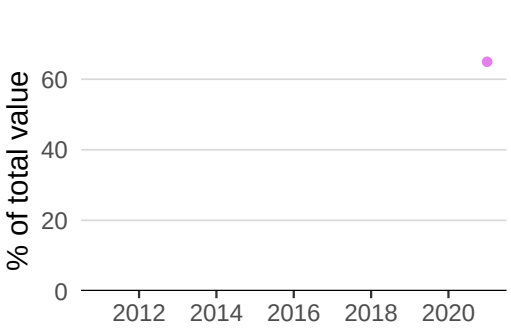

**6.2.5 High-tech manufacturing** was equal to 36.0% of mfg. output in 2018–up by 2 percentage points from the year prior–and equivalent to an indicator rank of 36.



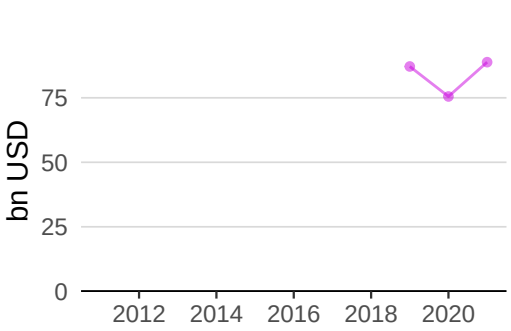

**6.3.2 Production and export complexity** was equal to 0.6 in 2019–up by 1 percentage point from the year prior–and equivalent to an indicator rank of 39.



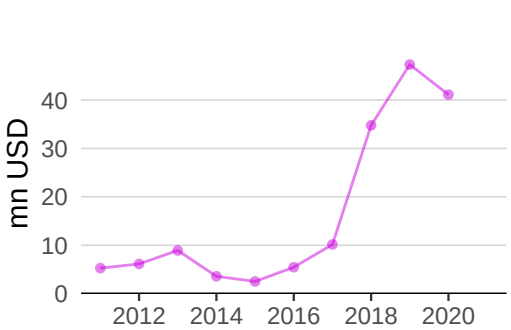

**6.3.3 High-tech exports** was equal to 1.3 bn USD in 2020–up by 377 percentage points from the year prior–and equivalent to an indicator rank of 82.




**7.1.1 Intangible asset intensity** was equal to 64.9% of total value in 2021 and equivalent to an indicator rank of 32.




**7.1.3 Global brand value** was equal to 88.8 bn USD in 2021–up by 18 percentage points from the year prior–and equivalent to an indicator rank of 20.




**7.2.1 Cultural and creative services exports** was equal to 41.1 mn USD in 2020–down by 13 percentage points from the year prior–and equivalent to an indicator rank of 98.

# SAUDI ARABIA'S INNOVATION TOP PERFORMERS

## 2.3.3 Global corporate R&D investors

| Firm | Industry | R&D | R&D Growth | R&D Intensity | Rank |
|---|---|---|---|---|---|
| | | [mn EUR] | [%] | [%] | |
| SAUDI ARABIAN OIL | Oil & Gas Producers | 615 | 31.8 | 0.3 | 263 |

Source: European Commission's Joint Research Centre (https://iri.jrc.ec.europa.eu/scoreboard/2021-eu-industrial-rd-investment-scoreboard).
Note: European Commission's Joint Research Centre ranks the top 2,500 firms by R&D investment annually.

## 2.3.4 QS university ranking

| University | Score | Rank |
|---|---|---|
| KING ABDUL AZIZ UNIVERSITY | 57.7 | 109 |
| KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS | 48.1 | 163= |
| KING SAUD UNIVERSITY | 36.4 | 277= |

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 |
|---|---|
| SAUDI ARABIAN OIL | 1 |
| SAUDI TELECOM | 2 |
| AL RAJHI BANK | 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

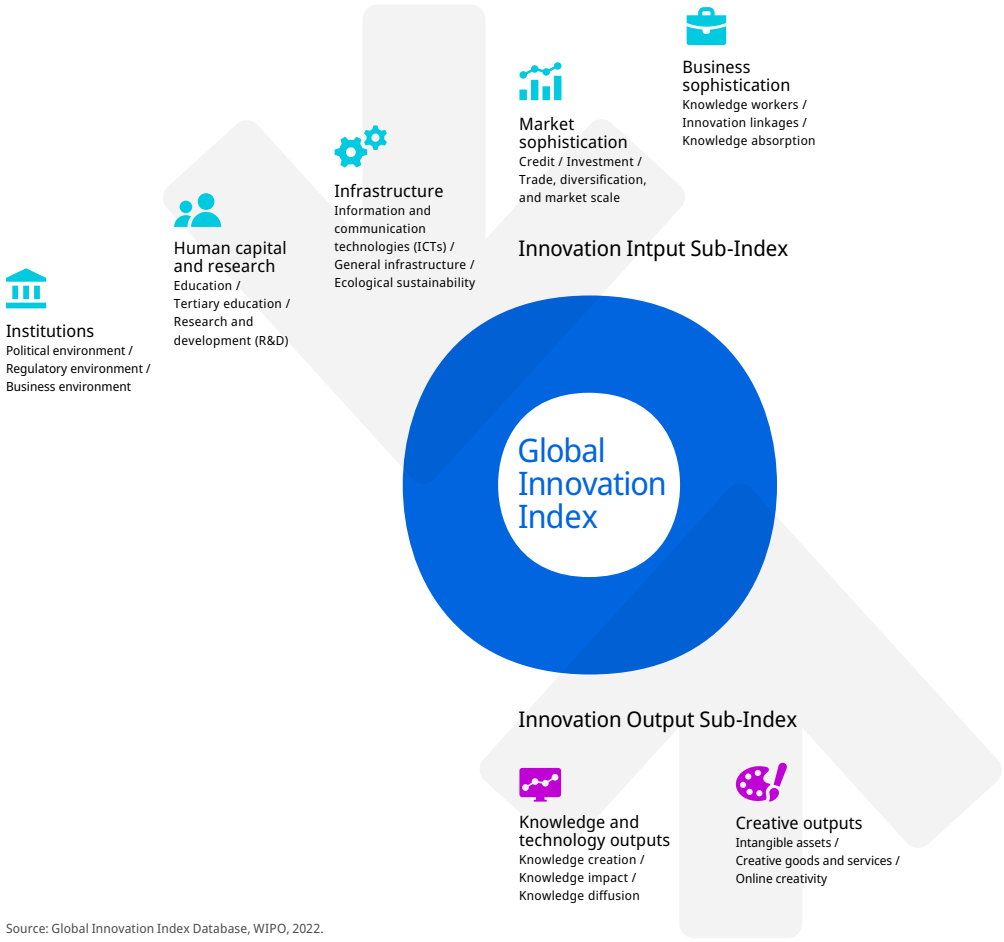
| Brand | Industry | Rank |
|---|---|---|
| ARAMCO | Oil & Gas | 1 |
| STC | Telecoms | 2 |
| SABIC | Chemicals | 3 |

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.