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.

**Saudi Arabia ranking in the Global Innovation Index 2023**

> Saudi Arabia ranks 48th among the 132 economies featured in the GII 2023.

> Saudi Arabia ranks 41st among the 50 high-income group economies.

> Saudi Arabia ranks 5th among the 18 economies in Northern Africa and Western Asia.

**Saudi Arabia GII Ranking (2020–2023)**

The table shows the rankings of Saudi Arabia over the past four years. 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 2023 is between ranks 47 and 54.

<table>
<thead>
<tr>
<th>Year</th>
<th>GII Position</th>
<th>Innovation Inputs</th>
<th>Innovation Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>68th</td>
<td>50th</td>
<td>77th</td>
</tr>
<tr>
<td>2021</td>
<td>68th</td>
<td>59th</td>
<td>72nd</td>
</tr>
<tr>
<td>2022</td>
<td>51st</td>
<td>37th</td>
<td>65th</td>
</tr>
<tr>
<td>2023</td>
<td>48th</td>
<td>37th</td>
<td>67th</td>
</tr>
</tbody>
</table>

Saudi Arabia performs worse in innovation outputs than innovation inputs in 2023.

This year Saudi Arabia ranks 37th in innovation inputs. This position is the same as last year.

Saudi Arabia ranks 67th in innovation outputs. This position is lower than last year.
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.

Innovation overperformers relative to their economic development

→ GDP per capita, PPP logarithmic scale (thousands of $)
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.

Relationship between innovation inputs and outputs

![Graph showing the relationship between innovation inputs and outputs.](image)
Overview of Saudi Arabia’s rankings in the seven areas of the GII in 2023

The chart shows the ranking for each of the seven areas that the GII comprises. The strongest areas for Saudi Arabia are those that rank above the GII (shown in blue) and the weakest are those that rank below.

**Highest rankings**

Saudi Arabia ranks highest in Market sophistication (28th), Human capital and research (35th), Institutions, Business sophistication (45th) and Infrastructure (48th).

**Lowest rankings**

Saudi Arabia ranks lowest in Knowledge and technology outputs (68th), Creative outputs (66th) and Infrastructure, GII Index (48th).

* 28th Market sophistication
* 35th Human capital and research
* 45th 2 pillars *
* 48th 1 pillar and the Global Innovation Index **
* 66th Creative outputs
* 68th Knowledge and technology outputs

* Institutions, Business sophistication
** Infrastructure
Benchmark of Saudi Arabia against other country groupings for each of the seven areas of the GII Index

The charts show the relative position of Saudi Arabia (blue bar) against other country groupings (grey bars), for each of the seven areas of the GII Index.

**High-Income economies**
Saudi Arabia performs below the high-income group average in Knowledge and technology outputs, Creative outputs, Business sophistication, Human capital and research, Infrastructure, Institutions.

**Northern Africa And Western Asia**
Saudi Arabia performs above the regional average in Business sophistication, Market sophistication, Human capital and research, Infrastructure, Institutions.

**Knowledge and technology outputs**
- Top 10 | Score: 58.96
- High income | Score: 38.62
- NAWA | Score: 24.01
- Saudi Arabia | Score: 21.95

**Creative outputs**
- Top 10 | 56.09
- High income | 40.27
- NAWA | 24.51
- Saudi Arabia | 24.07

**Business sophistication**
- Top 10 | 64.39
- High income | 46.38
- NAWA | 29.44
- Saudi Arabia | 34.42

**Market sophistication**
- Top 10 | 61.93
- Saudi Arabia | 47.54
- High income | 46.42
- NAWA | 36.12

**Human capital and research**
- Top 10 | 60.28
- High income | 46.30
- NAWA | 32.72
- Saudi Arabia | 40.56

**Infrastructure**
- Top 10 | 62.83
- High income | 55.85
- NAWA | 41.60
- Saudi Arabia | 48.35

**Institutions**
- Top 10 | 79.85
- High income | 68.16
- NAWA | 53.39
- Saudi Arabia | 59.20
## Innovation strengths and weaknesses in Saudi Arabia

The table below gives an overview of the indicator strengths and weaknesses of Saudi Arabia in the GII 2023.

> Saudi Arabia's main innovation strengths are **Market capitalization, % GDP** (rank 4), **ICT access** (rank 7) and **State of cluster development** (rank 8).

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td>Code</td>
</tr>
<tr>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>4</td>
<td>4.2.1</td>
</tr>
<tr>
<td>7</td>
<td>3.1.1</td>
</tr>
<tr>
<td>8</td>
<td>5.2.2</td>
</tr>
<tr>
<td>10</td>
<td>3.1.2</td>
</tr>
<tr>
<td>11</td>
<td>1.3.2</td>
</tr>
<tr>
<td>13</td>
<td>3.2.1</td>
</tr>
<tr>
<td>16</td>
<td>1.3.1</td>
</tr>
<tr>
<td>16</td>
<td>2.3.3</td>
</tr>
<tr>
<td>17</td>
<td>4.3.3</td>
</tr>
<tr>
<td>20</td>
<td>2.3.4</td>
</tr>
</tbody>
</table>
→ Saudi Arabia’s innovation system

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

> Innovation inputs in Saudi Arabia

2.2.2 Graduates in science and engineering, %
was equal to 22.78% of total tertiary graduates in 2021, down by 0.56 percentage points from the year prior – and equivalent to an indicator rank of 56.

2.3.1 Researchers, FTE/mn pop.
was equal to 700.64 FTE/mn pop. in 2021, up by 54.62% from the year prior – and equivalent to an indicator rank of 62.

2.3.2 Gross expenditure on R&D, % GDP
was equal to 0.464% GDP in 2021, down by 0.056 percentage points from the year prior – and equivalent to an indicator rank of 63.

2.3.4 QS university ranking, top 3
was equal to an average score of 48.67 for the top 3 universities in 2022, up by 2.68% from the year prior – and equivalent to an indicator rank of 20.

3.1.1 ICT access
was equal to a score of 9.75 in 2021, up by 0.52% from the year prior – and equivalent to an indicator rank of 7.

4.1.1 Finance for startups and scaleups
was equal to an average perception score of 5.51 in 2022, equivalent to an indicator rank of 18.
4.2.4 VC received, value, % GDP
was equal to 0.00057% GDP in 2022, down by 0.0078 percentage points from the year prior – and equivalent to an indicator rank of 22.

4.3.2 Domestic industry diversification
was equal to an index score of 0.235 in 2021, up by 11.68% from the year prior – and equivalent to an indicator rank of 81.
6.1.1 Patents by origin
was equal to 1.48 Thousands in 2021, down by 30.79% from the year prior – and equivalent to an indicator rank of 64.

6.1.5 Citable documents H-index
was equal to an index value of 533 in 2022, up by 11.51% from the year prior – and equivalent to an indicator rank of 37.

6.2.2 Unicorn valuation, % GDP
was equal to 0.0% GDP in 2023 – and equivalent to an indicator rank of 48.

6.2.3 Software spending, % GDP
was equal to 0.326% GDP in 2022, up by 0.079 percentage points from the year prior – and equivalent to an indicator rank of 35.

6.2.4 High-tech manufacturing, %
was equal to 26.3% of total manufacturing output in 2021, up by 0.36 percentage points from the year prior – and equivalent to an indicator rank of 47.

6.3.2 Production and export complexity
was equal to a score of 0.616 in 2020, down by 4.94% from the year prior – and equivalent to an indicator rank of 42.
6.3.3 High-tech exports
was equal to 1,881,353,088 USD in 2021, up by 45.91% from the year prior – and equivalent to an indicator rank of 76.

7.1.1 Intangible asset intensity, top 15, %
was equal to 65.06% in 2022, up by 0.11 percentage points from the year prior – and equivalent to an indicator rank of 27.

7.1.3 Global brand value, top 5,000
was equal to 99.084 bn USD in 2023, up by 11.57% from the year prior – and equivalent to an indicator rank of 18.

7.2.1 Cultural and creative services exports
was equal to 43,922,000 USD in 2021, up by 6.88% from the year prior – and equivalent to an indicator rank of 97.

7.3.4 Mobile app creation/bn PPP$ GDP
was equal to 136,871.43 Apps/bn PPP$ GDP in 2022, up by 47.26% from the year prior – and equivalent to an indicator rank of 68.
Saudi Arabia's innovation top performers

2.3.4 QS university ranking of Saudi Arabia’s top universities

<table>
<thead>
<tr>
<th>Rank</th>
<th>University</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>106</td>
<td>KING ABDUL AZIZ UNIVERSITY (KAU)</td>
<td>57.80</td>
</tr>
<tr>
<td>180</td>
<td>KING FAHD UNIVERSITY OF PETROLEUM &amp; MINERALS (KFUPM)</td>
<td>48.80</td>
</tr>
<tr>
<td>237</td>
<td>KING SAUD UNIVERSITY (KSU)</td>
<td>39.40</td>
</tr>
</tbody>
</table>

Source: QS Quacquarelli Symonds Ltd (https://www.topuniversities.com/university-rankings/world-university-rankings2023). 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=y” or a range “x-y”.

7.1.1 Top 15 intangible-asset intensive companies in Saudi Arabia

<table>
<thead>
<tr>
<th>Rank</th>
<th>Firm</th>
<th>Intensity, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SAUDI ARABIAN OIL CO</td>
<td>85.90</td>
</tr>
<tr>
<td>2</td>
<td>AL RAJHI BANK</td>
<td>73.91</td>
</tr>
<tr>
<td>3</td>
<td>SAUDI ARABIAN MINING CO</td>
<td>65.38</td>
</tr>
</tbody>
</table>


7.1.3 Top 5,000 companies in Saudi Arabia with highest global brand value

<table>
<thead>
<tr>
<th>Rank</th>
<th>Brand</th>
<th>Industry</th>
<th>Brand Value, mn USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ARAMCO</td>
<td>Oil &amp; Gas</td>
<td>45,227.2</td>
</tr>
<tr>
<td>2</td>
<td>STC</td>
<td>Telecoms</td>
<td>12,337.7</td>
</tr>
<tr>
<td>3</td>
<td>AL-RAJHI BANK</td>
<td>Banking</td>
<td>5,657.9</td>
</tr>
</tbody>
</table>

Source: Brand Finance (https://brandirectory.com). Note: Rank corresponds to within economy ranks.
Global Innovation Index 2023

Saudi Arabia

Output rank: 67  
Input rank: 37  
Income Region: High  
NAMA

Population (mn): 36.4  
GDP, PPP$ (bn): 2,018.3  
GDP per capita, PPP$: 55,802.3

Institutions 59.2  45

1.1 Institutional environment 44.3  71
1.1.1 Operational stability for businesses* 38.2  100
1.1.2 Government effectiveness* 50.4  46
1.2 Regulatory environment 58.7  78
1.2.1 Regulatory quality* 50.8  53
1.2.2 Rule of law* 46.5  54
1.2.3 Cost of redundancy dismissal 23.7  103
1.3 Business environment 74.6  15
1.3.1 Policies for doing business* 75.4  16
1.3.2 Entrepreneurship policies and culture* 73.7  11

Human capital and research 40.6  35

2.1 Education 56.4  51
2.1.1 Expenditure on education, % GDP 71.4  43
2.1.2 Government funding/pupil, secondary, % GDP/cap 42.2  13
2.1.3 School life expectancy, years 16.2  33
2.1.4 PISA scales in reading, maths and science 386.2  71
2.1.5 Pupil-teacher ratio, secondary 13.5  65
2.2 Tertiary education 32.1  61
2.2.1 Tertiary enrolment, % gross 71.4  32
2.2.2 Graduates in science and engineering, % 22.8  56
2.2.3 Tertiary inbound mobility, % 4.0  56
2.3 Research and development (R&D) 33.2  33
2.3.1 Researchers, FTE/mn pop. 700.6  62
2.3.2 Gross expenditure on R&D, % GDP 0.5  63
2.3.3 Global corporate R&D investors, top 3, mn US$ 68.2  16
2.3.4 QS university ranking, top 3* 49.3  20

Infrastructure 48.3  48

3.1 Information and communication technologies (ICTs) 85.2  20
3.1.1 ICT access* 96.4  7
3.1.2 ICT use* 95.3  10
3.1.3 Government’s online service* 80.3  32
3.1.4 E-participation* 86.8  43
3.2 General infrastructure 43.9  28
3.2.1 Electricity output, GWh/mn pop. 11,349.5  13
3.2.2 Logistics performance* 59.1  37
3.2.3 Gross capital formation, % GDP 20.8  90
3.3 Ecological sustainability 16.0  101
3.3.1 GDP/unit of energy use 6.7  102
3.3.2 Environmental performance* 32.2  81
3.3.3 ISO 14001 environment/bn PPP$ GDP 0.4  94

Market sophistication 47.5  28

4.1 Credit 44.7  37
4.1.1 Finance for startups and scaleups* 70.3  18
4.1.2 Domestic credit to private sector, % GDP 54.0  69
4.1.3 Loans from microfinance institutions, % GDP 54.0  69
4.2 Investment 33.1  20
4.2.1 Market capitalization, % GDP 252.5  4
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP 0.1  51
4.2.3 VC recipients, deals/bn PPP$ GDP 0.0  80
4.2.4 VC received, value, % GDP 0.0  22
4.3 Trade, diversification, and market scale 64.8  30
4.3.1 Applied tariff rate, weighted avg. % 4.2  87
4.3.2 Domestic industry diversification 78.5  81
4.3.3 Domestic market scale, bn PPP$ 2,018.3  17

Business sophistication 34.4  45

5.1 Knowledge workers 49.9  78
5.1.1 Knowledge-intensive employment, % 12.1  10
5.1.2 Firms offering formal training, % 12.1  10
5.1.3 GERD performed by business, % GDP 54.0  69
5.1.4 GERD financed by business, % 54.0  69
5.1.5 Females employed w/advanced degrees, % 12.1  10
5.2 Innovation linkages 38.5  29
5.2.1 University-industry R&D collaboration* 53.9  45
5.2.2 State of cluster development* 82.9  8
5.2.3 GERD financed by abroad, % GDP 49.9  78
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP 0.0  8
5.2.5 Patent families/bn PPP$ GDP 0.4  35
5.3 Knowledge absorption 30.3  79
5.3.1 Intellectual property payments, % total trade 7.5  74
5.3.2 High-tech imports, % total trade 4.1  54
5.3.3 ICT services imports, % total trade 4.1  54
5.3.4 FDI net inflows, % GDP 1.2  96
5.3.5 Research talent, % in businesses 4.1  54

Knowledge and technology outputs 22.0  68

6.1 Knowledge creation 21.5  51
6.1.1 Patents by origin/bn PPP$ GDP 0.8  64
6.1.2 PCT patents by origin/bn PPP$ GDP 0.2  42
6.2.1 Software spending, % GDP 0.3  35
6.2.2 High-tech manufacturing, % GDP 26.3  47
6.3 Knowledge diffusion 22.0  66
6.3.1 Intellectual property receipts, % total trade 5.4  18
6.3.2 Production and export complexity 65.4  42
6.3.3 High-tech exports, % total trade 0.8  76
6.3.4 ICT services exports, % total trade 0.6  98
6.3.5 ISO 9001 quality/bn PPP$ GDP 1.3  99

Creative outputs 24.1  66

7.1 Intangible assets 35.4  54
7.1.1 Intangible asset intensity, top 15, % 65.1  27
7.1.2 Trademarks by origin/bn PPP$ GDP 13.9  103
7.1.3 Global brand value, top 5,000 9.9  18
7.1.4 Industrial designs by origin/bn PPP$ GDP 0.5  82
7.2 Creative goods and services 7.9  75
7.2.1 Cultural and creative services exports, % total trade 0.0  97
7.2.2 National feature films/mn pop. 15-69 0.0  97
7.2.3 Entertainment and media market/sh mn pop. 15-69 18.8  28
7.2.4 Creative goods exports, % total trade 0.4  66
7.3 Online creativity 17.5  82
7.3.1 Generic top-level domains (TLDs)/sh mn pop. 15-69 3.0  69
7.3.2 Country-code TLDs/sh mn pop. 15-69 1.0  91
7.3.3 GitHub commits/mn pop. 15-69 1.8  101
7.3.4 Mobile app creation/bn PPP$ GDP 64.2  68

NOTES: * indicates a strength; † indicates 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/gii-ranking. 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.

**Saudi Arabia has missing data for fourteen indicators and outdated data for two indicators.**

### Missing data for Saudi Arabia

<table>
<thead>
<tr>
<th>Code</th>
<th>Indicator name</th>
<th>Economy Year</th>
<th>Model Year</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1.1</td>
<td>Expenditure on education, % GDP</td>
<td>n/a</td>
<td>2021</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>2.1.2</td>
<td>Government funding (primary, secondary, % GDP/cap)</td>
<td>n/a</td>
<td>2019</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>4.1.3</td>
<td>Loans from microfinance institutions, % GDP</td>
<td>n/a</td>
<td>2021</td>
<td>International Monetary Fund, Financial Access Survey (FAS)</td>
</tr>
<tr>
<td>5.1.1</td>
<td>Knowledge-intensive employment, %</td>
<td>n/a</td>
<td>2022</td>
<td>International Labour Organization</td>
</tr>
<tr>
<td>5.1.2</td>
<td>Firms offering formal training, %</td>
<td>n/a</td>
<td>2019</td>
<td>World Bank Enterprise Surveys</td>
</tr>
<tr>
<td>5.1.3</td>
<td>GERD performed by business, % GDP</td>
<td>n/a</td>
<td>2021</td>
<td>UNESCO Institute for Statistics; Eurostat; OECD; RICYT</td>
</tr>
<tr>
<td>5.1.4</td>
<td>GERD financed by business, %</td>
<td>n/a</td>
<td>2020</td>
<td>UNESCO Institute for Statistics; Eurostat; OECD; RICYT</td>
</tr>
<tr>
<td>5.1.5</td>
<td>Females employed w/ advanced degrees, %</td>
<td>n/a</td>
<td>2022</td>
<td>International Labour Organization</td>
</tr>
<tr>
<td>5.2.3</td>
<td>GERD financed by abroad, % GDP</td>
<td>n/a</td>
<td>2020</td>
<td>UNESCO Institute for Statistics; Eurostat; OECD; RICYT</td>
</tr>
<tr>
<td>5.3.1</td>
<td>Intellectual property payments, % total trade</td>
<td>n/a</td>
<td>2021</td>
<td>World Trade Organization and United Nations Conference on Trade and Development</td>
</tr>
<tr>
<td>5.3.5</td>
<td>Research talent, % in businesses</td>
<td>n/a</td>
<td>2021</td>
<td>UNESCO Institute for Statistics; Eurostat; OECD; RICYT</td>
</tr>
<tr>
<td>6.1.3</td>
<td>Utility models by origin bn PPP$/ GDP</td>
<td>n/a</td>
<td>2021</td>
<td>World Intellectual Property Organization; International Monetary Fund</td>
</tr>
<tr>
<td>6.3.1</td>
<td>Intellectual property receipts, % total trade</td>
<td>n/a</td>
<td>2021</td>
<td>World Trade Organization and United Nations Conference on Trade and Development</td>
</tr>
<tr>
<td>7.2.2</td>
<td>National feature films, mn pop. 15-69</td>
<td>n/a</td>
<td>2021</td>
<td>OMDIA; United Nations, World Population Prospects</td>
</tr>
</tbody>
</table>
Outdated data for Saudi Arabia

<table>
<thead>
<tr>
<th>Code</th>
<th>Indicator name</th>
<th>Economy Year</th>
<th>Model Year</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2.1</td>
<td>Electricity output, GWh/mn pop.</td>
<td>2020</td>
<td>2021</td>
<td>International Energy Agency</td>
</tr>
<tr>
<td>4.1.2</td>
<td>Domestic credit to private sector, % GDP</td>
<td>2017</td>
<td>2020</td>
<td>International Monetary Fund; World Bank and OECD GDP estimates.</td>
</tr>
</tbody>
</table>
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.

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.