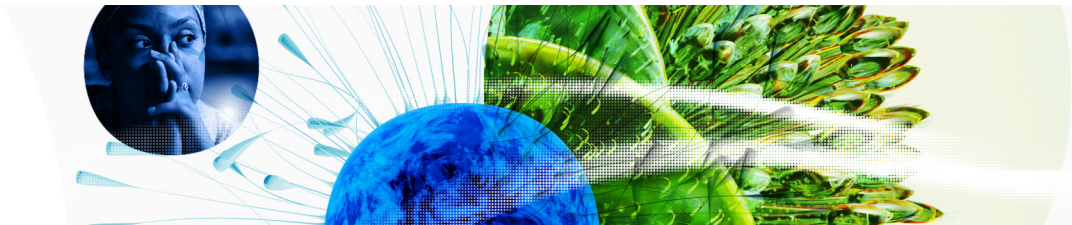


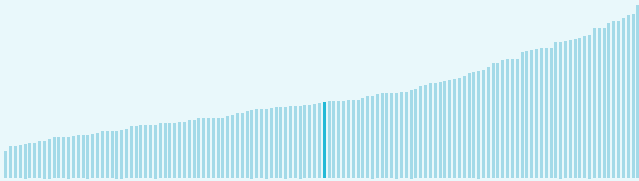
Global Innovation Index 2023



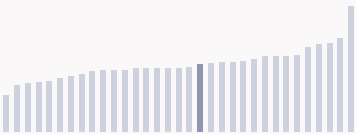
The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities**. Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation**.

Colombia ranking in the Global Innovation Index 2023

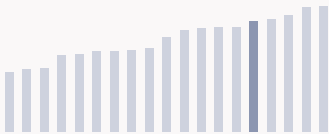
> Colombia ranks **66th** among the 132 economies featured in the GII 2023.



> Colombia ranks **15th** among the 33 upper-middle-income group economies.



> Colombia ranks **5th** among the 19 economies in Latin America and the Caribbean.



> Colombia GII Ranking (2020-2023)

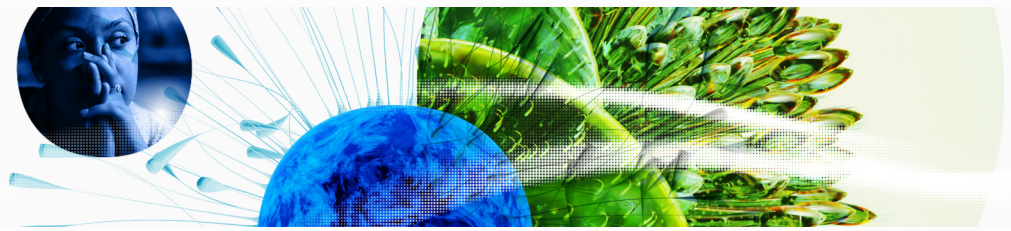
The table shows the rankings of Colombia over the past four years. Data availability and changes to the GII model framework influence year-on-year comparisons of the GII rankings. The statistical confidence interval for the ranking of Colombia in the GII 2023 is between ranks 62 and 72.

| | GII Position | Innovation Inputs | Innovation Outputs |
|------|--------------|-------------------|--------------------|
| 2020 | 68th | 56th | 74th |
| 2021 | 67th | 58th | 75th |
| 2022 | 63rd | 63rd | 70th |
| 2023 | 66th | 63rd | 71st |

Colombia performs worse in innovation outputs than innovation inputs in 2023.

- This year Colombia ranks 63rd in innovation inputs. This position is the same as last year.
- Colombia ranks 71st in innovation outputs. This position is lower than last year.

Global Innovation Index 2023



→ Expected vs. observed innovation performance

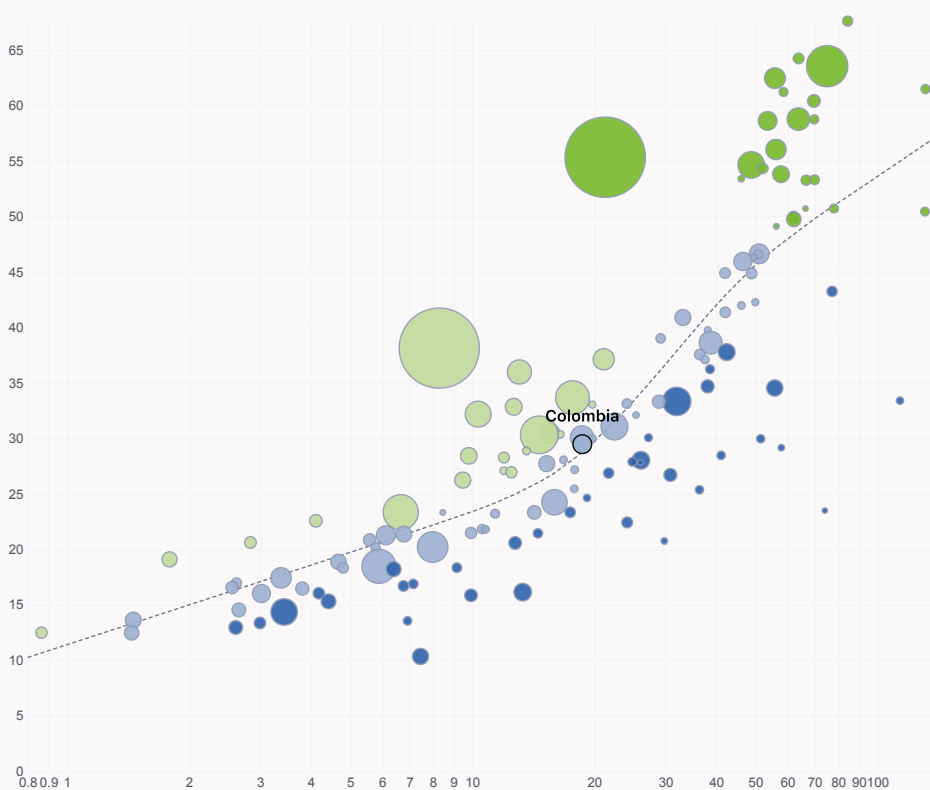
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected and those below are performing below expectations.



> Relative to GDP, Colombia's performance is at expectations for its level of development.

> Innovation overperformers relative to their economic development

↑ **GII Score**



- Innovation leader
- Performing above expectations for level of development
- Performing at expectations for level of development
- Performing below expectations for level of development

Size legend (Population)



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

Global Innovation Index 2023



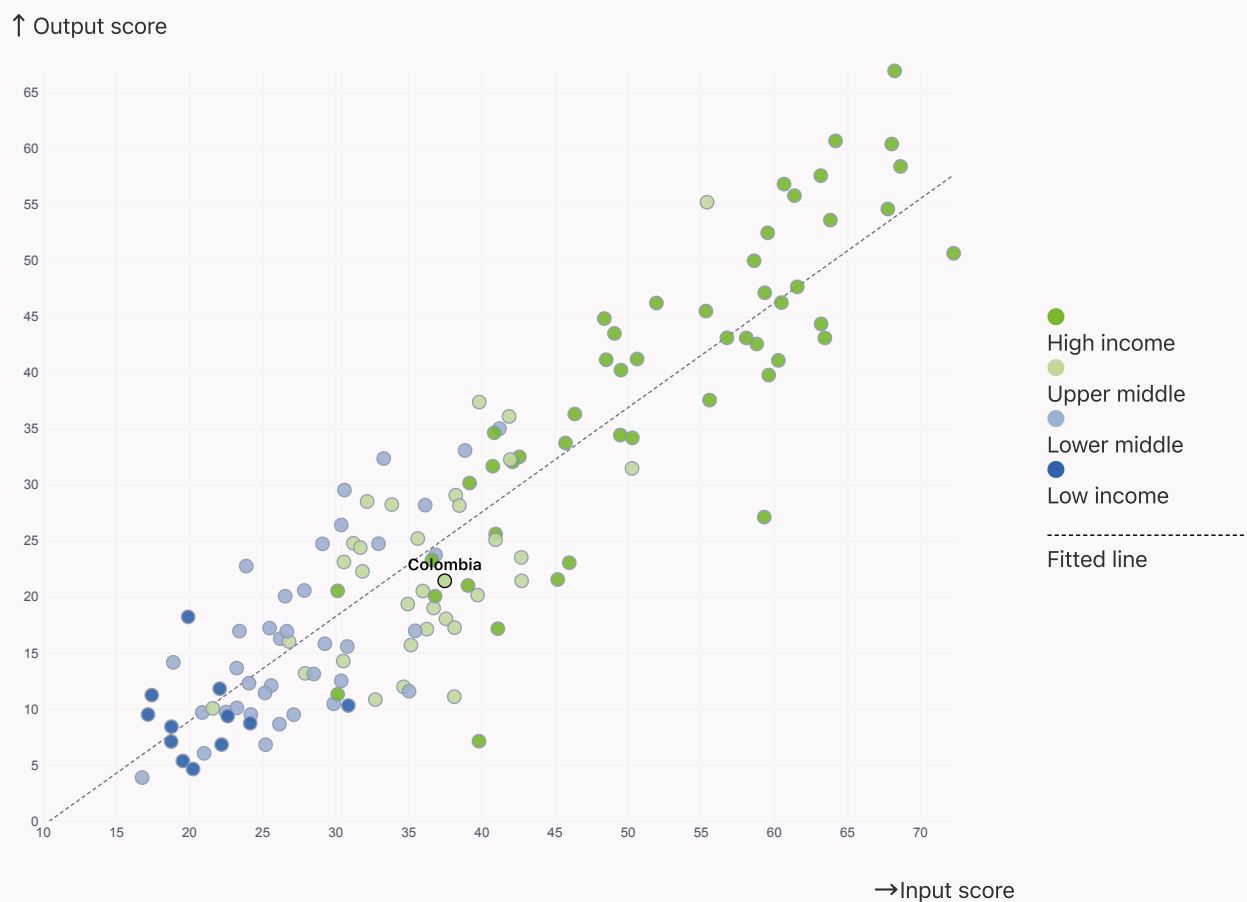
→ Effectively translating innovation investments into innovation outputs

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.



> Colombia produces less innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs

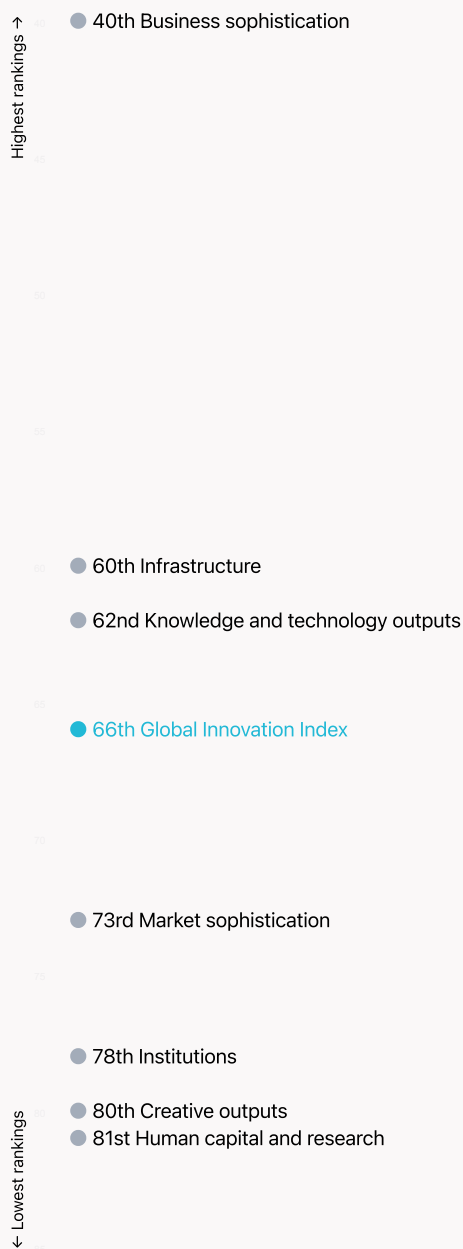


Global Innovation Index 2023



→ Overview of Colombia'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 Colombia are those that rank above the GII (shown in blue) and the weakest are those that rank below.




> **Highest rankings** 

Colombia ranks highest in Business sophistication (40th), Infrastructure (60th) and Knowledge and technology outputs (62nd).

> **Lowest rankings** 

Colombia ranks lowest in Human capital and research (81st), Creative outputs (80th) and Institutions (78th).

 The full WIPO Intellectual Property Statistics profile for Colombia can be found on [this link](#).

Global Innovation Index 2023



→ Benchmark of Colombia against other country groupings for each of the seven areas of the GII Index

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

> Upper-Middle-Income economies

Colombia performs above the upper-middle-income group average in Knowledge and technology outputs, Business sophistication, Infrastructure.



> Latin America And The Caribbean

Colombia performs above the regional average in all the pillars.



Knowledge and technology outputs

Top 10 | Score: 58.96

Colombia | Score: 23.65

Upper middle income | Score: 22.36

LCN | Score: 17.14

Creative outputs

Top 10 | 56.09

Upper middle income | 23.16

Colombia | 19.15

LCN | 18.91

Business sophistication

Top 10 | 64.39

Colombia | 37.30

Upper middle income | 29.27

LCN | 26.15

Market sophistication

Top 10 | 61.93

Upper middle income | 35.45

Colombia | 33.36

LCN | 29.74

Human capital and research

Top 10 | 60.28

Upper middle income | 29.68

Colombia | 27.03

LCN | 24.92

Infrastructure

Top 10 | 62.83

Colombia | 43.12

Upper middle income | 40.40

LCN | 35.88

Institutions

Top 10 | 79.85

Upper middle income | 47.71

Colombia | 46.67

LCN | 41.12

Global Innovation Index 2023



→ Innovation strengths and weaknesses in Colombia

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



> Colombia's main innovation strengths are **Firms offering formal training, %** (rank 6), **Intellectual property payments, % total trade** (rank 11) and **High-tech imports, % total trade** (rank 12).

Strengths

| Rank | Code | Indicator name |
|------|-------|---|
| 6 | 5.1.2 | Firms offering formal training, % |
| 11 | 5.3.1 | Intellectual property payments, % total trade |
| 12 | 5.3.2 | High-tech imports, % total trade |
| 13 | 3.3.1 | GDP/unit of energy use |
| 15 | 6.2.1 | Labor productivity growth, % |
| 20 | 6.2.2 | Unicorn valuation, % GDP |
| 21 | 6.3.5 | ISO 9001 quality/bn PPP\$ GDP |
| 22 | 5.1.4 | GERD financed by business, % |
| 25 | 3.3.3 | ISO 14001 environment/bn PPP\$ GDP |
| 28 | 7.3.2 | Country-code TLDs/th pop. 15-69 |

Weaknesses

| Rank | Code | Indicator name |
|------|-------|--|
| 113 | 2.1.5 | Pupil-teacher ratio, secondary |
| 109 | 2.2.3 | Tertiary inbound mobility, % |
| 92 | 2.3.1 | Researchers, FTE/mn pop. |
| 84 | 4.2.2 | Venture capital (VC) investors, deals/bn PPP\$ GDP |
| 75 | 5.3.5 | Research talent, % in businesses |
| 74 | 7.1.1 | Intangible asset intensity, top 15, % |
| 73 | 4.1.1 | Finance for startups and scaleups |
| 64 | 7.2.2 | National feature films/mn pop. 15-69 |
| 62 | 2.1.4 | PISA scales in reading, maths and science |
| 40 | 2.3.3 | Global corporate R&D investors, top 3, mn US\$ |

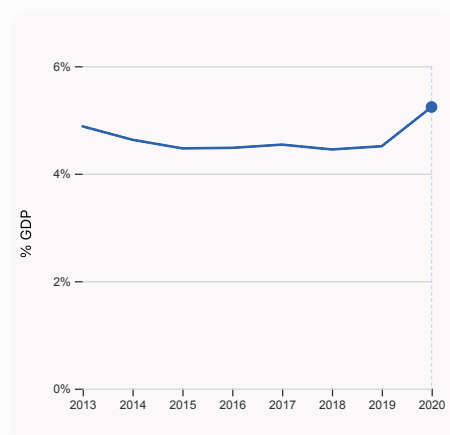
Global Innovation Index 2023



→ Colombia's innovation system

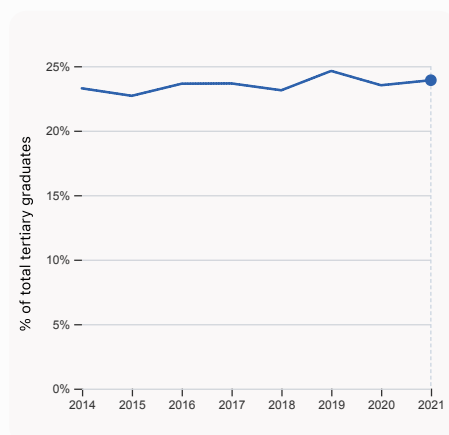
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Colombia



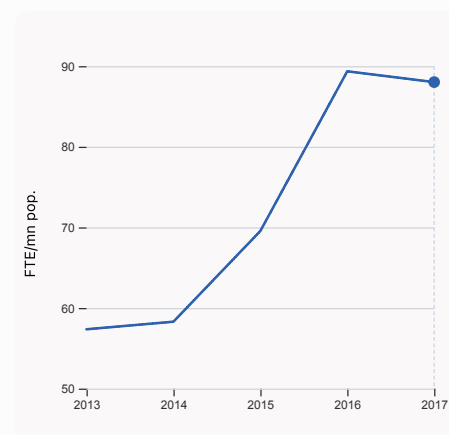
2.1.1 Expenditure on education, % GDP

was equal to 5.24% GDP in 2020, up by 0.73 percentage points from the year prior – and equivalent to an indicator rank of 28.



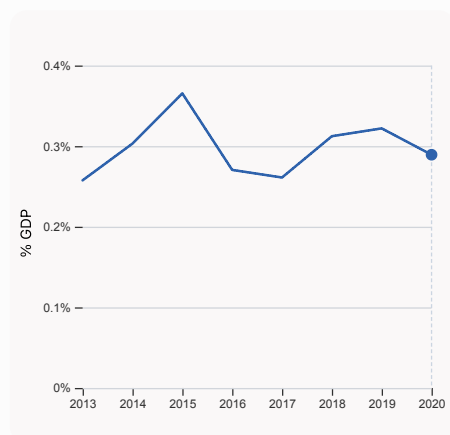
2.2.2 Graduates in science and engineering, %

was equal to 23.91% of total tertiary graduates in 2021, up by 0.39 percentage points from the year prior – and equivalent to an indicator rank of 51.



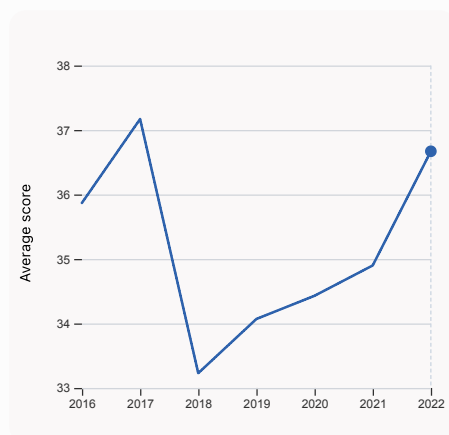
2.3.1 Researchers, FTE/mn pop.

was equal to 88.02 FTE/mn pop. in 2017, down by 1.5% from the year prior – and equivalent to an indicator rank of 92.



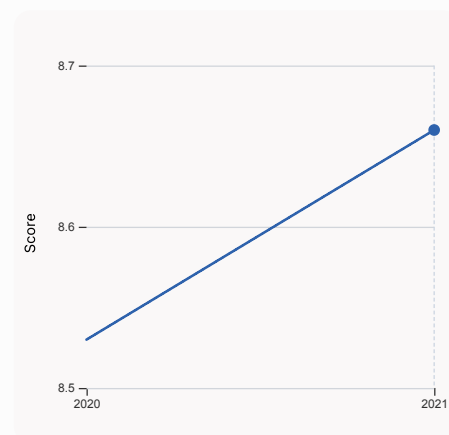
2.3.2 Gross expenditure on R&D, % GDP

was equal to 0.289% GDP in 2020, down by 0.033 percentage points from the year prior – and equivalent to an indicator rank of 78.



2.3.4 QS university ranking, top 3

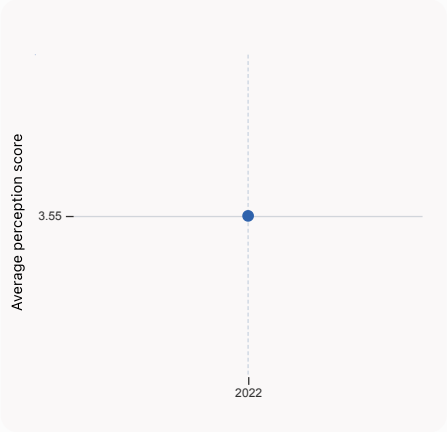
was equal to an average score of 36.67 for the top 3 universities in 2022, up by 5.072% from the year prior – and equivalent to an indicator rank of 35.



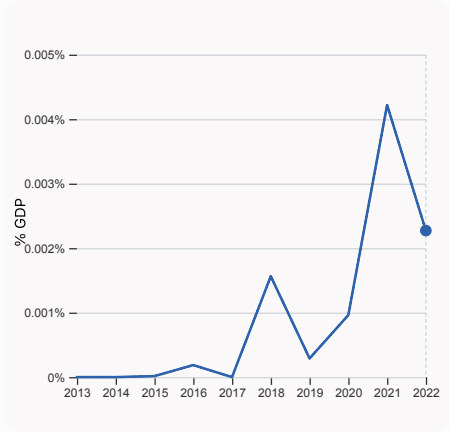
3.1.1 ICT access

was equal to a score of 8.66 in 2021, up by 1.52% from the year prior – and equivalent to an indicator rank of 72.

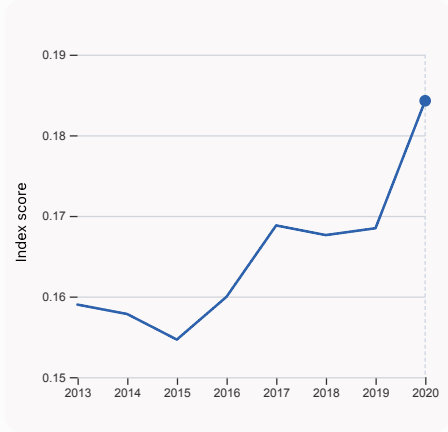
Global Innovation Index 2023



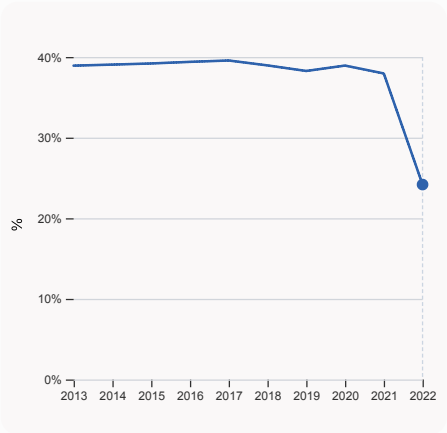
4.1.1 Finance for startups and scaleups
was equal to an average perception score of 3.55 in 2022, equivalent to an indicator rank of 73.



4.2.4 VC received, value, % GDP
was equal to 0.00227% GDP in 2022, down by 0.0019 percentage points from the year prior – and equivalent to an indicator rank of 28.



4.3.2 Domestic industry diversification
was equal to an index score of 0.184 in 2020, up by 9.38% from the year prior – and equivalent to an indicator rank of 63.

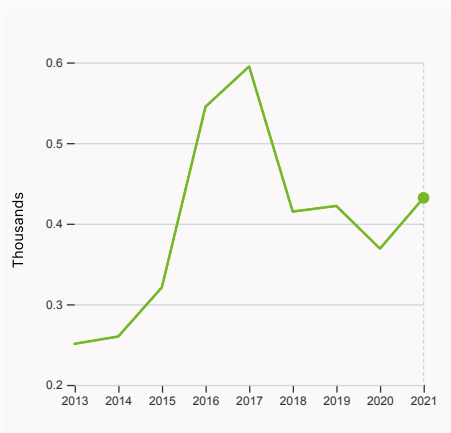


5.1.1 Knowledge-intensive employment, %
was equal to 24.18% in 2022, down by 13.78 percentage points from the year prior – and equivalent to an indicator rank of 58.

Global Innovation Index 2023

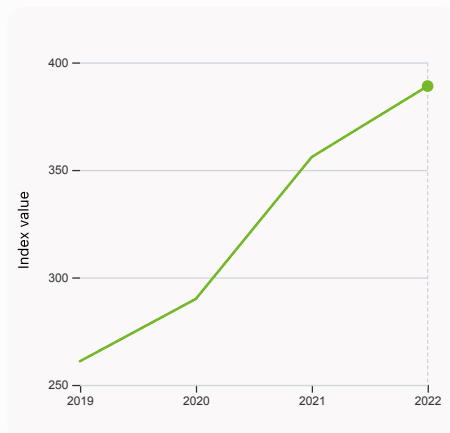


> Innovation outputs in Colombia



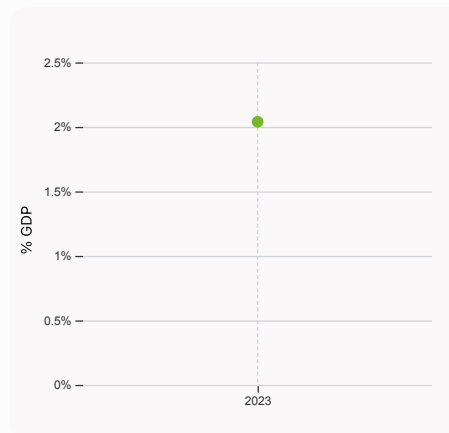
6.1.1 Patents by origin

was equal to 0.43 Thousands in 2021, up by 17.073% from the year prior – and equivalent to an indicator rank of 79.



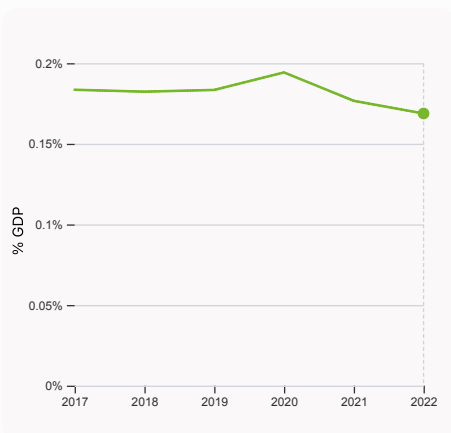
6.1.5 Citable documents H-index

was equal to an index value of 389 in 2022, up by 9.27% from the year prior – and equivalent to an indicator rank of 46.



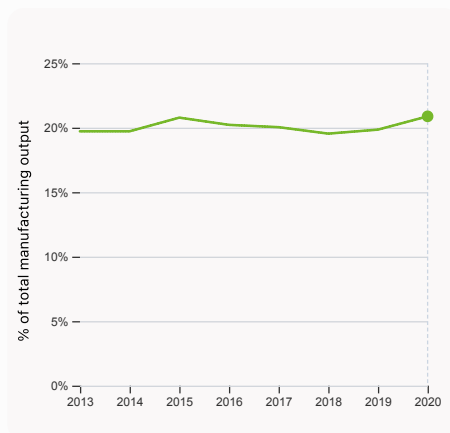
6.2.2 Unicorn valuation, % GDP

was equal to 2.04 % GDP in 2023 – and equivalent to an indicator rank of 20.



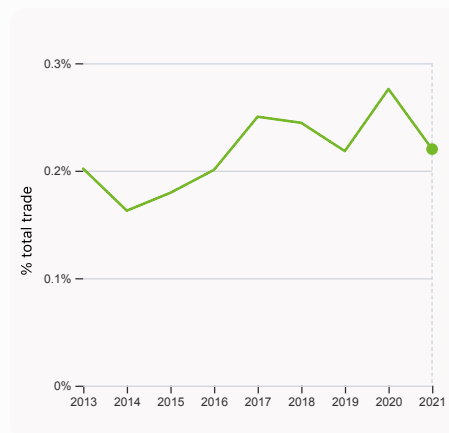
6.2.3 Software spending, % GDP

was equal to 0.169% GDP in 2022, down by 0.0079 percentage points from the year prior – and equivalent to an indicator rank of 79.



6.2.4 High-tech manufacturing, %

was equal to 20.88% of total manufacturing output in 2020, up by 1.03 percentage points from the year prior – and equivalent to an indicator rank of 61.



6.3.1 Intellectual property receipts, % total trade

was equal to 0.22% total trade in 2021, down by 0.056 percentage points from the year prior – and equivalent to an indicator rank of 43.

Global Innovation Index 2023



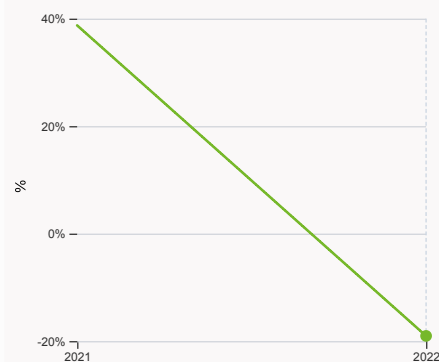
6.3.2 Production and export complexity

was equal to a score of -0.058 in 2020, down by 193.16% from the year prior – and equivalent to an indicator rank of 63.



6.3.3 High-tech exports

was equal to 735,048,057 USD in 2021, up by 6.58% from the year prior – and equivalent to an indicator rank of 69.



7.1.1 Intangible asset intensity, top 15, %

was equal to -19.033% in 2022, down by 57.77 percentage points from the year prior – and equivalent to an indicator rank of 74.



7.1.3 Global brand value, top 5,000

was equal to 8.237 bn USD in 2023, down by 12.0099% from the year prior – and equivalent to an indicator rank of 45.



7.2.1 Cultural and creative services exports

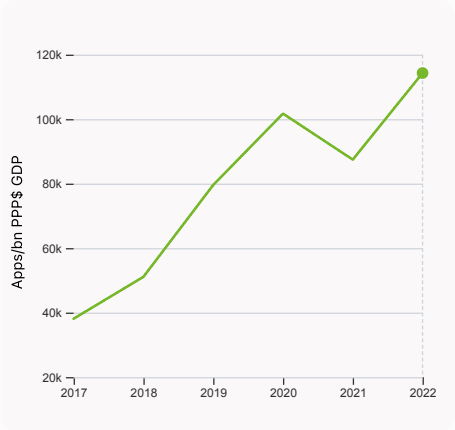
was equal to 274,103,000 USD in 2021, up by 33.23% from the year prior – and equivalent to an indicator rank of 55.



7.2.2 National feature films/mn pop. 15-69

was equal to 0.797 films/mn pop. 15-69 in 2021, up by 9.59% from the year prior – and equivalent to an indicator rank of 64.

Global Innovation Index 2023



7.3.4 Mobile app creation/bn PPP\$ GDP

was equal to 114,294.45 Apps/bn PPP\$ GDP in 2022, up by 30.7% from the year prior – and equivalent to an indicator rank of 72.

Global Innovation Index 2023



→ Colombia's innovation top performers

> 2.3.4 QS university ranking of Colombia's top universities

| Rank | University | Score |
|------|----------------------------------|-------|
| 220 | UNIVERSIDAD DE LOS ANDES | 41.60 |
| 243 | UNIVERSIDAD NACIONAL DE COLOMBIA | 38.90 |
| 382 | PONTIFICIA UNIVERSIDAD JAVERIANA | 29.50 |

Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2023>).

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".

> 6.2.2 Top Unicorn Companies in Colombia

| Rank | Unicorn Company | Industry | City | Valuation, bn USD |
|------|-----------------|-------------------------------------|--------|-------------------|
| 1 | RAPPI | Supply chain, logistics, & delivery | Bogota | 5 |
| 2 | LIFEMILES | Other | Bogota | 1 |
| 3 | HABI | Fintech | Bogota | 1 |

Source: CBInsights, Tracker – The Complete List of Unicorn Companies: <https://www.cbinsights.com/research-unicorn-companies>

> 7.1.1 Top 15 intangible-asset intensive companies in Colombia

| Rank | Firm | Intensity, % |
|------|--------------------------------|--------------|
| 1 | ECOPETROL SA | 18.70 |
| 2 | GRUPO NUTRESA SA | 63.14 |
| 3 | INTERCONEXION ELECTRICA SA ESP | 27.65 |

Source: Brand Finance (<https://brandirectory.com/reports/gift-2022>).

Note: Brand Finance only provides within economy ranks.

> 7.1.3 Top 5,000 companies in Colombia with highest global brand value

| Rank | Brand | Industry | Brand Value, mn USD |
|------|-------------|-----------|---------------------|
| 1 | ECOPETROL | Oil & Gas | 3,639.3 |
| 2 | BANCOLOMBIA | Banking | 1,394.3 |
| 3 | AGUILA | Beers | 645.9 |

Source: Brand Finance (<https://brandirectory.com>).

Note: Rank corresponds to within economy ranks.

Global Innovation Index 2023



GII 2023 rank

Colombia

66

| Output rank | Input rank | Income | Region | Population (mn) | GDP, PPP\$ (bn) | GDP per capita, PPP\$ |
|-------------|------------|--------------|--------|-----------------|-----------------|-----------------------|
| 71 | 63 | Upper middle | LCN | 51.9 | 964.7 | 18,693.1 |

Score / Value Rank

Score / Value Rank

Institutions 46.7 78

| | | |
|--|-------------|-----------|
| 1.1 Institutional environment | 39.0 | 81 |
| 1.1.1 Operational stability for businesses* | 41.7 | 87 |
| 1.1.2 Government effectiveness* | 36.3 | 71 |
| 1.2 Regulatory environment | 60.0 | 72 |
| 1.2.1 Regulatory quality* | 47.8 | 58 |
| 1.2.2 Rule of law* | 26.5 | 90 |
| 1.2.3 Cost of redundancy dismissal | 16.7 | 68 |
| 1.3 Business environment | 41.0 | 83 |
| 1.3.1 Policies for doing business* | 40.1 | 84 |
| 1.3.2 Entrepreneurship policies and culture* | 41.9 | 47 |

Human capital and research 27.0 81

| | | |
|--|-------------|-----------|
| 2.1 Education | 43.8 | 83 |
| 2.1.1 Expenditure on education, % GDP | 5.2 | 28 |
| 2.1.2 Government funding/pupil, secondary, % GDP/cap | 23.1 | 33 |
| 2.1.3 School life expectancy, years | 14.8 | 58 |
| 2.1.4 PISA scales in reading, maths and science | 405.5 | 62 |
| 2.1.5 Pupil-teacher ratio, secondary | 26.2 | 113 |
| 2.2 Tertiary education | 26.5 | 76 |
| 2.2.1 Tertiary enrolment, % gross | 57.1 | 57 |
| 2.2.2 Graduates in science and engineering, % | 23.9 | 51 |
| 2.2.3 Tertiary inbound mobility, % | 0.2 | 109 |
| 2.3 Research and development (R&D) | 10.7 | 58 |
| 2.3.1 Researchers, FTE/mn pop. | 88.0 | 92 |
| 2.3.2 Gross expenditure on R&D, % GDP | 0.3 | 78 |
| 2.3.3 Global corporate R&D investors, top 3, mn US\$ | 0.0 | 40 |
| 2.3.4 QS university ranking, top 3* | 37.1 | 35 |

Infrastructure 43.1 60

| | | |
|--|-------------|-----------|
| 3.1 Information and communication technologies (ICTs) | 71.5 | 62 |
| 3.1.1 ICT access* | 79.9 | 72 |
| 3.1.2 ICT use* | 63.8 | 86 |
| 3.1.3 Government's online service* | 71.5 | 59 |
| 3.1.4 E-participation* | 70.9 | 37 |
| 3.2 General infrastructure | 19.3 | 92 |
| 3.2.1 Electricity output, GWh/mn pop. | 1,642.1 | 89 |
| 3.2.2 Logistics performance* | 36.4 | 65 |
| 3.2.3 Gross capital formation, % GDP | 20.0 | 98 |
| 3.3 Ecological sustainability | 38.5 | 36 |
| 3.3.1 GDP/unit of energy use | 17.9 | 13 |
| 3.3.2 Environmental performance* | 39.8 | 63 |
| 3.3.3 ISO 14001 environment/bn PPP\$ GDP | 3.8 | 25 |

Market sophistication 33.4 73

| | | |
|--|-------------|-----------|
| 4.1 Credit | 23.8 | 81 |
| 4.1.1 Finance for startups and scaleups* | 28.3 | 73 |
| 4.1.2 Domestic credit to private sector, % GDP | 54.3 | 68 |
| 4.1.3 Loans from microfinance institutions, % GDP | n/a | n/a |
| 4.2 Investment | 12.8 | 49 |
| 4.2.1 Market capitalization, % GDP | 37.1 | 42 |
| 4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP | 0.0 | 84 |
| 4.2.3 VC recipients, deals/bn PPP\$ GDP | 0.0 | 60 |
| 4.2.4 VC received, value, % GDP | 0.0 | 28 |
| 4.3 Trade, diversification, and market scale | 63.5 | 39 |
| 4.3.1 Applied tariff rate, weighted avg., % | 2.4 | 65 |
| 4.3.2 Domestic industry diversification | 85.5 | 63 |
| 4.3.3 Domestic market scale, bn PPP\$ | 964.7 | 31 |

Business sophistication 37.3 40

| | | |
|---|-------------|-----------|
| 5.1 Knowledge workers | 48.1 | 34 |
| 5.1.1 Knowledge-intensive employment, % | 24.2 | 58 |
| 5.1.2 Firms offering formal training, % | 63.0 | 6 |
| 5.1.3 GERD performed by business, % GDP | 0.1 | 57 |
| 5.1.4 GERD financed by business, % | 53.4 | 22 |
| 5.1.5 Females employed w/advanced degrees, % | 16.3 | 46 |
| 5.2 Innovation linkages | 19.9 | 72 |
| 5.2.1 University-industry R&D collaboration* | 47.7 | 55 |
| 5.2.2 State of cluster development* | 44.2 | 58 |
| 5.2.3 GERD financed by abroad, % GDP | 0.0 | 66 |
| 5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP | 0.0 | 89 |
| 5.2.5 Patent families/bn PPP\$ GDP | 0.1 | 59 |
| 5.3 Knowledge absorption | 43.9 | 33 |
| 5.3.1 Intellectual property payments, % total trade | 2.4 | 11 |
| 5.3.2 High-tech imports, % total trade | 17.5 | 12 |
| 5.3.3 ICT services imports, % total trade | 1.9 | 39 |
| 5.3.4 FDI net inflows, % GDP | 3.4 | 40 |
| 5.3.5 Research talent, % in businesses | 2.5 | 75 |

Knowledge and technology outputs 23.7 62

| | | |
|--|-------------|-----------|
| 6.1 Knowledge creation | 9.7 | 81 |
| 6.1.1 Patents by origin/bn PPP\$ GDP | 0.5 | 79 |
| 6.1.2 PCT patents by origin/bn PPP\$ GDP | 0.1 | 56 |
| 6.1.3 Utility models by origin/bn PPP\$ GDP | 0.2 | 46 |
| 6.1.4 Scientific and technical articles/bn PPP\$ GDP | n/a | n/a |
| 6.1.5 Citable documents H-index | 19.3 | 46 |
| 6.2 Knowledge impact | 37.3 | 38 |
| 6.2.1 Labor productivity growth, % | 3.1 | 15 |
| 6.2.2 Unicorn valuation, % GDP | 2.0 | 20 |
| 6.2.3 Software spending, % GDP | 0.2 | 79 |
| 6.2.4 High-tech manufacturing, % | 20.9 | 61 |
| 6.3 Knowledge diffusion | 24.0 | 60 |
| 6.3.1 Intellectual property receipts, % total trade | 0.2 | 43 |
| 6.3.2 Production and export complexity | 51.3 | 63 |
| 6.3.3 High-tech exports, % total trade | 1.3 | 69 |
| 6.3.4 ICT services exports, % total trade | 1.1 | 85 |
| 6.3.5 ISO 9001 quality/bn PPP\$ GDP | 12.3 | 21 |

Creative outputs 19.1 80

| | | |
|---|-------------|-----------|
| 7.1 Intangible assets | 23.0 | 80 |
| 7.1.1 Intangible asset intensity, top 15, % | -19.0 | 74 |
| 7.1.2 Trademarks by origin/bn PPP\$ GDP | 40.1 | 57 |
| 7.1.3 Global brand value, top 5,000 | 2.3 | 45 |
| 7.1.4 Industrial designs by origin/bn PPP\$ GDP | 0.6 | 80 |
| 7.2 Creative goods and services | 5.8 | 83 |
| 7.2.1 Cultural and creative services exports, % total trade | 0.5 | 55 |
| 7.2.2 National feature films/mn pop. 15-69 | 0.8 | 64 |
| 7.2.3 Entertainment and media market/th pop. 15-69 | 5.8 | 40 |
| 7.2.4 Creative goods exports, % total trade | 0.3 | 72 |
| 7.3 Online creativity | 24.7 | 51 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15-69 | 3.1 | 67 |
| 7.3.2 Country-code TLDs/th pop. 15-69 | 25.3 | 28 |
| 7.3.3 GitHub commits/mn pop. 15-69 | 7.1 | 60 |
| 7.3.4 Mobile app creation/bn PPP\$ GDP | 63.4 | 72 |

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/gii-ranking>. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

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→ Data availability

The following tables list indicators that are either missing or outdated for Colombia.



> Colombia has missing data for one indicator and outdated data for six indicators.

> Missing data for Colombia

| Code | Indicator name | Economy Year | Model Year | Source |
|-------|---|--------------|------------|--|
| 4.1.3 | Loans from microfinance institutions, % GDP | n/a | 2021 | International Monetary Fund, Financial Access Survey (FAS) |

> Outdated data for Colombia

| Code | Indicator name | Economy Year | Model Year | Source |
|-------|-----------------------------------|--------------|------------|--|
| 2.1.1 | Expenditure on education, % GDP | 2020 | 2021 | UNESCO Institute for Statistics |
| 2.3.1 | Researchers, FTE/mn pop. | 2017 | 2021 | UNESCO Institute for Statistics; Eurostat; OECD; RICYT |
| 2.3.2 | Gross expenditure on R&D, % GDP | 2020 | 2021 | UNESCO Institute for Statistics; Eurostat; OECD; RICYT |
| 5.1.2 | Firms offering formal training, % | 2017 | 2019 | World Bank Enterprise Surveys |
| 5.1.3 | GERD performed by business, % GDP | 2020 | 2021 | UNESCO Institute for Statistics; Eurostat; OECD; RICYT |
| 5.3.5 | Research talent, % in businesses | 2017 | 2021 | UNESCO Institute for Statistics; Eurostat; OECD; RICYT |

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→ 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.



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.