



## COLOMBIA

**63rd**

Colombia ranks 63rd 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 Colombia 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 Colombia in the GII 2022 is between ranks 62 and 67.

### Rankings for Colombia (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	68	56	74
2021	67	58	75
2022	63	63	70

- Colombia performs better in innovation inputs than innovation outputs in 2022.
- This year Colombia ranks 63rd in innovation inputs, lower than both 2021 and 2020.
- As for innovation outputs, Colombia ranks 70th. This position is higher than both 2021 and 2020.

**15th**

Colombia ranks 15th among the 36 upper-middle-income group economies.

**4th**

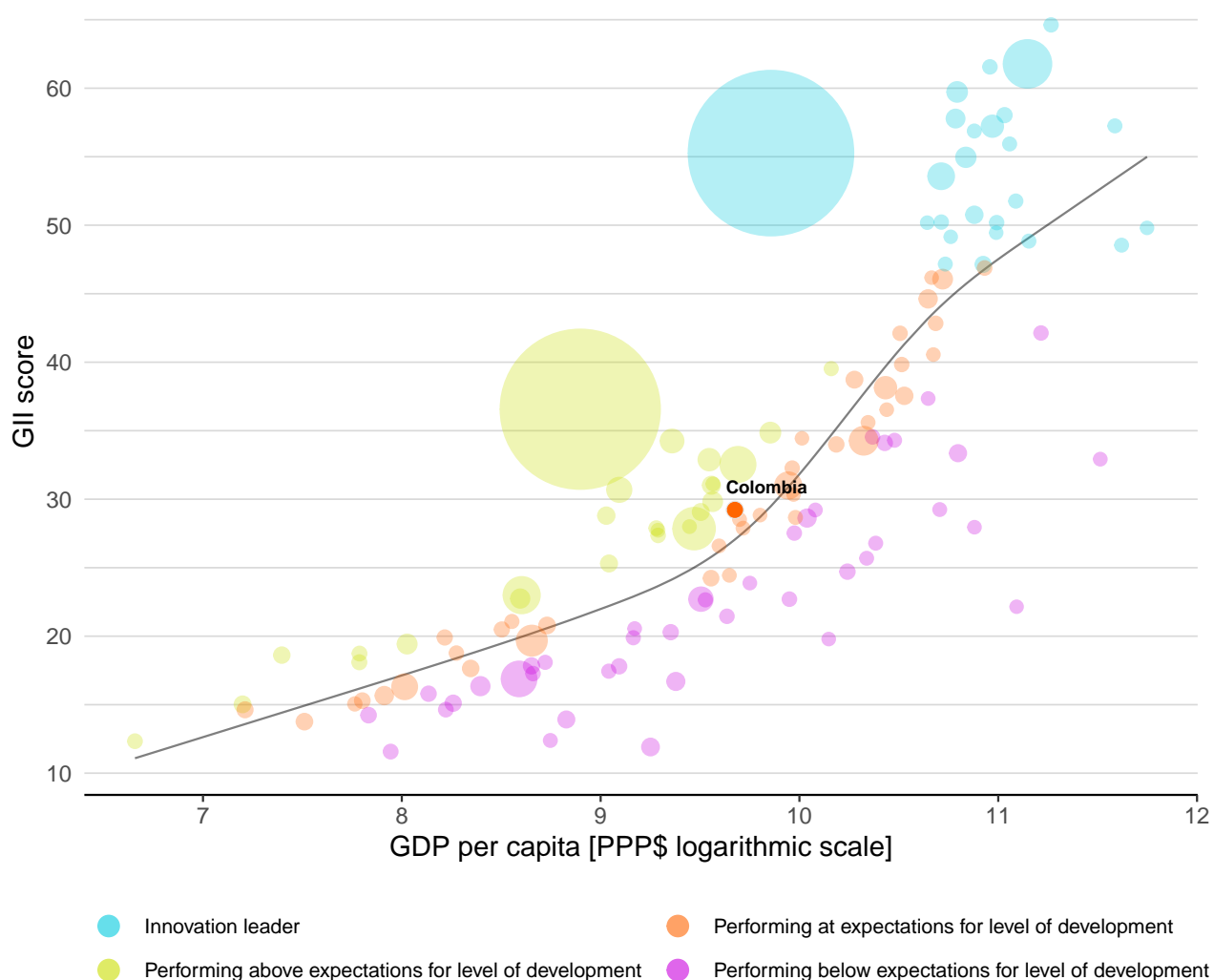
Colombia ranks 4th among the 18 economies in Latin America and the Caribbean.

## 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.

### The positive relationship between innovation and development

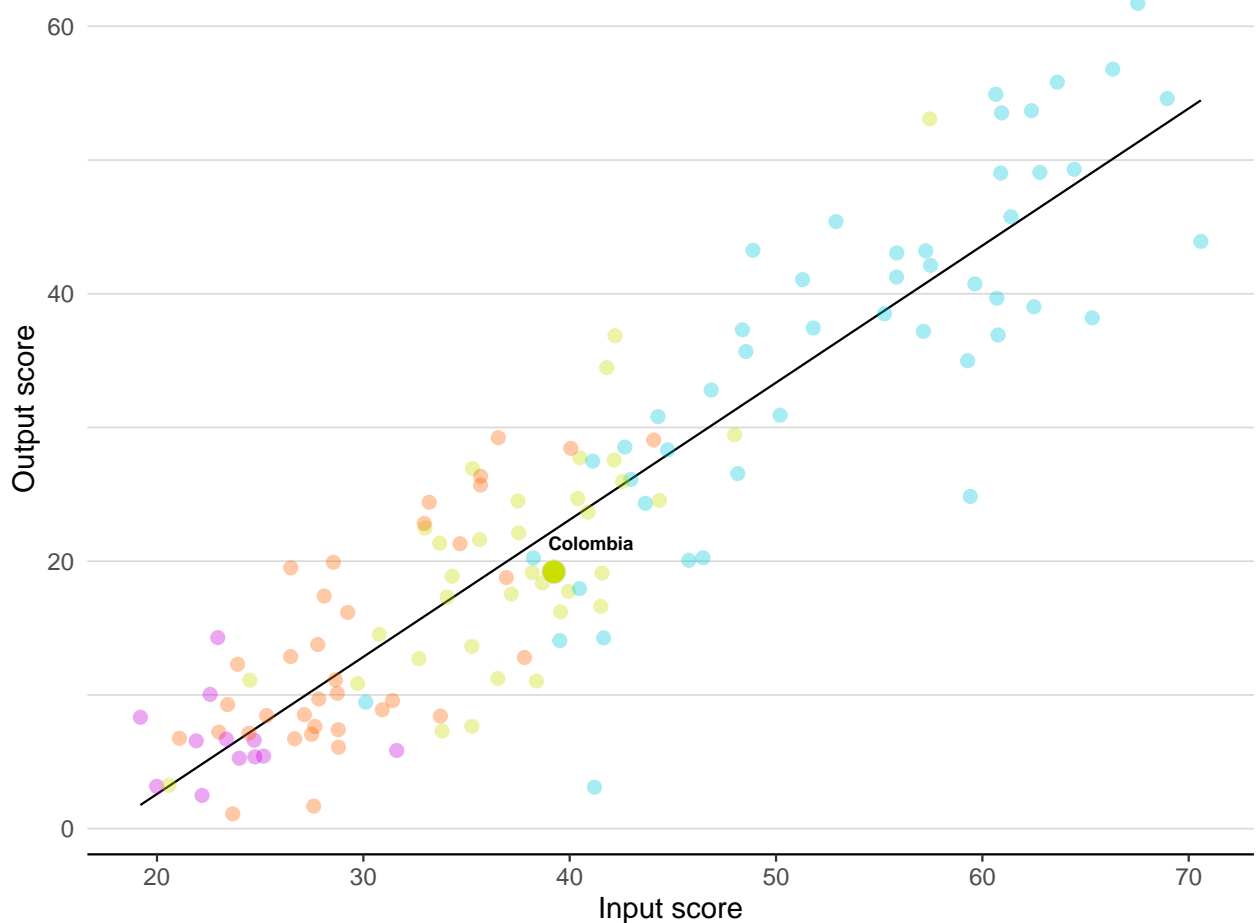


## EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

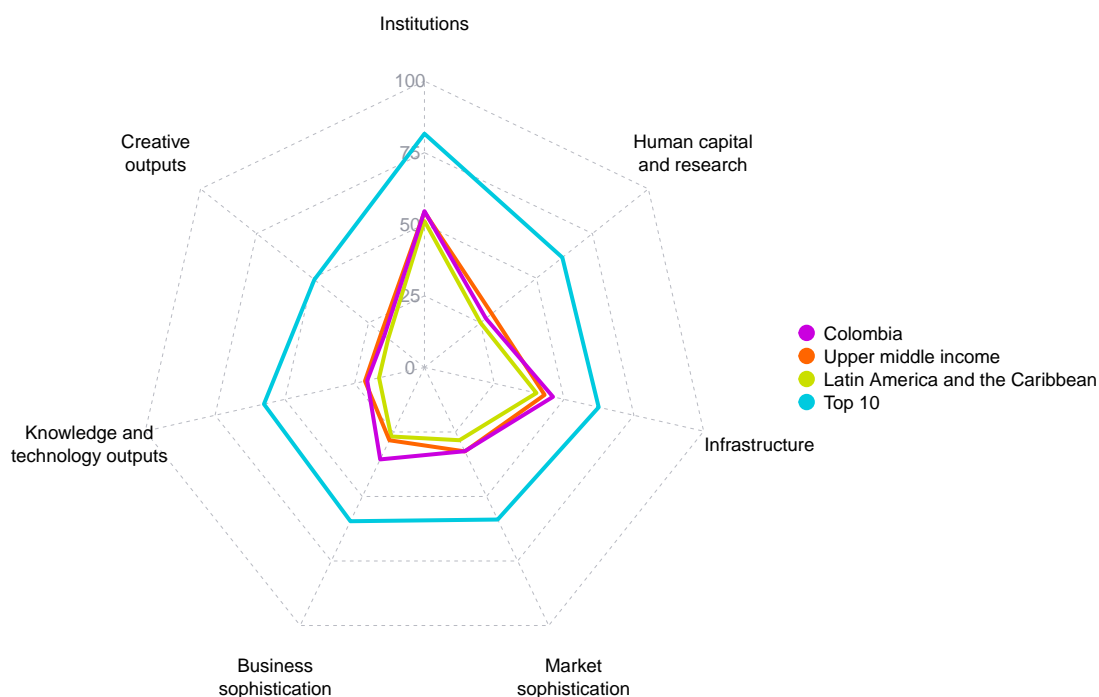
### Innovation input to output performance



Income    High income    Upper middle    Lower middle    Low income    — Fitted line

## BENCHMARKING AGAINST OTHER UPPER MIDDLE-INCOME GROUP ECONOMIES AND LATIN AMERICA AND THE CARIBBEAN

### The seven GII pillar scores for Colombia



### Upper-middle-income group economies

Colombia performs above the upper-middle-income group average in three pillars, namely: Institutions; Infrastructure; and, Business sophistication.

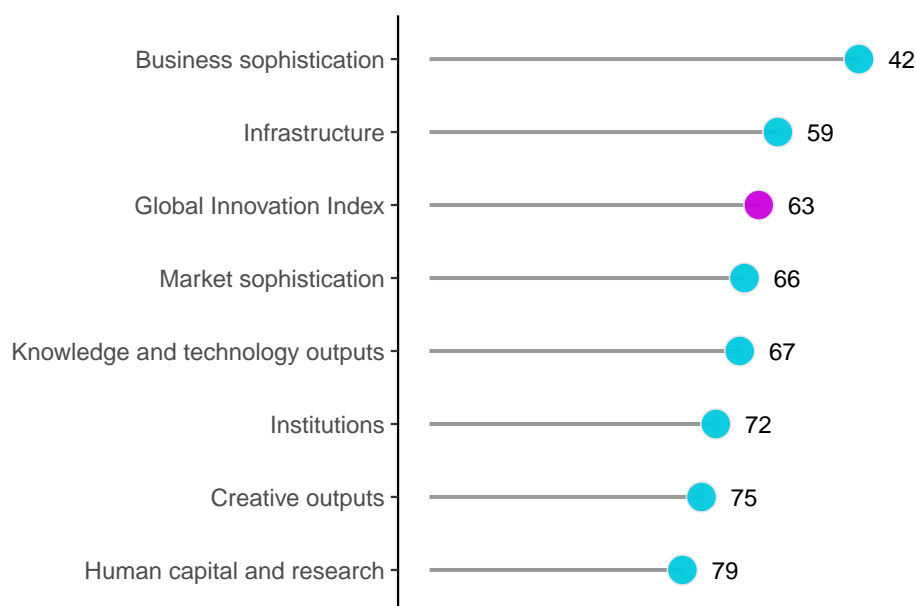
### Latin America and the Caribbean

Colombia performs above the regional average in all GII pillars.

## OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Colombia performs best in Business sophistication and its weakest performance is in Human capital and research.

### The seven GII pillar ranks for Colombia



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

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

[https://www.wipo.int/ipstats/en/statistics/country\\_profile/profile.jsp?code=CO](https://www.wipo.int/ipstats/en/statistics/country_profile/profile.jsp?code=CO).

## INNOVATION STRENGTHS AND WEAKNESSES








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

### Strengths and weaknesses for Colombia

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
3.1.4	E-participation	27	2.1.4	PISA scales in reading, maths and science	62
3.3.1	GDP/unit of energy use	15	2.1.5	Pupil-teacher ratio, secondary	108
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	23	2.2.3	Tertiary inbound mobility, %	108
5.1.2	Firms offering formal training, %	7	2.3.1	Researchers, FTE/mn pop.	92
5.1.4	GERD financed by business, %	24	2.3.3	Global corporate R&D investors, top 3, mn USD	38
5.3.2	High-tech imports, % total trade	14	3.2.3	Gross capital formation, % GDP	97
5.3.3	ICT services imports, % total trade	31	4.1.1	Finance for startups and scaleups	63
6.2.1	Labor productivity growth, %	8	4.2.2	Venture capital investors, deals/bn PPP\$ GDP	86
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	21	5.3.5	Research talent, % in businesses	74
7.3.2	Country-code TLDs/th pop. 15–69	28	7.1.1	Intangible asset intensity, top 15, %	63

## Colombia

63

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
70	63	Upper middle	LCN	51.3	812.8	15,922	
		Score/Value	Rank				
 Institutions		54.6	72	 Business sophistication			
1.1	Political environment	56.2	78	5.1	Knowledge workers	51.0	27 ●
1.1.1	Political and operational stability*	61.8	87	5.1.1	Knowledge-intensive employment, %	38.2	34 ●
1.1.2	Government effectiveness*	50.6	67	5.1.2	Firms offering formal training, %	63.0	7 ●
1.2	Regulatory environment	63.0	71	5.1.3	GERD performed by business, % GDP	0.1	57
1.2.1	Regulatory quality*	52.9	57	5.1.4	GERD financed by business, %	53.4	24 ●
1.2.2	Rule of law*	33.3	92	5.1.5	Females employed w/advanced degrees, %	14.9	50
1.2.3	Cost of redundancy dismissal	16.7	68	5.2	Innovation linkages	21.2	82
1.3	Business environment	44.6	74	5.2.1	University-industry R&D collaboration†	46.7	55
1.3.1	Policies for doing business†	46.1	79	5.2.2	State of cluster development and depth†	50.3	48
1.3.2	Entrepreneurship policies and culture*	43.1	38	5.2.3	GERD financed by abroad, % GDP	0.0	68
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	89
				5.2.5	Patent families/bn PPP\$ GDP	0.1	65
 Human capital and research		27.4	79	5.3	Knowledge absorption	34.7	52
2.1	Education	42.2	90	5.3.1	Intellectual property payments, % total trade	1.2	30
2.1.1	Expenditure on education, % GDP	4.9	44	5.3.2	High-tech imports, % total trade	15.8	14 ●
2.1.2	Government funding/pupil, secondary, % GDP/cap	21.4	45	5.3.3	ICT services imports, % total trade	2.3	31 ●
2.1.3	School life expectancy, years	14.4	63	5.3.4	FDI net inflows, % GDP	3.5	35
2.1.4	PISA scales in reading, maths and science	405.5	62 ○	5.3.5	Research talent, % in businesses	2.5	74 ○
2.1.5	Pupil-teacher ratio, secondary	26.1	108 ○ ◇	 Knowledge and technology outputs		20.5	67
2.2	Tertiary education	27.6	75	6.1	Knowledge creation	8.9	80
2.2.1	Tertiary enrolment, % gross	54.2	59	6.1.1	Patents by origin/bn PPP\$ GDP	0.5	76
2.2.2	Graduates in science and engineering, %	23.5	44	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	60
2.2.3	Tertiary inbound mobility, %	0.2	108 ○ ◇	6.1.3	Utility models by origin/bn PPP\$ GDP	0.3	44
2.3	Research and development (R&D)	12.6	52	6.1.4	Scientific and technical articles/bn PPP\$ GDP	10.1	86
2.3.1	Researchers, FTE/mn pop.	88.0	92 ○ ◇	6.1.5	Citable documents H-index	18.5	45
2.3.2	Gross expenditure on R&D, % GDP	0.3	79	6.2	Knowledge impact	32.5	49
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2.1	Labor productivity growth, %	3.6	8 ●
2.3.4	QS university ranking, top 3*	34.9	35	6.2.2	New businesses/th pop. 15–64	2.0	62
 Infrastructure		46.0	59	6.2.3	Software spending, % GDP	0.2	70
3.1	Information and communication technologies (ICTs)	75.7	58	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	14.0	21 ●
3.1.1	ICT access*	85.3	70	6.2.5	High-tech manufacturing, %	19.9	65
3.1.2	ICT use*	54.0	88	6.3	Knowledge diffusion	20.1	74
3.1.3	Government's online service*	76.5	49	6.3.1	Intellectual property receipts, % total trade	0.2	45
3.1.4	E-participation*	86.9	27 ●	6.3.2	Production and export complexity	43.7	55
3.2	General infrastructure	24.2	81	6.3.3	High-tech exports, % total trade	1.6	67
3.2.1	Electricity output, GWh/mn pop.	1,454.2	92 ○ ◇	6.3.4	ICT services exports, % total trade	0.8	89
3.2.2	Logistics performance*	41.4	57	 Creative outputs		17.9	75
3.2.3	Gross capital formation, % GDP	19.4	97 ○	7.1	Intangible assets	26.4	66
3.3	Ecological sustainability	38.2	33	7.1.1	Intangible asset intensity, top 15, %	38.7	63 ○
3.3.1	GDP/unit of energy use	16.7	15 ● ◆	7.1.2	Trademarks by origin/bn PPP\$ GDP	43.0	55
3.3.2	Environmental performance*	42.4	63	7.1.3	Global brand value, top 5,000, % GDP	31.1	44
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	4.0	23 ●	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.5	85
 Market sophistication		32.5	66	7.2	Creative goods and services	10.2	81
4.1	Credit	24.3	74	7.2.1	Cultural and creative services exports, % total trade	0.2	70
4.1.1	Finance for startups and scaleups*	29.4	63 ○	7.2.2	National feature films/mn pop. 15–69	1.3	54
4.1.2	Domestic credit to private sector, % GDP	54.1	65	7.2.3	Entertainment and media market/th pop. 15–69	6.0	43
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.4	Printing and other media, % manufacturing	1.2	32
4.2	Investment	10.5	56	7.2.5	Creative goods exports, % total trade	0.3	70
4.2.1	Market capitalization, % GDP	37.0	43	7.3	Online creativity	8.6	47
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	86 ○	7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.9	66
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	71	7.3.2	Country-code TLDs/th pop. 15–69	24.6	28 ●
4.2.4	Venture capital received, value, % GDP	0.0	30	7.3.3	GitHub commit pushes received/mn pop. 15–69	4.9	60
4.3	Trade, diversification, and market scale	62.6	40	7.3.4	Mobile app creation/bn PPP\$ GDP	2.1	72
4.3.1	Applied tariff rate, weighted avg., %	2.4	66				
4.3.2	Domestic industry diversification	85.3	61				
4.3.3	Domestic market scale, bn PPP\$	812.8	32				

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](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 Colombia.

### Missing data for Colombia

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)

### Outdated data for Colombia

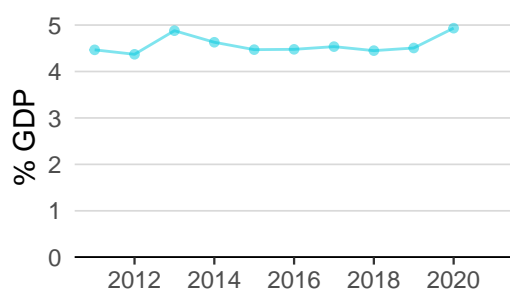
Code	Indicator name	Economy year	Model year	Source
2.3.1	Researchers, FTE/mn pop.	2017	2020	UNESCO Institute for Statistics
5.1.2	Firms offering formal training, %	2017	2019	World Bank Enterprise Surveys
5.3.5	Research talent, % in businesses	2017	2020	UNESCO Institute for Statistics



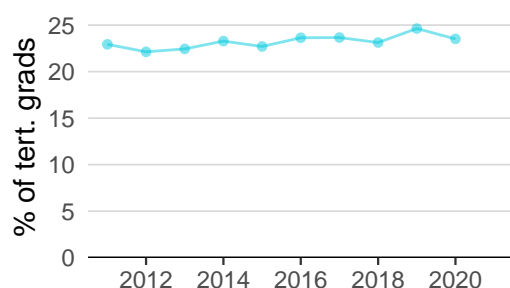
## COLOMBIA'S INNOVATION SYSTEM

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

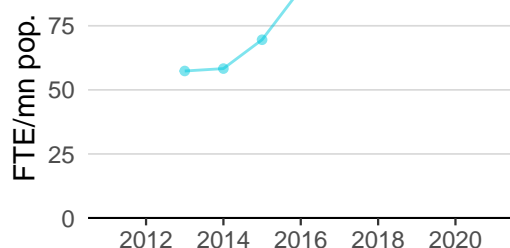
### Innovation inputs



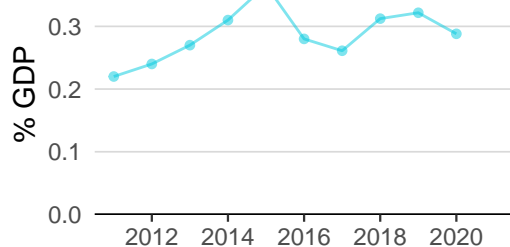
**2.1.1 Expenditure on education** was equal to 4.9% GDP in 2020—up by 9 percentage points from the year prior—and equivalent to an indicator rank of 44.



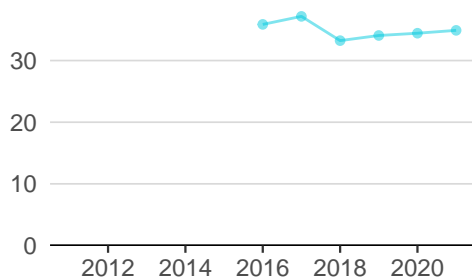
**2.2.2 Graduates in science and engineering** was equal to 23.5% of tert. grads in 2020—down by 5 percentage points from the year prior—and equivalent to an indicator rank of 44.



**2.3.1 Researchers** was equal to 88.0 FTE/mn pop. in 2017—down by 2 percentage points from the year prior—and equivalent to an indicator rank of 92.



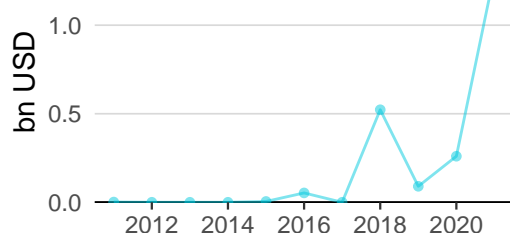
**2.3.2 Gross expenditure on R&D** was equal to 0.3% GDP in 2020—down by 10 percentage points from the year prior—and equivalent to an indicator rank of 79.



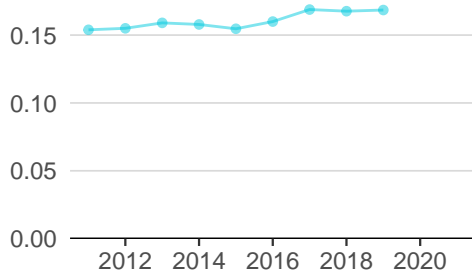
**2.3.4 QS university ranking** was equal to 34.9 in 2021—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 35.



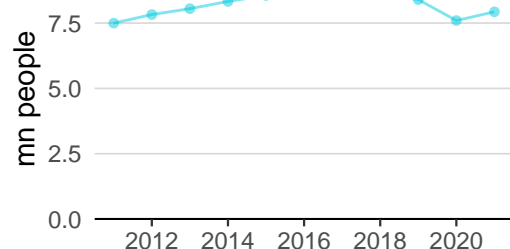
**3.1.1 ICT access** was equal to 8.5 in 2020 and equivalent to an indicator rank of 70.



**4.2.4 Venture capital received** was equal to 1.3 bn USD in 2021—up by 398 percentage points from the year prior—and equivalent to an indicator rank of 30.

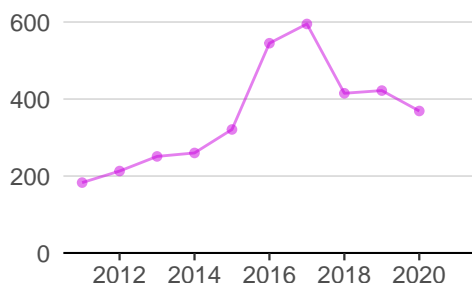


**4.3.2 Domestic industry diversification** was equal to 0.2 in 2019—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 61.

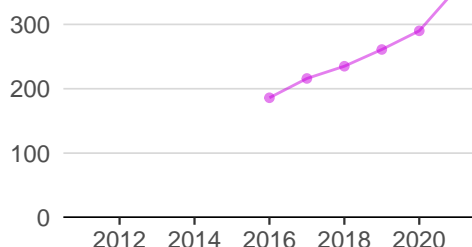


**5.1.1 Knowledge-intensive employment** was equal to 7.9 mn people in 2021—up by 4 percentage points from the year prior—and equivalent to an indicator rank of 34.

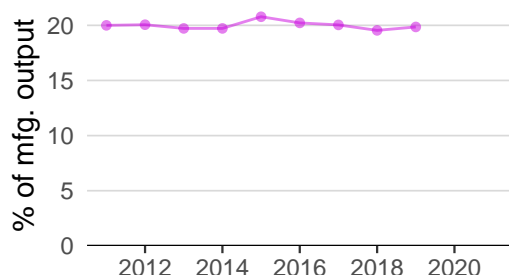
## Innovation outputs



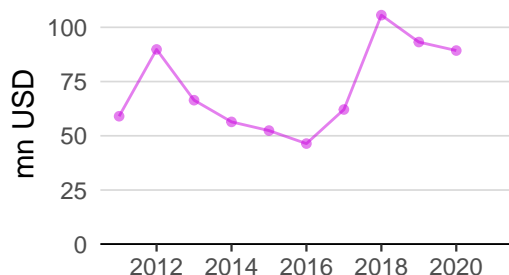
**6.1.1 Patents by origin** was equal to 369.0 in 2020—down by 13 percentage points from the year prior—and equivalent to an indicator rank of 76.



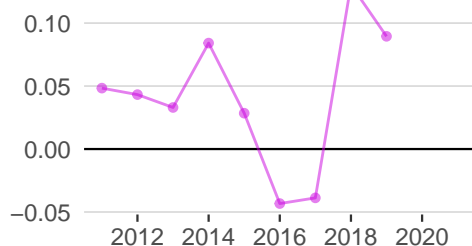
**6.1.5 Citable documents H-index** was equal to 356.0 in 2021—up by 23 percentage points from the year prior—and equivalent to an indicator rank of 45.



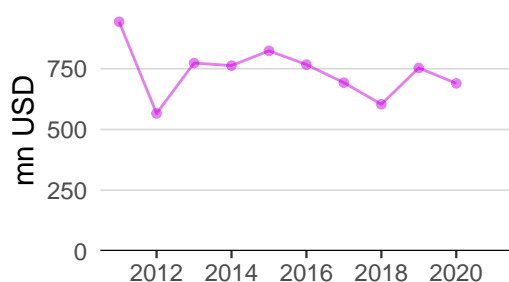
**6.2.5 High-tech manufacturing** was equal to 19.9% of mfg. output in 2019—up by 2 percentage points from the year prior—and equivalent to an indicator rank of 65.



**6.3.1 Intellectual property receipts** was equal to 89.3 mn USD in 2020—down by 4 percentage points from the year prior—and equivalent to an indicator rank of 45.



**6.3.2 Production and export complexity** was equal to 0.1 in 2019—down by 31 percentage points from the year prior—and equivalent to an indicator rank of 55.



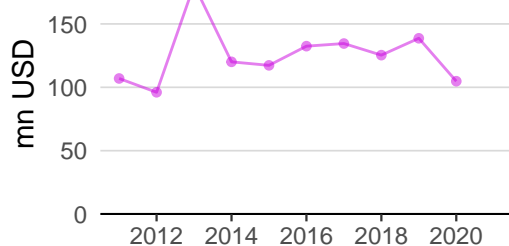
**6.3.3 High-tech exports** was equal to 689.6 mn USD in 2020—down by 8 percentage points from the year prior—and equivalent to an indicator rank of 67.



**7.1.1 Intangible asset intensity** was equal to 38.7% of total value in 2021 and equivalent to an indicator rank of 63.



**7.1.3 Global brand value** was equal to 9.4 bn USD in 2021—up by 17 percentage points from the year prior—and equivalent to an indicator rank of 44.



**7.2.1 Cultural and creative services exports** was equal to 104.8 mn USD in 2020—down by 24 percentage points from the year prior—and equivalent to an indicator rank of 70.

## COLOMBIA'S INNOVATION TOP PERFORMERS

### 2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank
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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
UNIVERSIDAD DE LOS ANDES	39.6	236=
UNIVERSIDAD NACIONAL DE COLOMBIA	37.6	258=
PONTIFICIA UNIVERSIDAD JAVERIANA	27.5	412=

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
ECOPETROL	1
GRUPO AVAL ACCIONES Y VAL	2
INTERCONEXION ELECTRICA	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
ECOPETROL	Oil & Gas	1
BANCOLOMBIA	Banking	2
BANCO DE BOGOTÁ	Banking	3

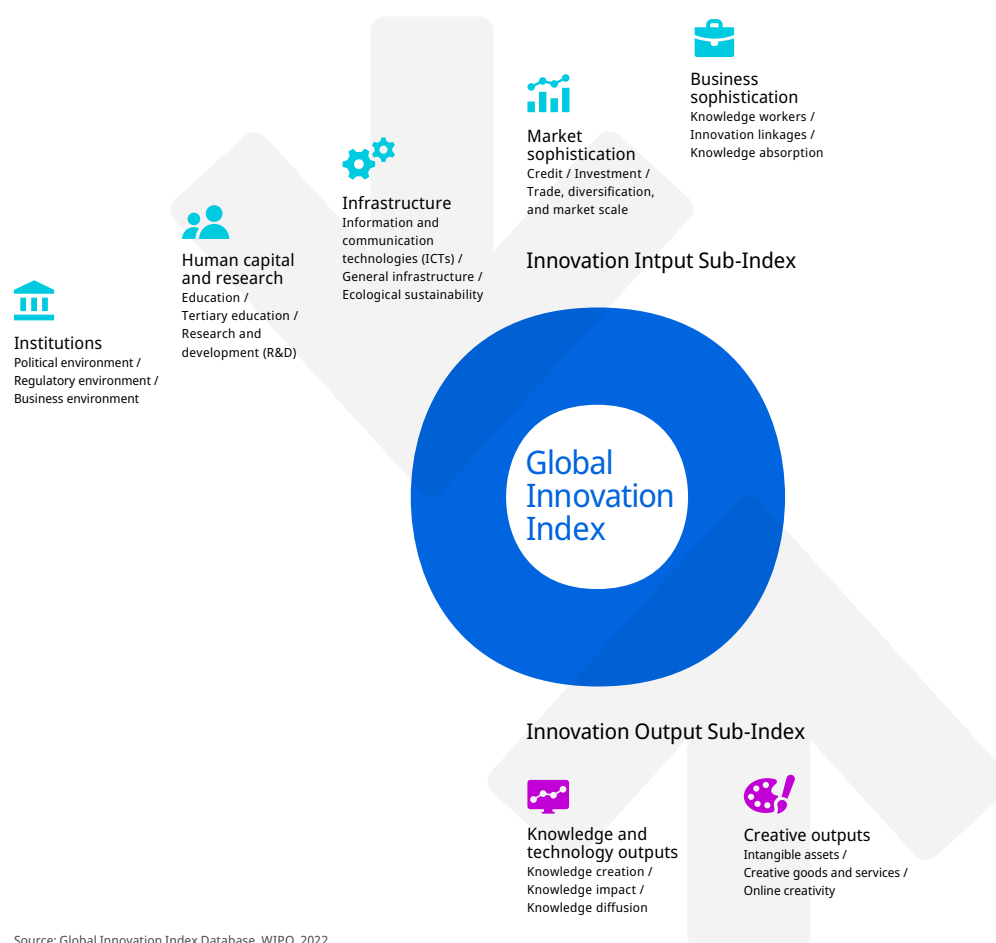
Source: Brand Finance (<https://brandirectory.com>).

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.



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.