



GUATEMALA

110th Guatemala ranks 110th 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 Guatemala 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 Guatemala in the GII 2022 is between ranks 100 and 111.

Rankings for Guatemala (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	106	110	96
2021	101	112	83
2022	110	117	96

- Guatemala performs better in innovation outputs than innovation inputs in 2022.
- This year Guatemala ranks 117th in innovation inputs, lower than both 2021 and 2020.
- As for innovation outputs, Guatemala ranks 96th. This position is lower than last year but the same as 2020.

35th Guatemala ranks 35th among the 36 upper-middle-income group economies.

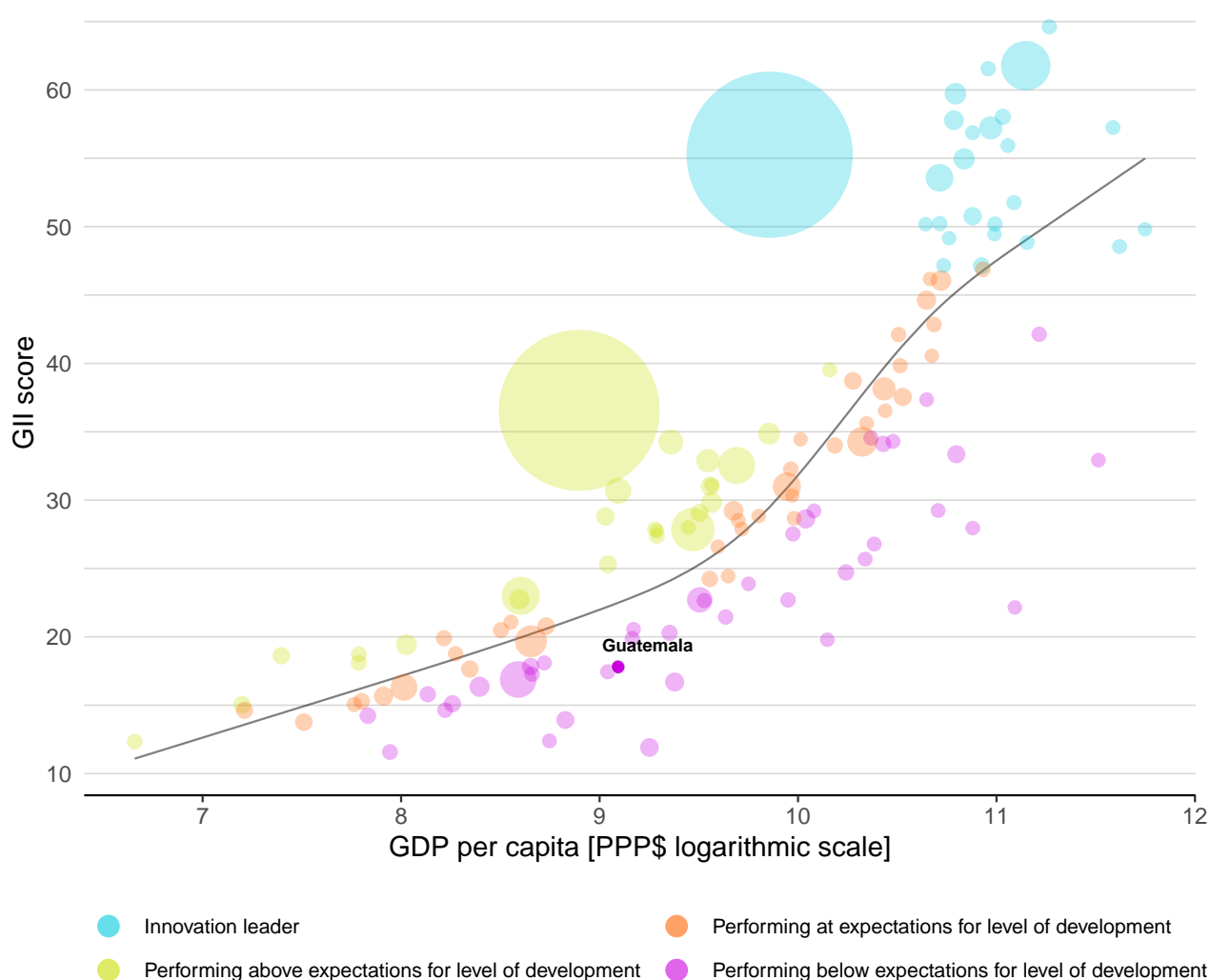
17th Guatemala ranks 17th among the 18 economies in Latin America and the Caribbean.

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, Guatemala's performance is below expectations for its level of development.

The positive relationship between innovation and development

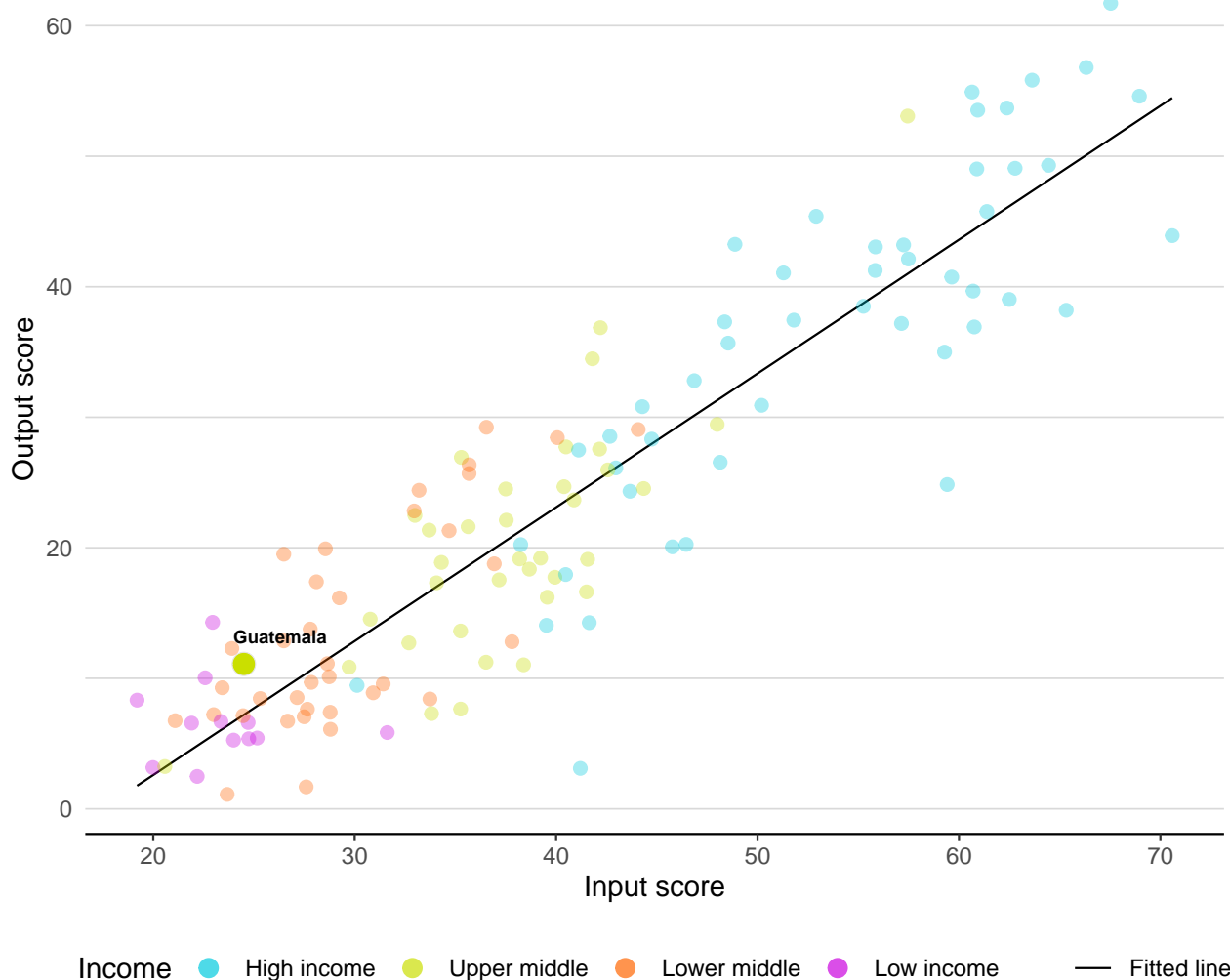


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

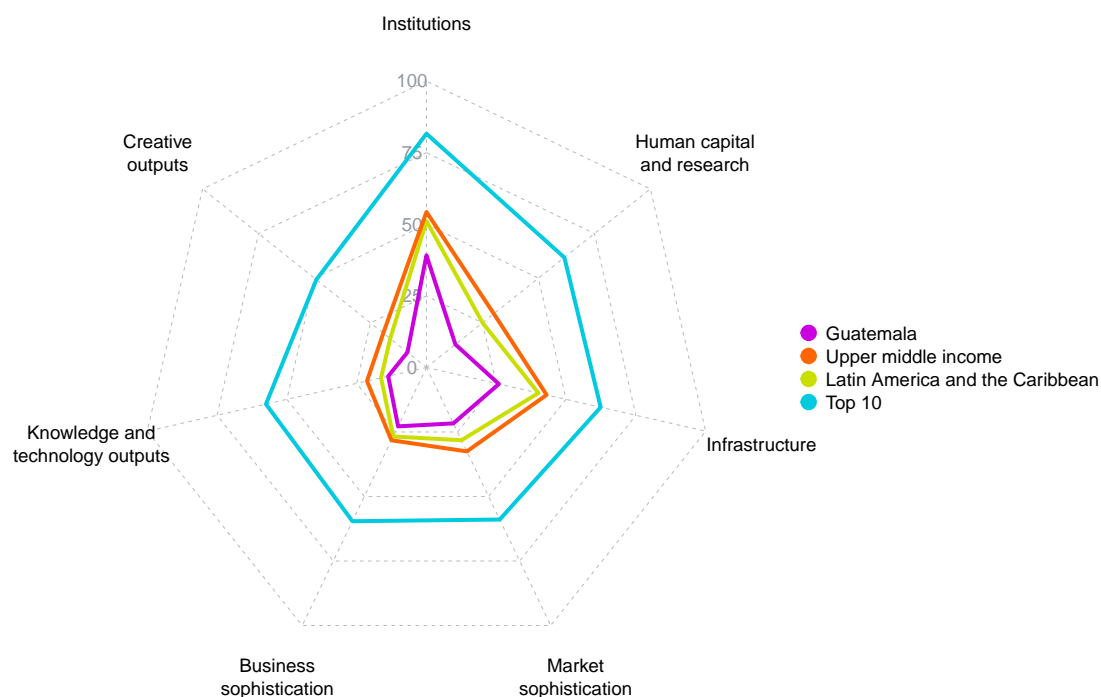
Guatemala produces more innovation outputs relative to its level of innovation investments.

Innovation input to output performance



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

The seven GII pillar scores for Guatemala



Upper-middle-income group economies

Guatemala performs below the upper-middle-income group average in all GII pillars.

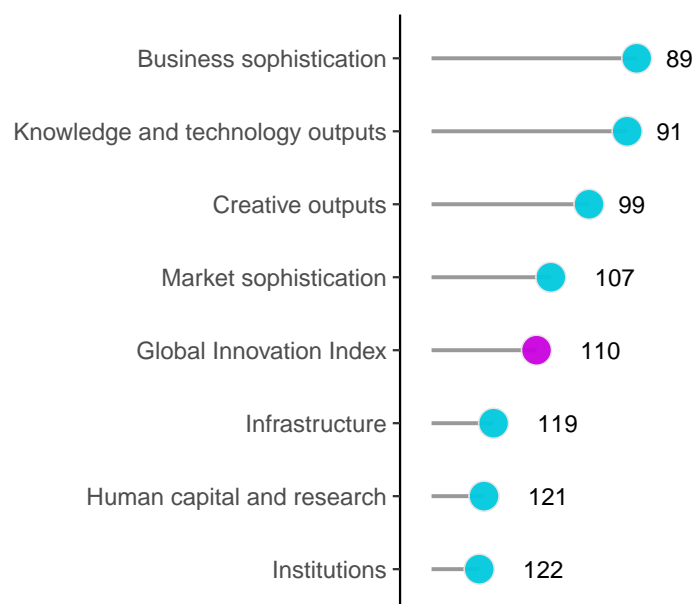
Latin America and the Caribbean

Guatemala performs below the regional average in all GII pillars.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Guatemala performs best in Business sophistication and its weakest performance is in Institutions.

The seven GII pillar ranks for Guatemala



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

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

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

INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths and weaknesses for Guatemala

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
2.1.5	Pupil-teacher ratio, secondary	50	2.1.2	Government funding/pupil, secondary, % GDP/cap	107
4.3.1	Applied tariff rate, weighted avg., %	51	2.2.2	Graduates in science and engineering, %	107
5.1.2	Firms offering formal training, %	13	2.3.1	Researchers, FTE/mn pop.	108
5.3.1	Intellectual property payments, % total trade	26	2.3.2	Gross expenditure on R&D, % GDP	113
5.3.2	High-tech imports, % total trade	26	2.3.3	Global corporate R&D investors, top 3, mn USD	38
5.3.3	ICT services imports, % total trade	41	2.3.4	QS university ranking, top 3	72
6.3.1	Intellectual property receipts, % total trade	60	5.1.3	GERD performed by business, % GDP	89
6.3.4	ICT services exports, % total trade	25	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	127
7.1.2	Trademarks by origin/bn PPP\$ GDP	61	5.2.5	Patent families/bn PPP\$ GDP	101
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	58	6.1.4	Scientific and technical articles/bn PPP\$ GDP	127

Guatemala

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
96	117	Upper middle	LCN	18.2	163.1	8,895
			Score/ Value	Rank		
					Score/ Value	Rank
Institutions				39.2	122	
1.1	Political environment		45.6	110		
1.1.1	Political and operational stability*		56.4	108		
1.1.2	Government effectiveness*		34.9	108		
1.2	Regulatory environment		46.1	116		
1.2.1	Regulatory quality*		40.6	85		
1.2.2	Rule of law*		18.8	122		
1.2.3	Cost of redundancy dismissal		27.0	108		
1.3	Business environment		25.8	118		
1.3.1	Policies for doing business†		36.5	101		
1.3.2	Entrepreneurship policies and culture*		15.1	64		
Human capital and research				12.9	121	
2.1	Education		34.1	111		
2.1.1	Expenditure on education, % GDP		3.3	101		
2.1.2	Government funding/pupil, secondary, % GDP/cap		5.3	107		
2.1.3	School life expectancy, years		10.6	101		
2.1.4	PISA scales in reading, maths and science		n/a	n/a		
2.1.5	Pupil-teacher ratio, secondary		12.2	50		
2.2	Tertiary education		4.6	121		
2.2.1	Tertiary enrolment, % gross		22.1	94		
2.2.2	Graduates in science and engineering, %		9.8	107		
2.2.3	Tertiary inbound mobility, %		0.2	107		
2.3	Research and development (R&D)		0.0	117		
2.3.1	Researchers, FTE/mn pop.		14.4	108		
2.3.2	Gross expenditure on R&D, % GDP		0.0	113		
2.3.3	Global corporate R&D investors, top 3, mn USD		0.0	38		
2.3.4	QS university ranking, top 3*		0.0	72		
Infrastructure				25.9	119	
3.1	Information and communication technologies (ICTs)		47.2	109		
3.1.1	ICT access*		63.7	110		
3.1.2	ICT use*		24.1	122		
3.1.3	Government's online service*		51.2	104		
3.1.4	E-participation*		50.0	103		
3.2	General infrastructure		12.3	125		
3.2.1	Electricity output, GWh/mn pop.		745.0	102		
3.2.2	Logistics performance*		16.7	112		
3.2.3	Gross capital formation, % GDP		15.3	118		
3.3	Ecological sustainability		18.3	103		
3.3.1	GDP/unit of energy use		9.9	70		
3.3.2	Environmental performance*		28.0	121		
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP		0.2	104		
Market sophistication				21.7	107	
4.1	Credit		16.4	96		
4.1.1	Finance for startups and scaleups*		20.9	70		
4.1.2	Domestic credit to private sector, % GDP		35.9	86		
4.1.3	Loans from microfinance institutions, % GDP		n/a	n/a		
4.2	Investment		2.0	[105]		
4.2.1	Market capitalization, % GDP		n/a	n/a		
4.2.2	Venture capital investors, deals/bn PPP\$ GDP		0.0	73		
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP		n/a	n/a		
4.2.4	Venture capital received, value, % GDP		n/a	n/a		
4.3	Trade, diversification, and market scale		46.6	88		
4.3.1	Applied tariff rate, weighted avg., %		1.6	51		
4.3.2	Domestic industry diversification		n/a	n/a		
4.3.3	Domestic market scale, bn PPP\$		163.1	73		
Business sophistication				22.8	89	
5.1	Knowledge workers				20.4	94
5.1.1	Knowledge-intensive employment, %				9.3	109
5.1.2	Firms offering formal training, %				55.7	13
5.1.3	GERD performed by business, % GDP				0.0	89
5.1.4	GERD financed by business, %				11.1	74
5.1.5	Females employed w/advanced degrees, %				2.7	102
5.2	Innovation linkages				17.6	110
5.2.1	University-industry R&D collaboration†				39.7	80
5.2.2	State of cluster development and depth†				47.6	69
5.2.3	GERD financed by abroad, % GDP				0.0	96
5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP				0.0	127
5.2.5	Patent families/bn PPP\$ GDP				0.0	101
5.3	Knowledge absorption				30.5	64
5.3.1	Intellectual property payments, % total trade				1.4	26
5.3.2	High-tech imports, % total trade				11.0	26
5.3.3	ICT services imports, % total trade				1.9	41
5.3.4	FDI net inflows, % GDP				1.3	92
5.3.5	Research talent, % in businesses				3.5	73
Knowledge and technology outputs				13.7	91	
6.1	Knowledge creation				1.6	125
6.1.1	Patents by origin/bn PPP\$ GDP				0.0	121
6.1.2	PCT patents by origin/bn PPP\$ GDP				0.0	94
6.1.3	Utility models by origin/bn PPP\$ GDP				0.1	60
6.1.4	Scientific and technical articles/bn PPP\$ GDP				2.0	127
6.1.5	Citable documents H-index				3.6	110
6.2	Knowledge impact				15.6	107
6.2.1	Labor productivity growth, %				1.1	59
6.2.2	New businesses/th pop. 15–64				0.6	92
6.2.3	Software spending, % GDP				0.0	118
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP				1.4	95
6.2.5	High-tech manufacturing, %				n/a	n/a
6.3	Knowledge diffusion				23.9	63
6.3.1	Intellectual property receipts, % total trade				0.1	60
6.3.2	Production and export complexity				34.0	77
6.3.3	High-tech exports, % total trade				1.9	66
6.3.4	ICT services exports, % total trade				4.3	25
Creative outputs				8.5	[99]	
7.1	Intangible assets				14.7	[89]
7.1.1	Intangible asset intensity, top 15, %				n/a	n/a
7.1.2	Trademarks by origin/bn PPP\$ GDP				40.9	61
7.1.3	Global brand value, top 5,000, % GDP				n/a	n/a
7.1.4	Industrial designs by origin/bn PPP\$ GDP				0.0	117
7.2	Creative goods and services				3.0	[109]
7.2.1	Cultural and creative services exports, % total trade				0.1	81
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				n/a	n/a
7.2.4	Printing and other media, % manufacturing				n/a	n/a
7.2.5	Creative goods exports, % total trade				0.2	72
7.3	Online creativity				1.6	90
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69				3.8	58
7.3.2	Country-code TLDs/th pop. 15–69				0.6	98
7.3.3	GitHub commit pushes received/mn pop. 15–69				2.2	84
7.3.4	Mobile app creation/bn PPP\$ GDP				0.0	105

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 Guatemala.

Missing data for Guatemala

Code	Indicator name	Economy year	Model year	Source
2.1.4	PISA scales in reading, maths and science	n/a	2018	OECD, PISA
4.1.3	Loans from microfinance institutions, % GDP	n/a	2020	International Monetary Fund, Financial Access Survey (FAS)
4.2.1	Market capitalization, % GDP	n/a	2020	World Federation of Exchanges
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	n/a	2021	Refinitiv
4.2.4	Venture capital received, value, % GDP	n/a	2021	Refinitiv
4.3.2	Domestic industry diversification	n/a	2019	United Nations Industrial Development Organization
6.2.5	High-tech manufacturing, %	n/a	2019	United Nations Industrial Development Organization
7.1.1	Intangible asset intensity, top 15, %	n/a	2021	Brand Finance
7.1.3	Global brand value, top 5,000, % GDP	n/a	2021	Brand Finance
7.2.2	National feature films/mn pop. 15–69	n/a	2019	OMDIA
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2021	PwC, GEMO
7.2.4	Printing and other media, % manufacturing	n/a	2019	United Nations Industrial Development Organization

Outdated data for Guatemala

Code	Indicator name	Economy year	Model year	Source
2.2.2	Graduates in science and engineering, %	2015	2020	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2019	2020	UNESCO Institute for Statistics
2.3.2	Gross expenditure on R&D, % GDP	2019	2020	UNESCO Institute for Statistics
5.1.1	Knowledge-intensive employment, %	2019	2021	International Labour Organization
5.1.2	Firms offering formal training, %	2017	2019	World Bank Enterprise Surveys
5.1.3	GERD performed by business, % GDP	2019	2020	UNESCO Institute for Statistics
5.1.5	Females employed w/advanced degrees, %	2019	2021	International Labour Organization
5.2.3	GERD financed by abroad, % GDP	2018	2019	UNESCO Institute for Statistics
5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	2019	2021	Refinitiv
5.3.5	Research talent, % in businesses	2019	2020	UNESCO Institute for Statistics

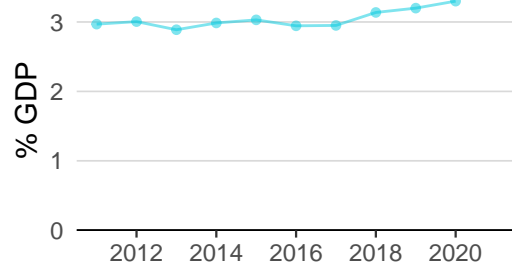


Code	Indicator name	Economy year	Model year	Source
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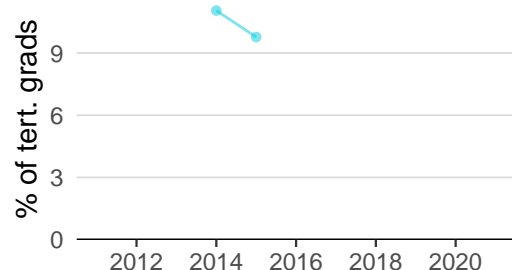
GUATEMALA'S INNOVATION SYSTEM

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

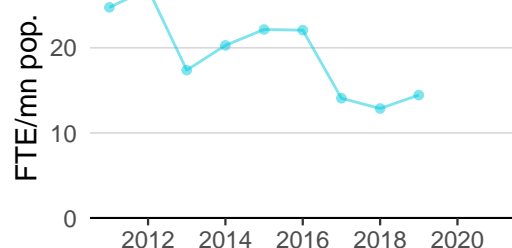
Innovation inputs



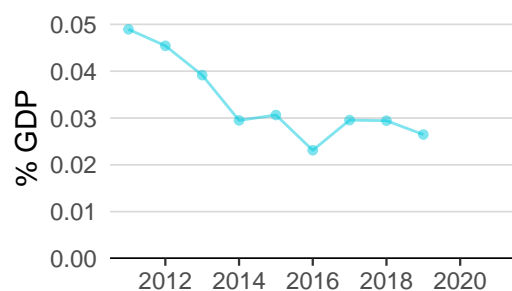
2.1.1 Expenditure on education was equal to 3.3% GDP in 2020—up by 3 percentage points from the year prior—and equivalent to an indicator rank of 101.



2.2.2 Graduates in science and engineering was equal to 9.8% of tert. grads in 2015—down by 12 percentage points from the year prior—and equivalent to an indicator rank of 107.

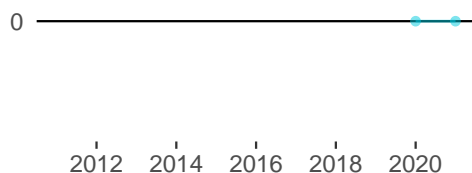


2.3.1 Researchers was equal to 14.4 FTE/mn pop. in 2019—up by 12 percentage points from the year prior—and equivalent to an indicator rank of 108.



2.3.2 Gross expenditure on R&D was equal to 0.0% GDP in 2019—down by 10 percentage points from the year prior—and equivalent to an indicator rank of 113.

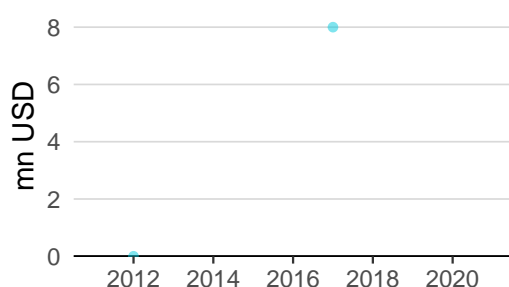
2.3.4 QS university ranking was equal to 0.0 in 2021—effectively unchanged from the year prior—and equivalent to an indicator rank of 72.



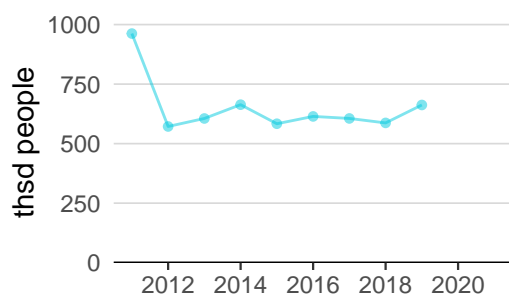
3.1.1 ICT access was equal to 6.4 in 2020 and equivalent to an indicator rank of 110.



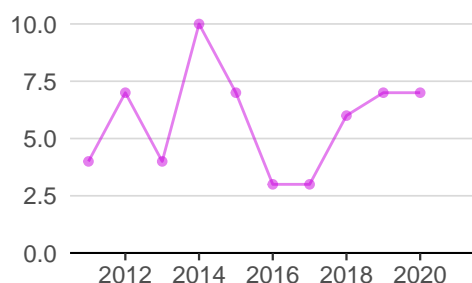
4.2.4 Venture capital received was equal to 8.0 mn USD in 2017 .



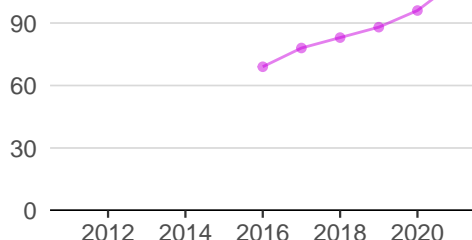
5.1.1 Knowledge-intensive employment was equal to 662.4 thsd people in 2019—up by 13 percentage points from the year prior—and equivalent to an indicator rank of 109.



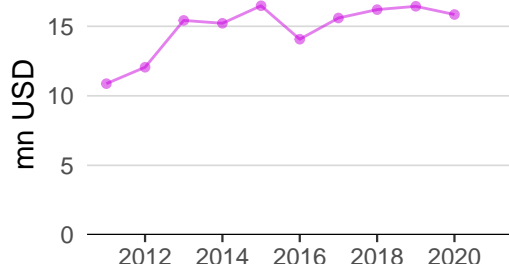
Innovation outputs



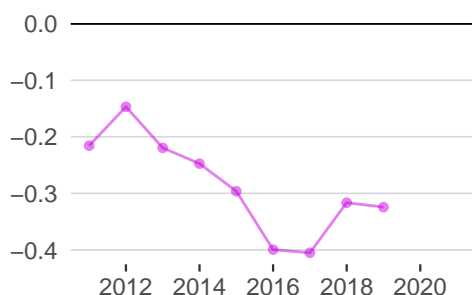
6.1.1 Patents by origin was equal to 7.0 in 2020—effectively unchanged from the year prior—and equivalent to an indicator rank of 121.



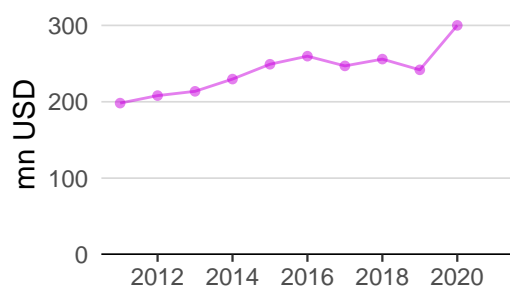
6.1.5 Citable documents H-index was equal to 110.0 in 2021—up by 15 percentage points from the year prior—and equivalent to an indicator rank of 110.



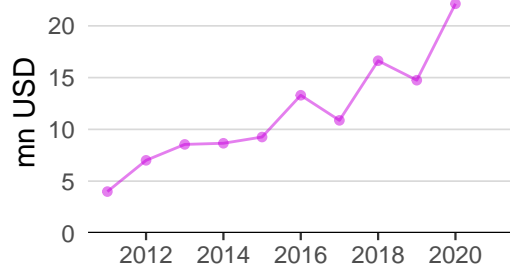
6.3.1 Intellectual property receipts was equal to 15.8 mn USD in 2020—down by 4 percentage points from the year prior—and equivalent to an indicator rank of 60.



6.3.2 Production and export complexity was equal to -0.3 in 2019—down by 3 percentage points from the year prior—and equivalent to an indicator rank of 77.



6.3.3 High-tech exports was equal to 300.0 mn USD in 2020—up by 24 percentage points from the year prior—and equivalent to an indicator rank of 66.



7.2.1 Cultural and creative services exports was equal to 22.1 mn USD in 2020—up by 50 percentage points from the year prior—and equivalent to an indicator rank of 81.



GUATEMALA'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
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No observations

Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2022>).

7.1.1 Intangible asset intensity, top 15

Firm	Rank
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No observations

Source: Brand Finance (<https://brandirectory.com/reports/gift-2021>).

7.1.3 Global brand value, top 5,000

Brand	Industry	Rank
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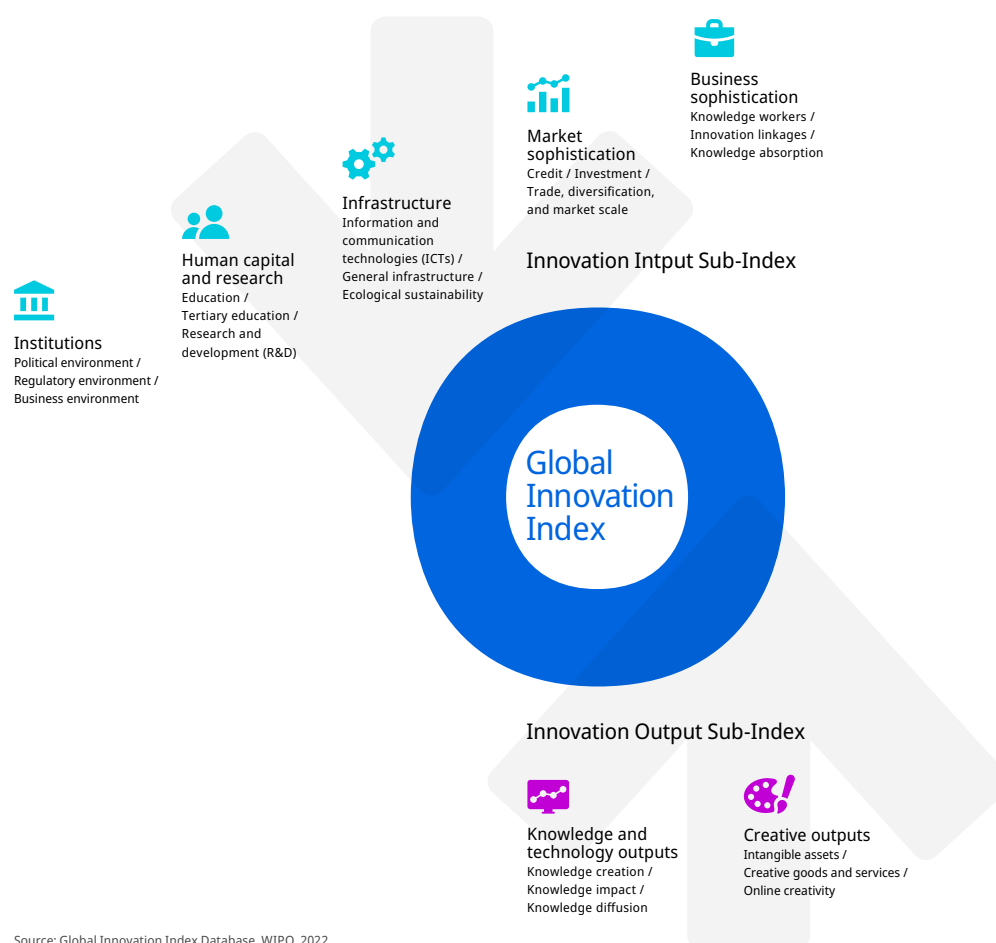
No observations

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

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.