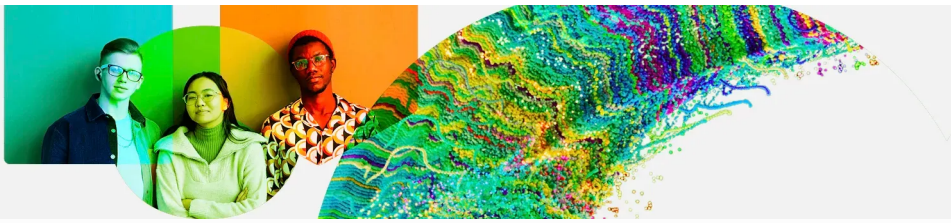
Global Innovation Index 2024



Guatemala ranking in the Global Innovation Index 2024

Guatemala ranks 122nd among the 133 economies featured in the GII 2024.

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.

Guatemala ranks 34th among the 34 upper-middle-income group economies.

Guatemala ranks 19th among the 20 economies in Latin America and the Caribbean.

Guatemala GII Ranking (2020-2024)

The table shows the rankings of Guatemala 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 Guatemala in the GII 2024 is between ranks 106 and 123.

Year	GII Position	Innovation Inputs	Innovation Outputs
2020	106th	110th	96th
2021	101st	112nd	83rd
2022	110th	117th	96th
2023	122nd	121st	115th
2024	122nd	117th	122nd

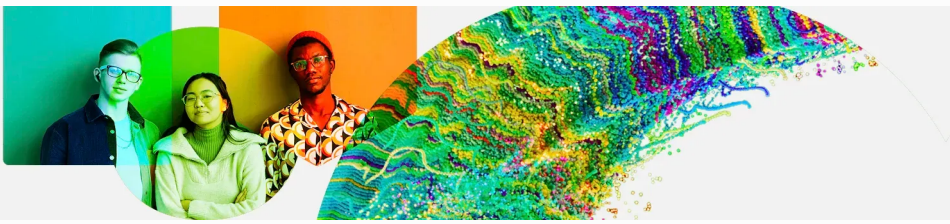
Guatemala performs worse in innovation outputs than innovation inputs in 2024.

This year **Guatemala ranks 117th in innovation inputs.** This position is higher than last year.

Guatemala ranks 122nd in innovation outputs. This position is lower than last year.

Guatemala has no clusters in the top 100 S&T clusters of the Global Innovation Index.

Global Innovation Index 2024



> Global Innovation Tracker

The Global Innovation Tracker 2024 shows what is the current state of innovation in Guatemala, how rapidly is technology being embraced and what are the resulting societal impacts.

For Guatemala, 4 indicators have improved in the short-term and 4 indicators have worsened.

Science and innovation investment

Scientific publications	R&D investments	Venture capital		International patent filings
		Deal numbers	Deal values	
▼ -3.4% 2022 - 2023	▲ 29.5% 2020 - 2021	▲ 200% 2022 - 2023	▼ -50% 2022 - 2023	0% 2022 - 2023
▲ 7.3% 2013 - 2023	▲ 5.3% 2011 - 2021	n/a	n/a	▼ -6.7% 2013 - 2023

Technology adoption

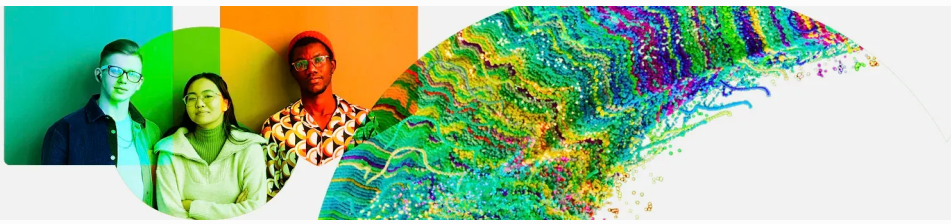
Safe sanitation	Connectivity		Robots	Electric vehicles
	Fixed broadband	5G		
n/a	▲ 3.1% 2019 - 2020	n/a	n/a	n/a
n/a	▲ 7.1% 2010 - 2020		n/a	n/a
n/a	3.5 per 100 inhabitants in 2020	1 per 100 inhabitants in 2022		n/a

Socioeconomic impact

Labor productivity	Life expectancy	Temperature change
▲ 0.9% 2022 - 2023	▼ -0.8% 2021 - 2022	▲ 1.6°C 2023
▲ 0.2% 2013 - 2023	▼ -0.4% 2012 - 2022	n/a
24,996 USD in 2023	68.7 years in 2022	

Notes: Not all indicators of the Global Innovation Tracker are used to calculate the Global Innovation Index. Long-term annual growth refers to the compound annual growth rate (CAGR) over the indicated period. For each variable, a one-year growth rate is set for the short run, and ten-year CAGR is set for the long run; time windows might differ when gaps exist in data availability. The end period corresponds to the most recent available observation, which may differ among countries. Temperature change is an exception: it indicates the change in degrees Celsius with respect to the average temperature in the country from 1951–1980. Figures are rounded.

Global Innovation Index 2024

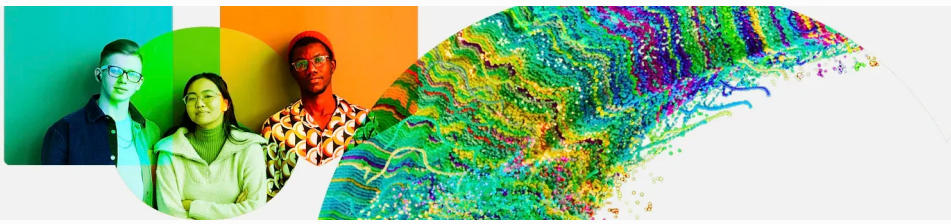


Expected vs. observed innovation performance

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.

> Innovation overperformers relative to their economic development



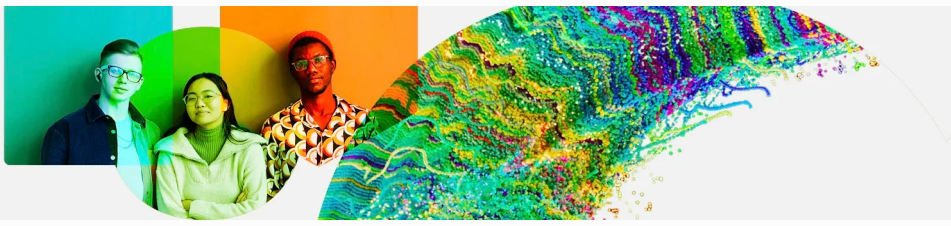
Effectively translating innovation investments into innovation outputs

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 less innovation outputs relative to its level of innovation investments.

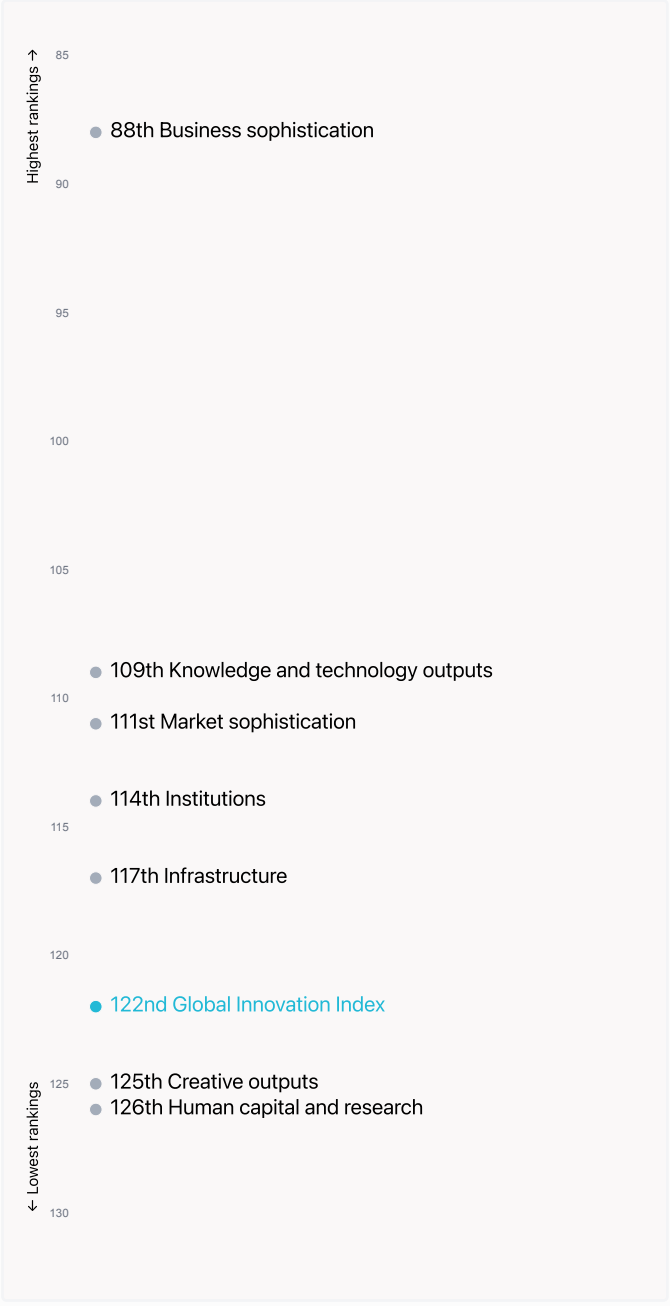
> Relationship between innovation inputs and outputs

Global Innovation Index 2024



Overview of Guatemala's rankings in the seven areas of the GII in 2024

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



Highest rankings

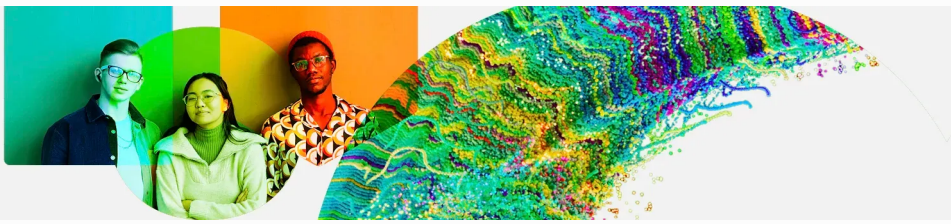
Guatemala ranks highest in Business sophistication (88th), Knowledge and technology outputs (109th), Market sophistication (111st) and Institutions (114th).

Lowest rankings

Guatemala ranks lowest in Human capital and research (126th), Creative outputs (125th) and Infrastructure (117th).

The full WIPO Intellectual Property Statistics profile for Guatemala can be found on this link.

Global Innovation Index 2024



Benchmark of Guatemala against other economy groupings for each of the seven areas of the GII Index

The charts shows the relative position of Guatemala (blue bar) against other economy groupings (grey bars), for each of the seven areas of the GII Index.

Upper-Middle-Income economies

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

Latin America And The Caribbean

Guatemala performs below the regional average in all pillars.

Institutions

- Top 10 | Score: 80.81
- Upper middle income | Score: 43.0
- LCN | Score: 38.36
- Guatemala | Score: 28.80

Human capital and research

- Top 10 | Score: 61.30
- Upper middle income | Score: 29.5
- LCN | Score: 26.04
- Guatemala | Score: 12.07

Infrastructure

- Top 10 | Score: 58.57
- Upper middle income | Score: 39.8
- LCN | Score: 35.16
- Guatemala | Score: 24.02

Market sophistication

- Top 10 | Score: 62.12
- Upper middle income | Score: 32.9
- LCN | Score: 27.03
- Guatemala | Score: 19.41

Business sophistication

- Top 10 | Score: 63.64
- Upper middle income | Score: 27.6
- LCN | Score: 24.99
- Guatemala | Score: 22.43

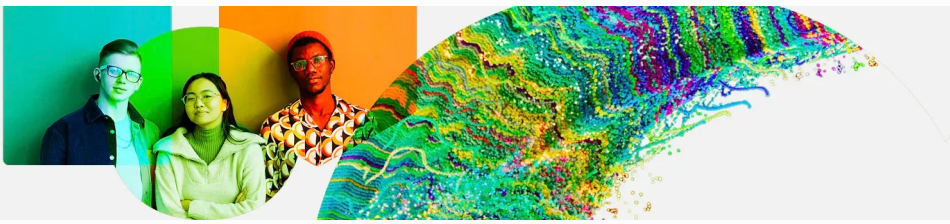
Knowledge and technology outputs

- Top 10 | Score: 57.29
- Upper middle income | Score: 20.6
- LCN | Score: 15.72
- Guatemala | Score: 10.71

Creative outputs

- Top 10 | Score: 56.54
- Upper middle income | Score: 24.3
- LCN | Score: 19.36
- Guatemala | Score: 4.84

Global Innovation Index 2024



Innovation strengths and weaknesses in Guatemala

The table below gives an overview of the indicator strengths and weaknesses of Guatemala in the GII 2024.

Guatemala's main innovation strengths are **Intellectual property payments, % total trade** (rank 20), **Pupil–teacher ratio, secondary** (rank 22) and **High-tech imports, % total trade** (rank 34).

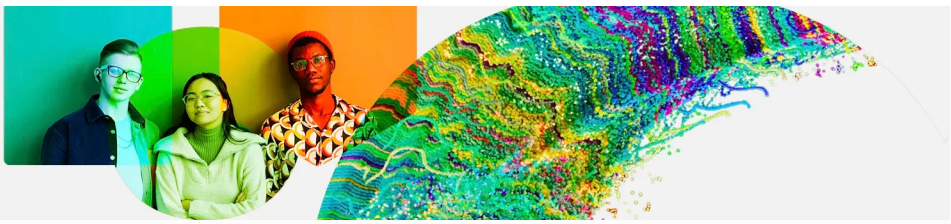
Strengths

Rank	Code	Indicator name
20	5.3.1	Intellectual property payments, % total trade
22	2.1.5	Pupil–teacher ratio, secondary
34	5.3.2	High-tech imports, % total trade
44	3.3.2	Low-carbon energy use, %
51	6.3.4	ICT services exports, % total trade
61	4.3.1	Applied tariff rate, weighted avg., %
62	6.3.1	Intellectual property receipts, % total trade
65	6.2.1	Labor productivity growth, %
69	5.3.4	FDI net inflows, % GDP
69	6.3.3	High-tech exports, % total trade
69	5.3.3	ICT services imports, % total trade

Weaknesses

Rank	Code	Indicator name
129	6.1.4	Scientific and technical articles/bn PPP$ GDP
109	2.3.2	Gross expenditure on R&D, % GDP
109	2.3.1	Researchers, FTE/mn pop.
108	2.2.3	Tertiary inbound mobility, %
95	2.1.2	Government funding/pupil, secondary, % GDP/cap
91	5.1.3	GERD performed by business, % GDP
82	4.1.1	Finance for startups and scaleups†
75	2.3.4	QS university ranking, top 3*
49	6.2.2	Unicorn valuation, % GDP
41	2.3.3	Global corporate R&D investors, top 3, mn USD

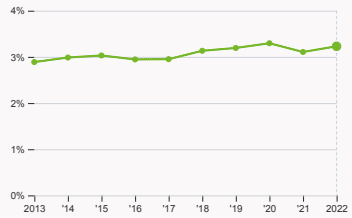
Global Innovation Index 2024



Guatemala's innovation system

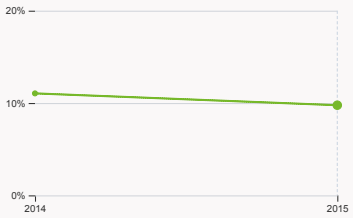
As far as practicable, the plots below present unscaled indicator data.

Innovation inputs in Guatemala



2.1.1 **Expenditure on education**

was equal to 3.23 % GDP in 2022, up by 0.12 percentage points from the year prior – and equivalent to an indicator rank of 100.



2.2.2 **Graduates in science and engineering**

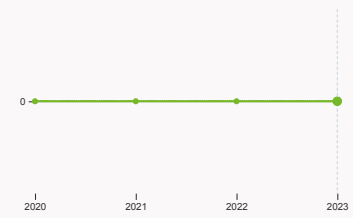
was equal to 9.77 % of total graduates in 2015, down by 1.28 percentage points from the year prior – and equivalent to an indicator rank of 110.

2.3.1 **Researchers**

was equal to 14.52 FTE per million population in 2021, down by 16.05% from the year prior – and equivalent to an indicator rank of 109.

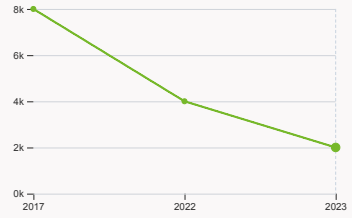
2.3.2 **Gross expenditure on R&D**

was equal to 0.06 % GDP in 2021, up by 0.01 percentage points from the year prior – and equivalent to an indicator rank of 109.



2.3.4 **QS university ranking**

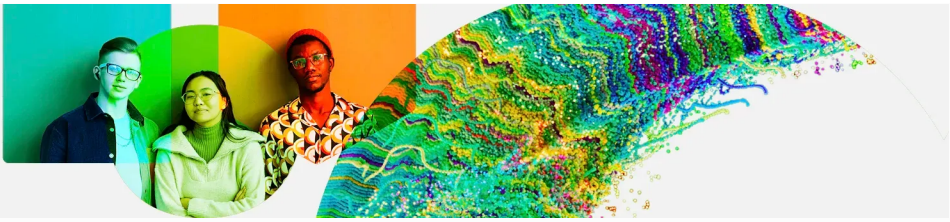
was equal to an average score of 0 for the top three universities in 2023 with no change from the year prior – and equivalent to an indicator rank of 75.

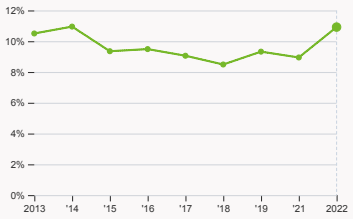


4.2.4 **VC received, value**

was equal to 2 thousand USD in 2023, down by 50% from the year prior – and equivalent to an indicator rank of 96.

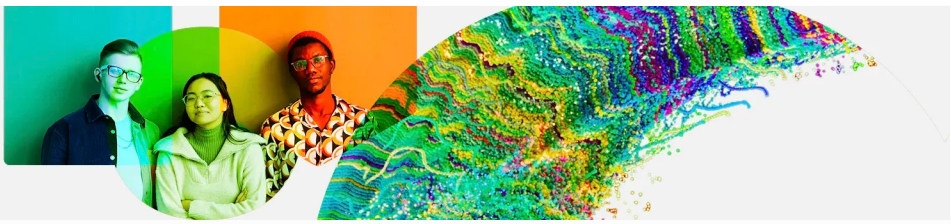
Global Innovation Index 2024



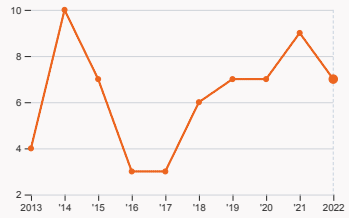


5.1.1 **Knowledge-intensive employment**
was equal to 10.92 % in 2022, up by 1.97 percentage points from the year prior – and equivalent to an indicator rank of 107.

Global Innovation Index 2024



Innovation outputs in Guatemala

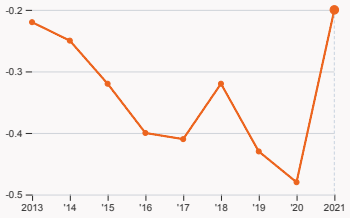


6.1.1 Patents by origin

was equal to 7 patents in 2022, down by 22.22% from the year prior – and equivalent to an indicator rank of 120.

6.2.2 Unicorn valuation

was equal to 0 % GDP in 2024 with no change from the year prior – and equivalent to an indicator rank of 49.

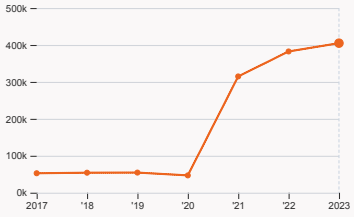


6.3.2 Production and export complexity

was equal to a score of -0.2 in 2021, up by 58.33% from the year prior – and equivalent to an indicator rank of 74.

6.3.3 High-tech exports

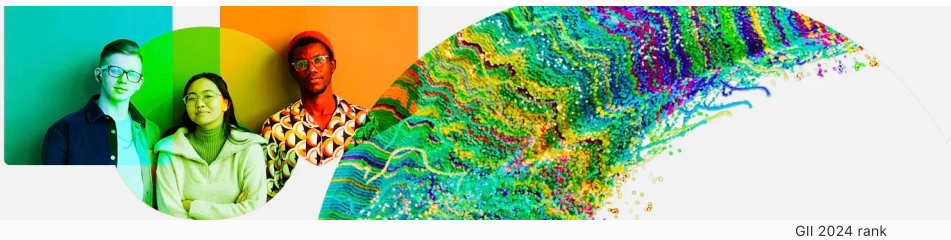
was equal to 372.37 million USD in 2022, up by 9.66% from the year prior – and equivalent to an indicator rank of 69.



7.3.3 Mobile app creation

was equal to 404.94 thousand global downloads of mobile apps in 2023, up by 5.87% from the year prior – and equivalent to an indicator rank of 116.

Global Innovation Index 2024



Guatemala

GII 2024 rank **122**

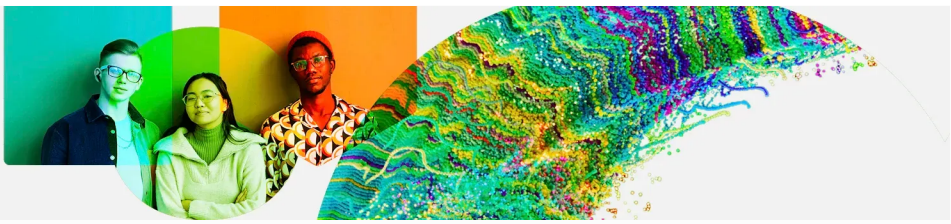
Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
122	117	Upper middle	LCN	18.1	201.4	10,595.3

	Score / Value	Rank
Institutions	28.8	114
1.1 Institutional environment	36.1	105
1.1.1 Operational stability for businesses*	52	89
1.1.2 Government effectiveness*	20.3	122
1.2 Regulatory environment	22.8	108
1.2.1 Regulatory quality*	34.2	88
1.2.2 Rule of law*	11.5	124
1.3 Business environment	27.4	106
1.3.1 Policy stability for doing business†	42.4	81
1.3.2 Entrepreneurship policies and culture†	12.4	75
Human capital and research	12.1	126
2.1 Education	31.7	118
2.1.1 Expenditure on education, % GDP	3.2	100
2.1.2 Government funding/pupil, secondary, % GDP/cap	5.9	95
2.1.3 School life expectancy, years	10.8	100
2.1.4 PISA scales in reading, maths and science	363.8	77
2.1.5 Pupil–teacher ratio, secondary	9.1	22
2.2 Tertiary education	4.3	124
2.2.1 Tertiary enrolment, % gross	18.7	105
2.2.2 Graduates in science and engineering, %	9.8	110
2.2.3 Tertiary inbound mobility, %	0.2	108
2.3 Research and development (R&D)	0.2	115
2.3.1 Researchers, FTE/mn pop.	14.5	109
2.3.2 Gross expenditure on R&D, % GDP	0.06	109
2.3.3 Global corporate R&D investors, top 3, mn USD	0	41
2.3.4 QS university ranking, top 3*	0	75
Infrastructure	24	117
3.1 Information and communication technologies (ICTs)	43.1	110
3.1.1 ICT access*	48.6	109
3.1.2 ICT use*	n/a	n/a
3.1.3 Government's online service*	49.3	92
3.1.4 E-participation*	31.4	104
3.2 General infrastructure	11.3	123
3.2.1 Electricity output, GWh/mn pop.	812.4	101
3.2.2 Logistics performance*	22.7	82
3.2.3 Gross capital formation, % GDP	16.6	119
3.3 Ecological sustainability	17.7	74
3.3.1 GDP/unit of energy use	9.5	78
3.3.2 Low-carbon energy use, %	27.3	44
3.3.3 ISO 14001 environment/bn PPP$ GDP	0.3	113
Market sophistication	19.4	111
4.1 Credit	11.8	109
4.1.1 Finance for startups and scaleups†	12.5	82
4.1.2 Domestic credit to private sector, % GDP	36.8	83
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a
4.2 Investment	1.1	109
4.2.1 Market capitalization, % GDP	n/a	n/a
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.01	93
4.2.3 VC recipients, deals/bn PPP$ GDP	0.01	100
4.2.4 VC received, value, % GDP	0.00003	96
4.3 Trade, diversification and market scale	45.4	90
4.3.1 Applied tariff rate, weighted avg., %	1.7	61
4.3.2 Domestic industry diversification	n/a	n/a
4.3.3 Domestic market scale, bn PPP$	201.4	73

	Score / Value	Rank
Business sophistication	22.4	88
5.1 Knowledge workers	22.7	98
5.1.1 Knowledge-intensive employment, %	10.9	107
5.1.2 Firms offering formal training, %	55.7	11
5.1.3 GERD performed by business, % GDP	0.003	91
5.1.4 GERD financed by business, %	11.1	76
5.1.5 Females employed w/advanced degrees, %	3.8	99
5.2 Innovation linkages	18.2	90
5.2.1 Public Research-Industry co-publications, %	0.9	89
5.2.2 University-industry R&D collaboration†	37.9	81
5.2.3 State of cluster development†	42.3	78
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.004	116
5.2.5 Patent families/bn PPP$ GDP	0.007	97
5.3 Knowledge absorption	26.5	64
5.3.1 Intellectual property payments, % total trade	1.6	20
5.3.2 High-tech imports, % total trade	10.7	34
5.3.3 ICT services imports, % total trade	1.2	69
5.3.4 FDI net inflows, % GDP	2.3	69
5.3.5 Research talent, % in businesses	3.5	77
Knowledge and technology outputs	10.7	109
6.1 Knowledge creation	1.4	129
6.1.1 Patents by origin/bn PPP$ GDP	0.04	120
6.1.2 PCT patents by origin/bn PPP$ GDP	0.005	96
6.1.3 Utility models by origin/bn PPP$ GDP	0.02	66
6.1.4 Scientific and technical articles/bn PPP$ GDP	1.3	129
6.1.5 Citable documents H-index	4	114
6.2 Knowledge impact	16.9	118
6.2.1 Labor productivity growth, %	0.7	65
6.2.2 Unicorn valuation, % GDP	0	49
6.2.3 Software spending, % GDP	0.01	127
6.2.4 High-tech manufacturing, %	n/a	n/a
6.3 Knowledge diffusion	13.8	79
6.3.1 Intellectual property receipts, % total trade	0.08	62
6.3.2 Production and export complexity	37.9	74
6.3.3 High-tech exports, % total trade	1.4	69
6.3.4 ICT services exports, % total trade	2.4	51
6.3.5 ISO 9001 quality/bn PPP$ GDP	1.3	109
Creative outputs	4.8	[125]
7.1 Intangible assets	0.8	[129]
7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
7.1.2 Trademarks by origin/bn PPP$ GDP	n/a	n/a
7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a
7.1.4 Industrial designs by origin/bn PPP$ GDP	0.09	112
7.2 Creative goods and services	2.5	[107]
7.2.1 Cultural and creative services exports, % total trade	0.08	93
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 Creative goods exports, % total trade	0.2	78
7.3 Online creativity	15.2	113
7.3.1 Top-level domains (TLDs)/th pop. 15–69	1.8	82
7.3.2 GitHub commits/mn pop. 15–69	2.2	102
7.3.3 Mobile app creation/bn PPP$ GDP	41.6	116

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question, 🕓 that the economy's data is outdated. Square brackets [ ] indicate the the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level; n/a represents missing values; a dash - indicates an indicator which is not relevant to this economy and thus not considered for DMC thresholds.

Global Innovation Index 2024



Data availability

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

Guatemala has missing data for ten indicators and outdated data for fourteen indicators.

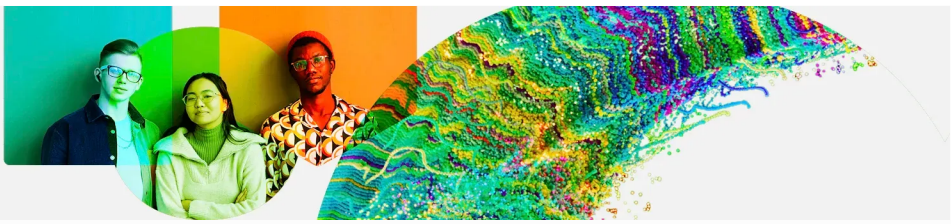
Missing data for Guatemala

Code	Indicator name	Economy Year	Model Year	Source
3.1.2	ICT use*	n/a	2022	World Intellectual Property Organization; International Telecommunication Union ITU DataHub (accessed May 1st, 2024)
4.1.3	Loans from microfinance institutions, % GDP	n/a	2022	International Monetary Fund, Financial Access Survey (FAS)
4.2.1	Market capitalization, % GDP	n/a	2022	World Federation of Exchanges; World Bank
4.3.2	Domestic industry diversification	n/a	2021	United Nations Industrial Development Organization (UNIDO), Industrial Statistics Database (INDSTAT) Rev.3 and 4
6.2.4	High-tech manufacturing, %	n/a	2021	United Nations Industrial Development Organization
7.1.1	Intangible asset intensity, top 15, %	n/a	2023	Brand Finance
7.1.2	Trademarks by origin/bn PPP$ GDP	n/a	2022	World Intellectual Property Organization; International Monetary Fund
7.1.3	Global brand value, top 5,000, % GDP	n/a	2024	Brand Finance; International Monetary Fund
7.2.2	National feature films/mn pop. 15–69	n/a	2022	OMDIA; United Nations, World Population Prospects
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2023	PwC, GEMO; United Nations, World Population Prospects; International Monetary Fund

Outdated data for Guatemala

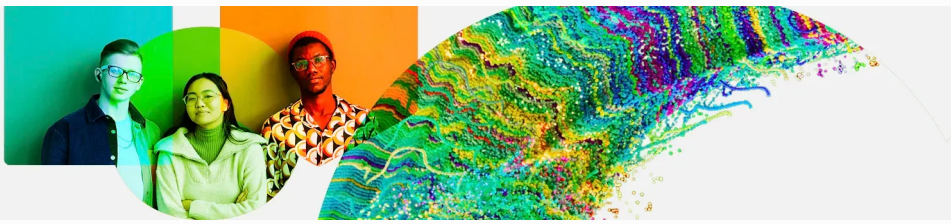
Code	Indicator name	Economy Year	Model Year	Source
2.1.3	School life expectancy, years	2019	2022	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2020	2022	UNESCO Institute for Statistics
2.2.2	Graduates in science and engineering, %	2015	2021	UNESCO Institute for Statistics; Eurostat; OECD
2.2.3	Tertiary inbound mobility, %	2019	2022	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2021	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT

Global Innovation Index 2024



Code	Indicator name	Economy Year	Model Year	Source
2.3.2	Gross expenditure on R&D, % GDP	2021	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
3.1.1	ICT access*	2021	2022	World Intellectual Property Organization; International Telecommunication Union ITU DataHub (accessed May 1st, 2024)
3.2.1	Electricity output, GWh/mn pop.	2021	2022	International Energy Agency
5.1.2	Firms offering formal training, %	2017	2023	World Bank Enterprise Surveys
5.1.3	GERD performed by business, % GDP	2019	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.4	GERD financed by business, %	2019	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.5	Females employed w/advanced degrees, %	2022	2023	International Labour Organization
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	2022	2023	LSEG Data & Analytics; International Monetary Fund
5.3.5	Research talent, % in businesses	2019	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT

Global Innovation Index 2024



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, 2024.

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.