

GUATEMALA

106th Guatemala ranks 106th among the 131 economies featured in the GII 2020.

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 2020 is between ranks 105 and 112.

Rankings of Guatemala (2018–2020)

| | GII | Innovation inputs | Innovation outputs |
|-------------|-----|-------------------|--------------------|
| 2020 | 106 | 110 | 96 |
| 2019 | 107 | 105 | 102 |
| 2018 | 102 | 107 | 96 |

- Guatemala performs better in innovation outputs than innovation inputs in 2020.
- This year Guatemala ranks 110th in innovation inputs, lower than last year and lower compared to 2018.
- As for innovation outputs, Guatemala ranks 96th. This position is higher than last year and the same as 2018.

36th Guatemala ranks 36th among the 37 upper middle-income group economies.

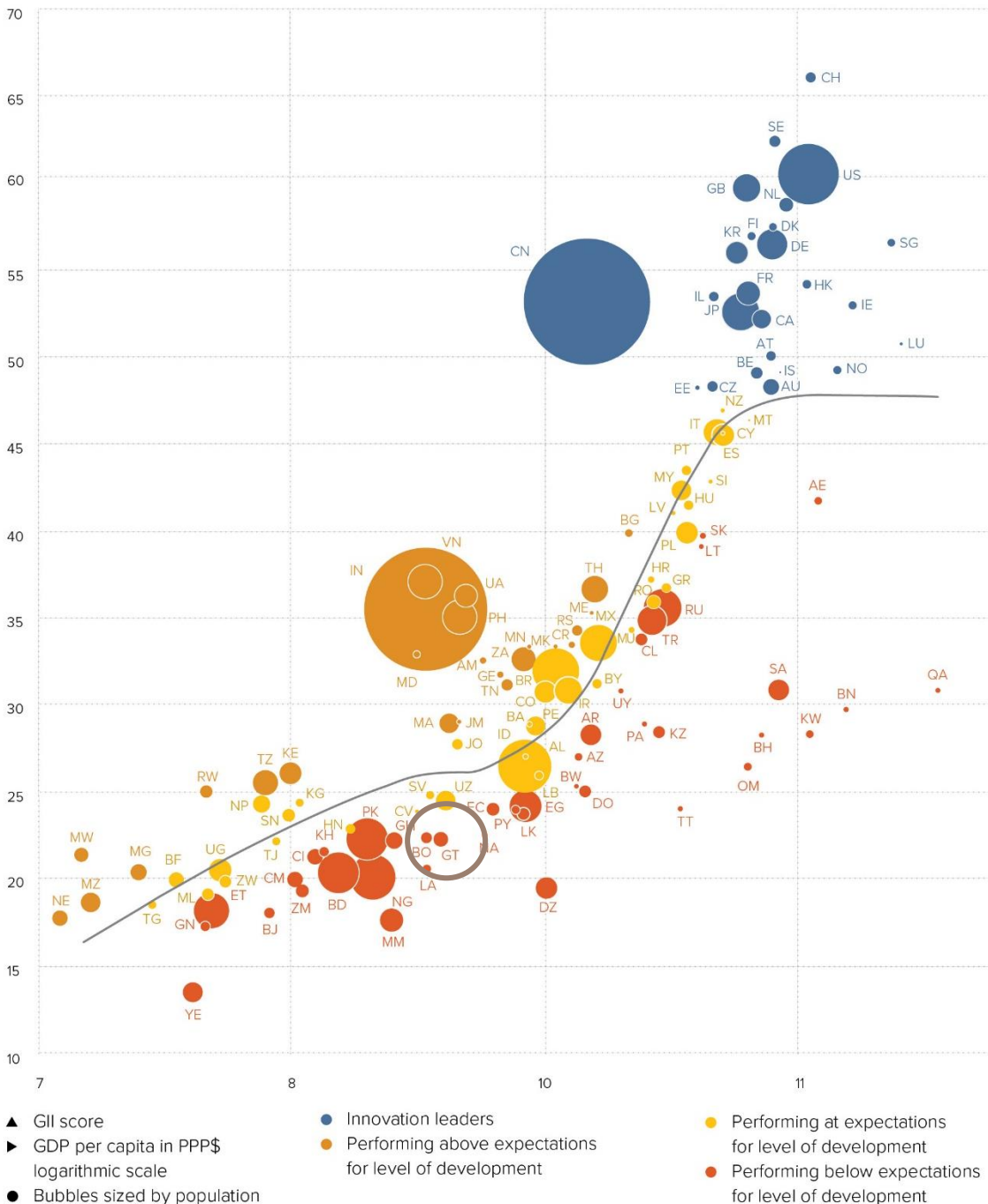
18th Guatemala ranks 18th among the 18 economies in Latin America and the Caribbean.

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 is performing below expectations for its level of development.

The positive relationship between innovation and development

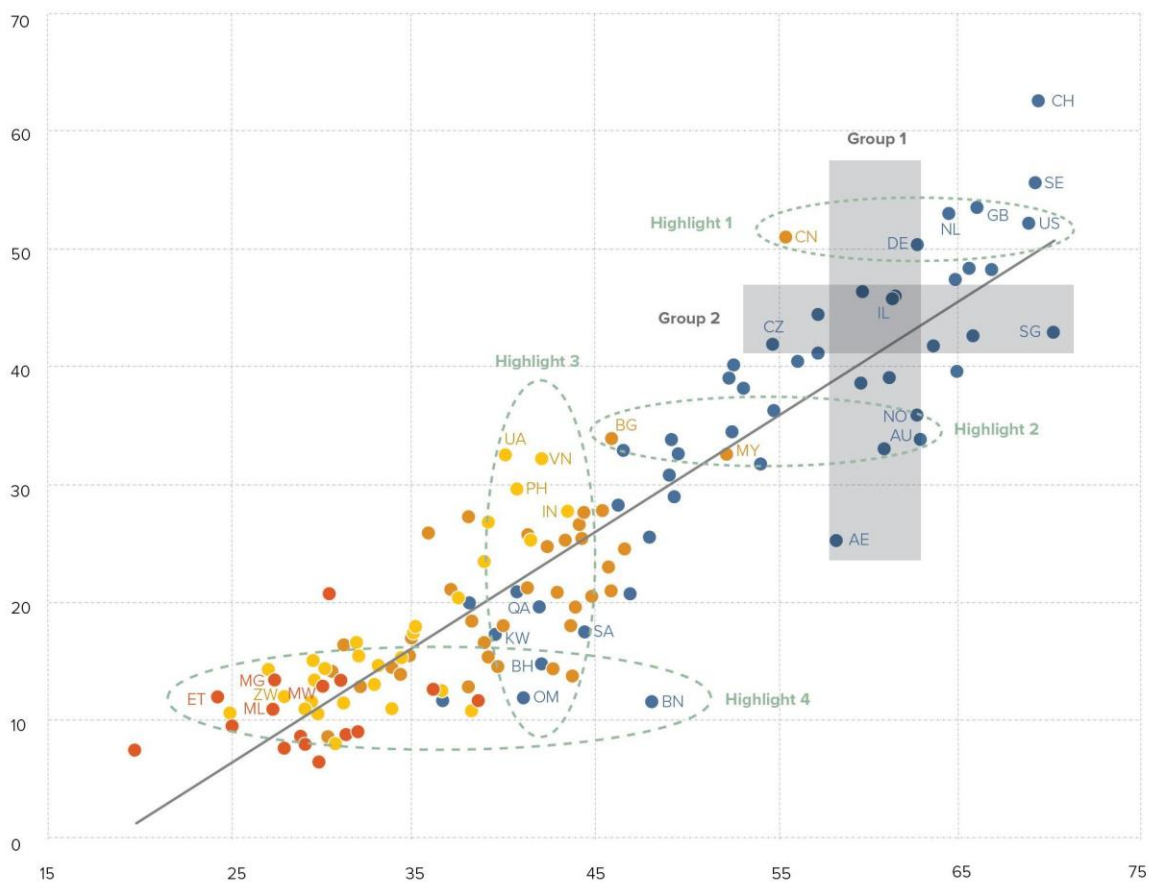


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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, 2020

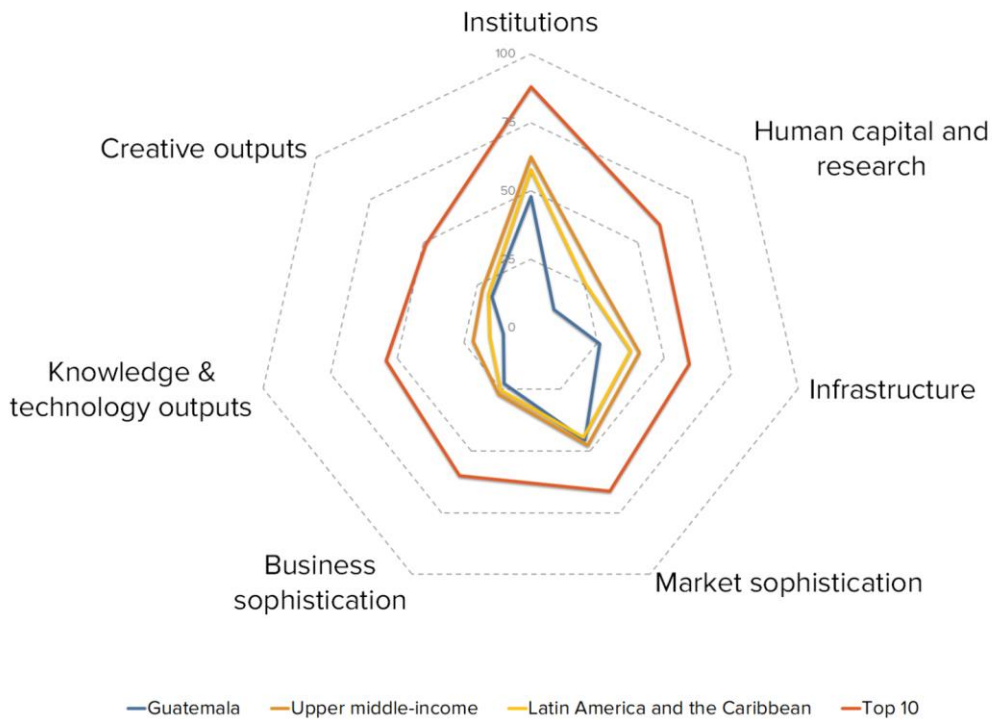


▲ Output score ● High income group ● Lower middle-income group — Fitted values
 ► Input score ● Upper middle-income group ● Low income group

| | | | | | | | |
|----|-------------------|----|------------|----|--------------|----|--------------------------|
| AU | Australia | IN | India | NL | Netherlands | CH | Switzerland |
| BH | Bahrain | IL | Israel | NO | Norway | UA | Ukraine |
| BN | Brunei Darussalam | KW | Kuwait | OM | Oman | AE | United Arab Emirates |
| BG | Bulgaria | MG | Madagascar | PH | Philippines | GB | United Kingdom |
| CN | China | MW | Malawi | QA | Qatar | US | United States of America |
| CZ | Czech Republic | ML | Mali | SA | Saudi Arabia | VN | Viet Nam |
| ET | Ethiopia | MY | Malaysia | SG | Singapore | ZW | Zimbabwe |
| DE | Germany | | | SE | Sweden | | |

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

Guatemala's scores in the seven GII pillars



Upper middle-income group economies

Guatemala scores below average for its income group in all seven GII pillars.

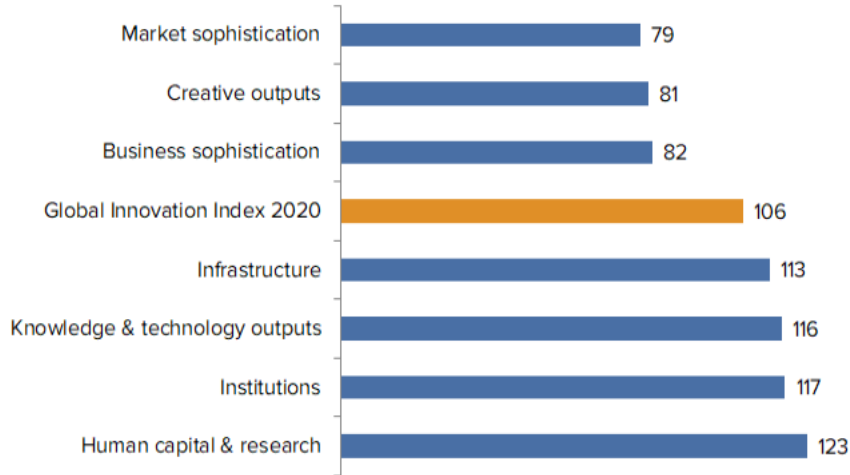
Latin America and the Caribbean

Compared to other economies in Latin America and the Caribbean, Guatemala performs:

- above average in one of the seven GII pillars: Market sophistication; and
- below average in six out of the seven GII pillars: Institutions, Human capital & research, Infrastructure, Business sophistication, Knowledge & technology outputs and Creative outputs.

OVERVIEW OF GUATEMALA RANKINGS IN THE SEVEN GII AREAS

Guatemala performs best in Market sophistication and its weakest performance is in Human capital & research.



*The highest possible ranking in each pillar is 1.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Guatemala in the GII 2020.

| Strengths | | | Weaknesses | | |
|-----------|--|------|------------|--|------|
| Code | Indicator name | Rank | Code | Indicator name | Rank |
| 2.1.5 | Pupil-teacher ratio, secondary | 39 | 2.1.2 | Government funding/pupil, secondary, % GDP/cap | 103 |
| 4.1.1 | Ease of getting credit* | 14 | 2.2.2 | Graduates in science & engineering, % | 105 |
| 4.3 | Trade, competition, and market scale | 47 | 2.3.1 | Researchers, FTE/mn pop. | 106 |
| 4.3.1 | Applied tariff rate, weighted avg., % | 16 | 2.3.2 | Gross expenditure on R&D, % GDP | 114 |
| 4.3.2 | Intensity of local competition† | 41 | 2.3.3 | Global R&D companies, top 3, mn US\$ | 42 |
| 5.1.2 | Firms offering formal training, % | 9 | 2.3.4 | QS university ranking, average score top 3* | 77 |
| 5.3 | Knowledge absorption | 54 | 3.2.3 | Gross capital formation, % GDP | 124 |
| 5.3.1 | Intellectual property payments, % total trade | 33 | 5.1.3 | GERD performed by business, % GDP | 88 |
| 5.3.2 | High-tech imports, % total trade | 30 | 6.1.2 | PCT patents by origin/bn PPP\$ GDP | 100 |
| 7.1 | Intangible assets | 49 | 6.1.4 | Scientific & technical articles/bn PPP\$ GDP | 129 |
| 7.1.1 | Trademarks by origin/bn PPP\$ GDP | 57 | 7.3.4 | Mobile app creation/bn PPP\$ GDP | 101 |
| 7.1.4 | ICTs & organizational model creation† | 56 | | | |
| 7.3.1 | Generic top-level domains (TLDs)/th pop. 15–69 | 58 | | | |

STRENGTHS

GII strengths for Guatemala are found in four of the seven GII pillars.

- Human capital & research (123): the indicator Pupil–teacher ratio (39) reveals a strength.
- Market sophistication (79): shows strengths in the sub-pillar(s) Trade, competition, and market scale (47) and in the indicators Ease of getting credit (14), Applied tariff rate, weighted mean (16) and Intensity of local competition (41).
- Business sophistication (82): displays strengths in the sub-pillar Knowledge absorption (54) and in the indicators Firms offering formal training (9), Intellectual property payments (33) and High-tech imports (30).
- Creative outputs (81): demonstrates strengths in the sub-pillar Intangible assets (49) and in the indicators Trademarks by origin (57), ICTs & organizational model creation (56) and Generic top-level domains (58).

WEAKNESSES

GII weaknesses for Guatemala are found in five of the seven GII pillars.

- Human capital & research (123): exhibits weaknesses in several indicators; namely, Government funding/pupil (103), Graduates in science & engineering (105), Researchers (106), Gross expenditure on R&D (114), Global R&D companies (42) and QS university ranking (77).
- Infrastructure (113): the indicator Gross capital formation (124) reveals a weakness.
- Business sophistication (82): displays a weakness in the indicator GERD performed by business (88).
- Knowledge & technology outputs (116): shows weaknesses in the indicators PCT patents by origin (100) and Scientific & technical articles (129).
- Creative outputs (81): the indicator Mobile app creation (101) demonstrates a weakness.

| Output rank | Input rank | Income | Region | Population (mn) | GDP, PPP\$ | GDP per capita, PPP\$ | GII 2019 rank |
|--|---|--------------|------------------|---|--|-----------------------|------------------|
| 96 | 110 | Upper middle | LCN | 17.6 | 153.3 | 7,599.6 | 107 |
| | | | Score/Value Rank | | | | Score/Value Rank |
| INSTITUTIONS 48.0 117 | | | | BUSINESS SOPHISTICATION 22.6 82 | | | |
| 1.1 | Political environment | 41.7 | 115 | 5.1 | Knowledge workers | 20.9 | 99 |
| 1.1.1 | Political and operational stability*..... | 55.4 | 116 | 5.1.1 | Knowledge-intensive employment, %..... | 9.1 | 107 |
| 1.1.2 | Government effectiveness*..... | 34.9 | 115 | 5.1.2 | Firms offering formal training, %..... | 55.7 | 9 |
| 1.2 | Regulatory environment | 45.2 | 114 | 5.1.3 | GERD performed by business, % GDP..... | 0.0 | 88 |
| 1.2.1 | Regulatory quality*..... | 36.6 | 86 | 5.1.4 | GERD financed by business, %..... | 10.3 | 76 |
| 1.2.2 | Rule of law*..... | 19.3 | 123 | 5.1.5 | Females employed w/advanced degrees, %..... | 2.2 | 100 |
| 1.2.3 | Cost of redundancy dismissal, salary weeks..... | 27.0 | 106 | 5.2 | Innovation linkages | 14.7 | 113 |
| 1.3 | Business environment | 57.2 | 113 | 5.2.1 | University/industry research collaboration*..... | 37.7 | 85 |
| 1.3.1 | Ease of starting a business*..... | 86.8 | 77 | 5.2.2 | State of cluster development..... | 44.3 | 79 |
| 1.3.2 | Ease of resolving insolvency*..... | 27.6 | 124 | 5.2.3 | GERD financed by abroad, % GDP..... | 0.0 | 72 |
| | | | | 5.2.4 | JV-strategic alliance deals/bn PPP\$ GDP..... | 0.0 | 120 |
| | | | | 5.2.5 | Patent families 2+ offices/bn PPP\$ GDP..... | 0.0 | 91 |
| HUMAN CAPITAL & RESEARCH 10.8 123 | | | | 5.3 Knowledge absorption 32.0 54 | | | |
| 2.1 | Education | 24.3 | 118 | 5.3.1 | Intellectual property payments, % total trade..... | 1.1 | 33 |
| 2.1.1 | Expenditure on education, % GDP..... | 2.9 | 100 | 5.3.2 | High-tech imports, % total trade..... | 10.0 | 30 |
| 2.1.2 | Government funding/pupil, secondary, % GDP/cap..... | 5.4 | 103 | 5.3.3 | ICT services imports, % total trade..... | 0.9 | 79 |
| 2.1.3 | School life expectancy, years..... | 10.8 | 102 | 5.3.4 | FDI net inflows, % GDP..... | 1.5 | 102 |
| 2.1.4 | PISA scales in reading, maths, & science..... | n/a | n/a | 5.3.5 | Research talent, % in business enterprise..... | n/a | n/a |
| 2.1.5 | Pupil-teacher ratio, secondary..... | 10.5 | 39 | | | | |
| 2.2 | Tertiary education | 8.0 | 116 | KNOWLEDGE & TECHNOLOGY OUTPUTS 10.2 116 | | | |
| 2.2.1 | Tertiary enrolment, % gross..... | 21.8 | 92 | 6.1 | Knowledge creation | 1.4 | 129 |
| 2.2.2 | Graduates in science & engineering, %..... | 9.8 | 105 | 6.1.1 | Patents by origin/bn PPP\$ GDP..... | 0.0 | 128 |
| 2.2.3 | Tertiary inbound mobility, %..... | n/a | n/a | 6.1.2 | PCT patents by origin/bn PPP\$ GDP..... | 0.0 | 100 |
| 2.3 | Research & development (R&D) | 0.1 | 119 | 6.1.3 | Utility models by origin/bn PPP\$ GDP..... | 0.1 | 58 |
| 2.3.1 | Researchers, FTE/mn pop..... | 14.1 | 106 | 6.1.4 | Scientific & technical articles/bn PPP\$ GDP..... | 0.4 | 129 |
| 2.3.2 | Gross expenditure on R&D, % GDP..... | 0.0 | 114 | 6.1.5 | Citable documents H-index..... | 4.6 | 111 |
| 2.3.3 | Global R&D companies, avg. exp. top 3, mn \$US..... | 0.0 | 42 | 6.2 | Knowledge impact | 9.8 | 118 |
| 2.3.4 | QS university ranking, average score top 3*..... | 0.0 | 77 | 6.2.1 | Growth rate of PPP\$ GDP/worker, %..... | -0.1 | 94 |
| | | | | 6.2.2 | New businesses/th pop. 15-64..... | 0.5 | 96 |
| | | | | 6.2.3 | Computer software spending, % GDP..... | 0.0 | 120 |
| | | | | 6.2.4 | ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.3 | 95 |
| | | | | 6.2.5 | High- and medium-high-tech manufacturing, %..... | n/a | n/a |
| INFRASTRUCTURE 25.9 113 | | | | 6.3 Knowledge diffusion 19.3 82 | | | |
| 3.1 | Information & communication technologies (ICTs) | 50.8 | 95 | 6.3.1 | Intellectual property receipts, % total trade..... | 0.0 | 97 |
| 3.1.1 | ICT access*..... | 47.8 | 93 | 6.3.2 | High-tech net exports, % total trade..... | 1.4 | 63 |
| 3.1.2 | ICT use*..... | 28.9 | 105 | 6.3.3 | ICT services exports, % total trade..... | 1.4 | 72 |
| 3.1.3 | Government's online service*..... | 64.6 | 84 | 6.3.4 | FDI net outflows, % GDP..... | 0.1 | 109 |
| 3.1.4 | E-participation*..... | 61.8 | 89 | | | | |
| 3.2 | General infrastructure | 7.6 | 129 | CREATIVE OUTPUTS 18.1 81 | | | |
| 3.2.1 | Electricity output, kWh/mn pop..... | 766.4 | 101 | 7.1 | Intangible assets | 30.7 | 49 |
| 3.2.2 | Logistics performance*..... | 16.2 | 114 | 7.1.1 | Trademarks by origin/bn PPP\$ GDP..... | 44.7 | 57 |
| 3.2.3 | Gross capital formation, % GDP..... | 11.9 | 124 | 7.1.2 | Global brand value, top 5,000, % GDP..... | n/a | n/a |
| 3.3 | Ecological sustainability | 19.3 | 107 | 7.1.3 | Industrial designs by origin/bn PPP\$ GDP..... | 0.2 | 98 |
| 3.3.1 | GDP/unit of energy use..... | 9.0 | 69 | 7.1.4 | ICTs & organizational model creation*..... | 57.0 | 56 |
| 3.3.2 | Environmental performance*..... | 31.8 | 115 | 7.2 | Creative goods and services | 3.2 | [111] |
| 3.3.3 | ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.1 | 124 | 7.2.1 | Cultural & creative services exports, % total trade..... | 0.1 | 88 |
| | | | | 7.2.2 | National feature films/mn pop. 15-69..... | 1.2 | 82 |
| | | | | 7.2.3 | Entertainment & 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..... | 0.3 | 74 |
| MARKET SOPHISTICATION 45.5 79 | | | | 7.3 Online creativity 7.7 97 | | | |
| 4.1 | Credit | 39.6 | 72 | 7.3.1 | Generic top-level domains (TLDs)/th pop. 15-69..... | 4.1 | 58 |
| 4.1.1 | Ease of getting credit*..... | 85.0 | 14 | 7.3.2 | Country-code TLDs/th pop. 15-69..... | 0.5 | 97 |
| 4.1.2 | Domestic credit to private sector, % GDP..... | 32.8 | 91 | 7.3.3 | Wikipedia edits/mn pop. 15-69..... | 30.1 | 93 |
| 4.1.3 | Microfinance gross loans, % GDP..... | 0.2 | 52 | 7.3.4 | Mobile app creation/bn PPP\$ GDP..... | 0.0 | 101 |
| 4.2 | Investment | 30.0 | [94] | | | | |
| 4.2.1 | Ease of protecting minority investors*..... | 30.0 | 121 | | | | |
| 4.2.2 | Market capitalization, % GDP..... | n/a | n/a | | | | |
| 4.2.3 | Venture capital deals/bn PPP\$ GDP..... | n/a | n/a | | | | |
| 4.3 | Trade, competition, and market scale | 66.9 | 47 | | | | |
| 4.3.1 | Applied tariff rate, weighted avg., %..... | 1.4 | 16 | | | | |
| 4.3.2 | Intensity of local competition*..... | 72.8 | 41 | | | | |
| 4.3.3 | Domestic market scale, bn PPP\$..... | 153.3 | 73 | | | | |

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 Appendix II for details, including the year of the data, at <http://globalinnovationindex.org>. 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 data that are either missing or outdated for Guatemala.

Missing data

| Code | Indicator name | Country year | Model year | Source |
|-------|--|--------------|------------|--|
| 2.1.4 | PISA scales in reading, maths & science | n/a | 2018 | OECD Programme for International Student Assessment (PISA) |
| 2.2.3 | Tertiary inbound mobility, % | n/a | 2017 | UNESCO Institute for Statistics |
| 4.2.2 | Market capitalization, % GDP | n/a | 2018 | World Federation of Exchanges |
| 4.2.3 | Venture capital deals/bn PPP\$ GDP | n/a | 2019 | Thomson Reuters |
| 5.3.5 | Research talent, % in business enterprise | n/a | 2018 | UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators |
| 6.2.5 | High- & medium-high-tech manufacturing, % | n/a | 2017 | United Nations Industrial Development Organization |
| 7.1.2 | Global brand value, top 5,000, % GDP | n/a | 2019 | Brand Finance |
| 7.2.3 | Entertainment & Media market/th pop. 15–69 | n/a | 2018 | PwC |
| 7.2.4 | Printing & other media, % manufacturing | n/a | 2017 | United Nations Industrial Development Organization |

Outdated data

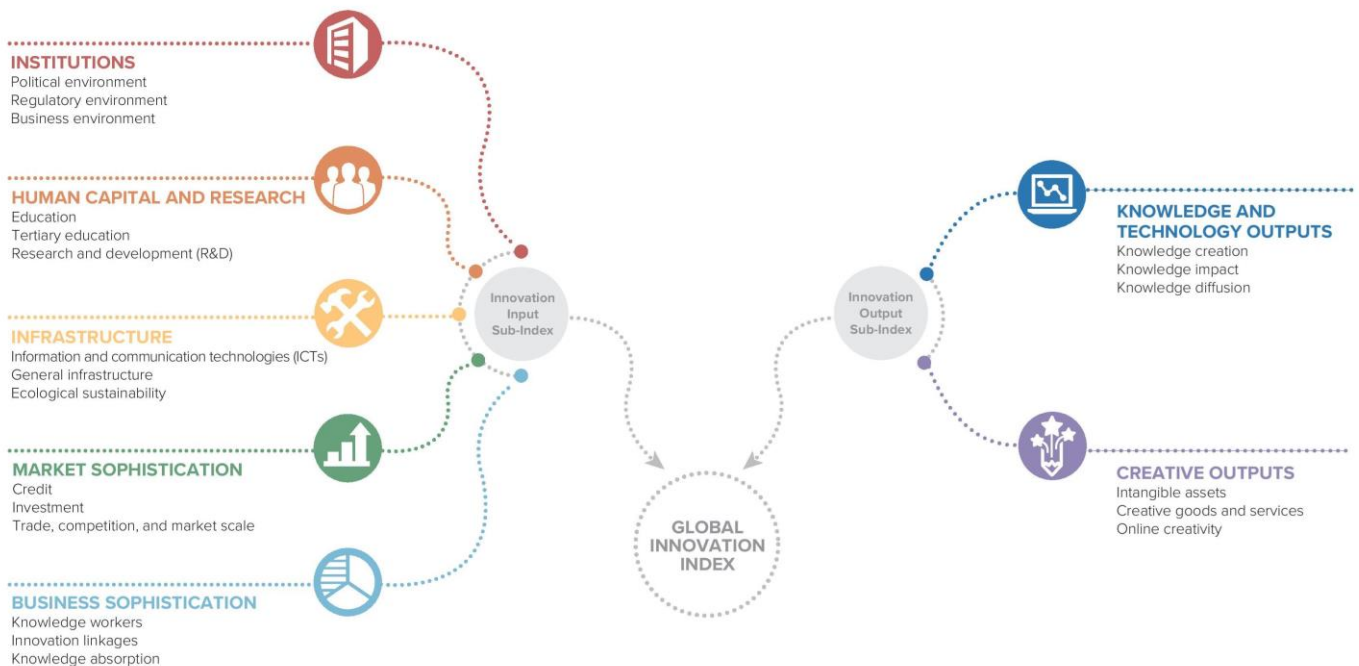
| Code | Indicator name | Country year | Model year | Source |
|-------|--|--------------|------------|--|
| 2.1.3 | School life expectancy, years | 2015 | 2017 | UNESCO Institute for Statistics |
| 2.2.1 | Tertiary enrolment, % gross | 2015 | 2017 | UNESCO Institute for Statistics |
| 2.2.2 | Graduates in science & engineering, % | 2015 | 2017 | UNESCO Institute for Statistics |
| 2.3.1 | Researchers, FTE/mn pop. | 2017 | 2018 | UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators |
| 2.3.2 | Gross expenditure on R&D, % GDP | 2017 | 2018 | UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators |
| 4.3.1 | Applied tariff rate, weighted avg., % | 2015 | 2018 | World Bank |
| 5.1.1 | Knowledge-intensive employment, % | 2017 | 2018 | International Labour Organization |
| 5.1.2 | Firms offering formal training, % | 2016 | 2018 | World Bank |
| 5.1.3 | GERD performed by business, % GDP | 2017 | 2018 | UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators |
| 5.1.5 | Females employed w/advanced degrees, % | 2017 | 2018 | International Labour Organization |
| 5.2.3 | GERD financed by abroad, % GDP | 2015 | 2017 | UNESCO Institute for Statistics |
| 5.3.2 | High-tech imports, % total trade | 2017 | 2018 | United Nations, COMTRADE |
| 6.3.2 | High-tech net exports, % total trade | 2017 | 2018 | United Nations, COMTRADE |
| 7.2.2 | National feature films/mn pop. 15–69 | 2010 | 2017 | UNESCO Institute for Statistics |
| 7.2.5 | Creative goods exports, % total trade | 2017 | 2018 | United Nations, COMTRADE |

ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. In 2020, the GII presents its 13th edition devoted to the theme *Who Will Finance Innovation?*

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.

Framework of the Global Innovation Index 2020



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.

