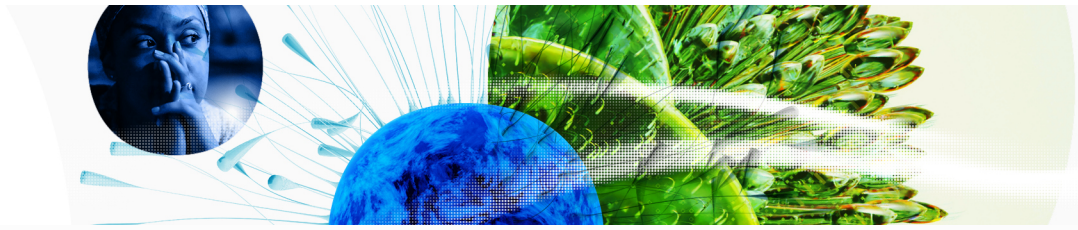
Global Innovation Index 2023



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**.

Panama ranking in the Global Innovation Index 2023

> Panama ranks 84th among the 132 economies featured in the GII 2023.

> Panama ranks 48th among the 50 high-income group economies.

> Panama ranks 10th among the 19 economies in Latin America and the Caribbean.

> Panama GII Ranking (2020-2023)

The table shows the rankings of Panama 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 Panama in the GII 2023 is between ranks 82 and 88.

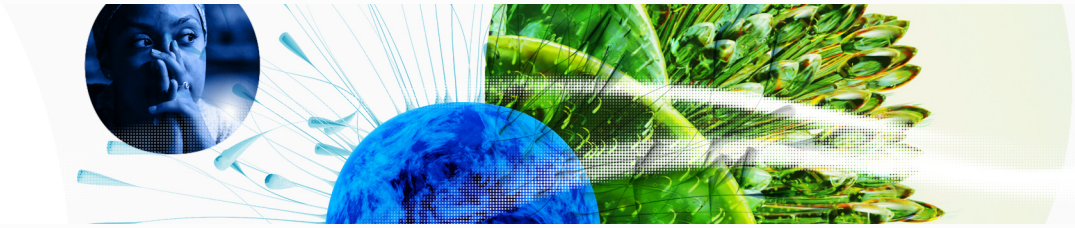
	GII Position	Innovation Inputs	Innovation Outputs
2020	73rd	82nd	70th
2021	83rd	83rd	79th
2022	81st	83rd	80th
2023	84th	93rd	75th

Panama performs better in innovation outputs than innovation inputs in 2023.

This year Panama ranks 93rd in innovation inputs. This position is lower than last year.

Panama ranks 75th in innovation outputs. This position is higher than last year.

Global Innovation Index 2023

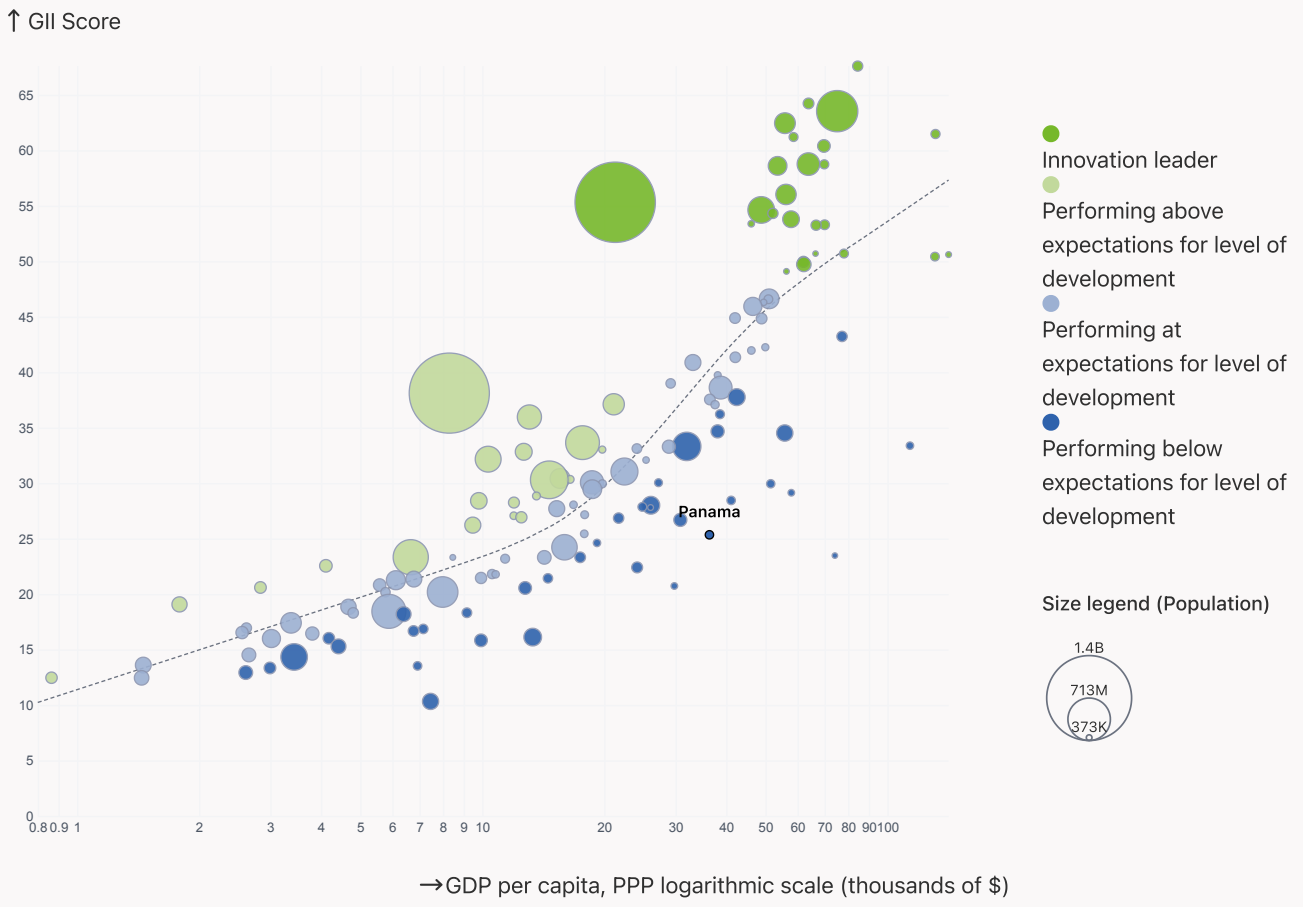


→ Expected vs. observed innovation performance

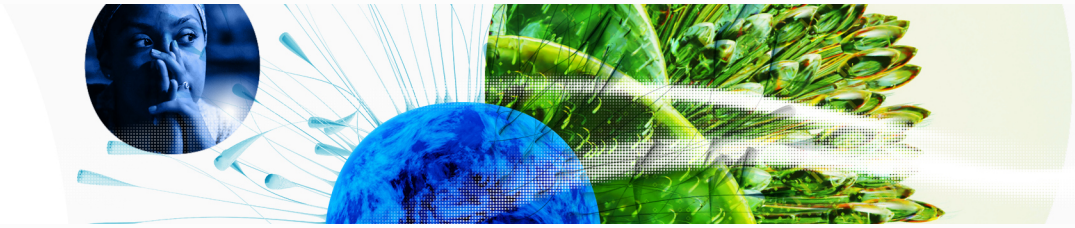
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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

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

> Innovation overperformers relative to their economic development



Global Innovation Index 2023

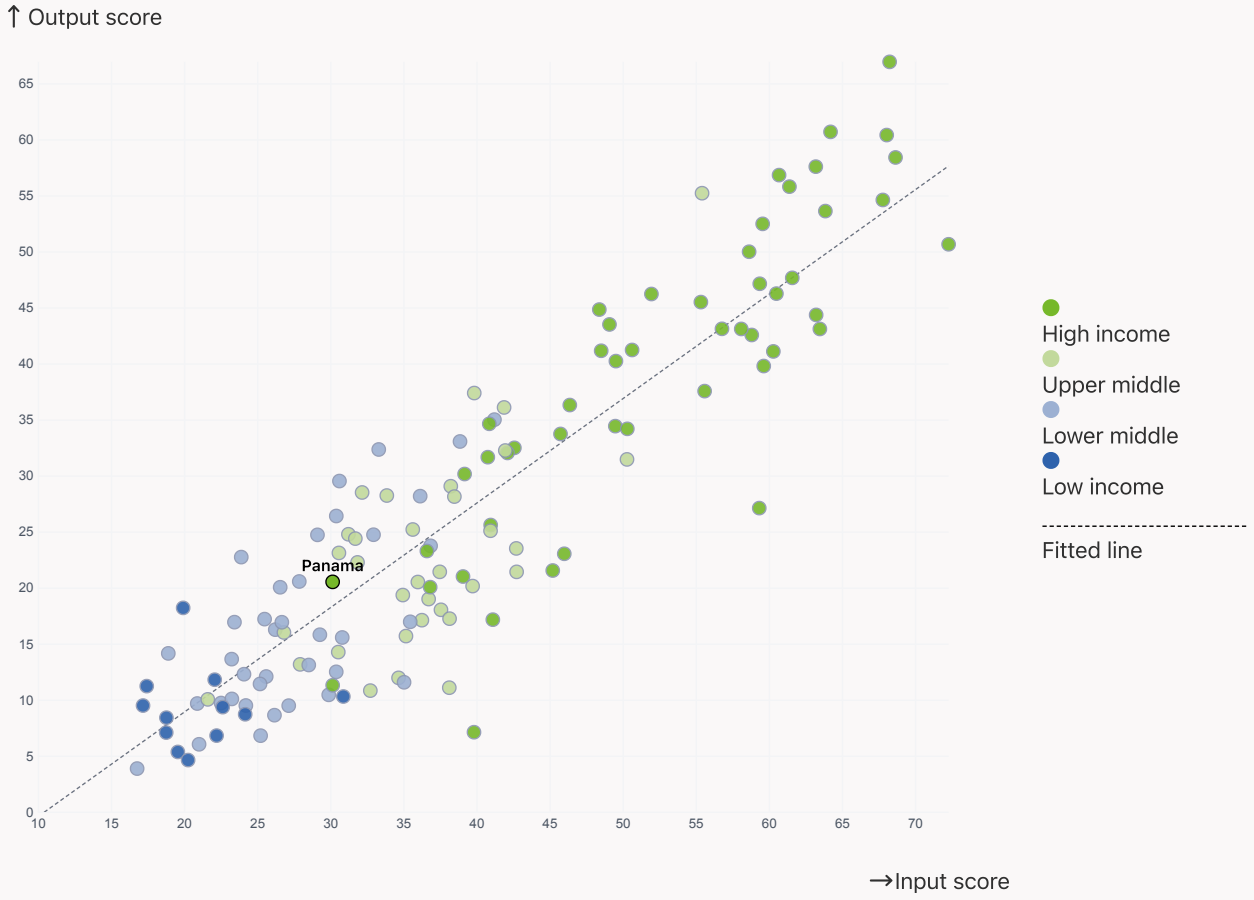


→ Effectively translating innovation investments into innovation outputs

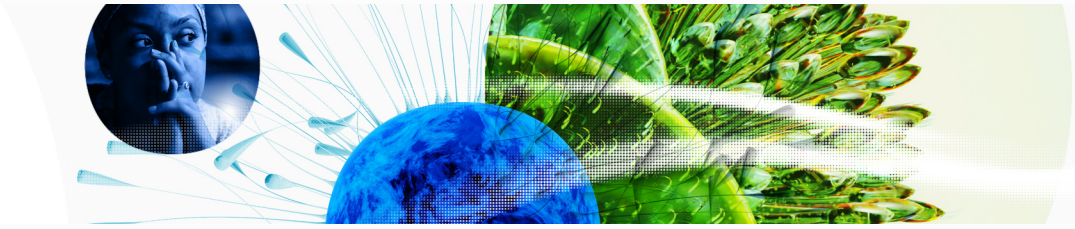
The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

> Panama produces more innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs

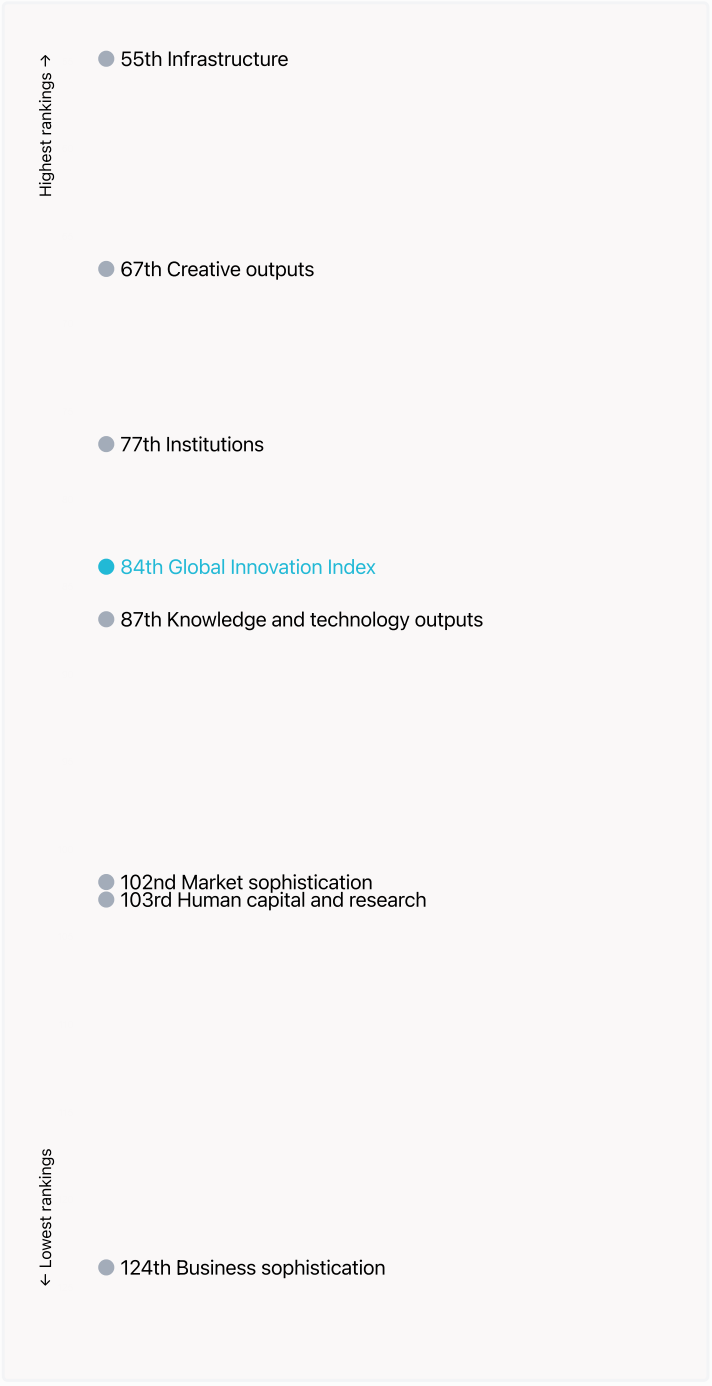


Global Innovation Index 2023



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



> Highest rankings

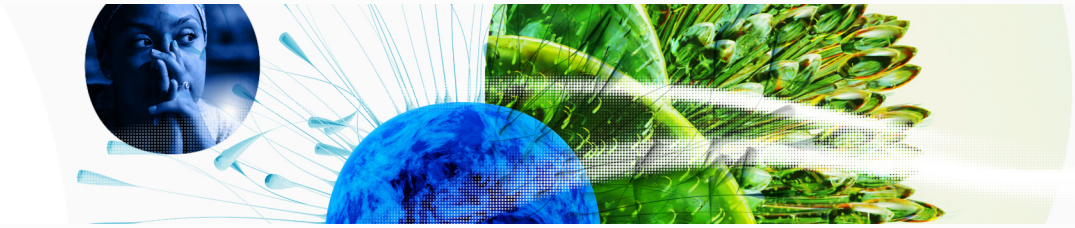
Panama ranks highest in Infrastructure (55th), Creative outputs (67th) and Institutions (77th).

> Lowest rankings

Panama ranks lowest in Business sophistication (124th), Human capital and research (103rd) and Market sophistication (102nd).

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

Global Innovation Index 2023



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

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

> High-Income economies

Panama performs below the high-income group average in all the pillars.

> Latin America And The Caribbean

Panama performs below the regional average in Knowledge and technology outputs, Business sophistication, Market sophistication, Human capital and research.

Knowledge and technology outputs

- Top 10 | Score: 58.96
- High income | Score: 38.62
- LCN | Score: 17.14
- Panama | Score: 17.11

Creative outputs

- Top 10 | 56.09
- High income | 40.27
- Panama | 23.90
- LCN | 18.91

Business sophistication

- Top 10 | 64.39
- High income | 46.38
- LCN | 26.15
- Panama | 16.21

Market sophistication

- Top 10 | 61.93
- High income | 46.42
- LCN | 29.74
- Panama | 23.54

Human capital and research

- Top 10 | 60.28
- High income | 46.30
- LCN | 24.92
- Panama | 19.11

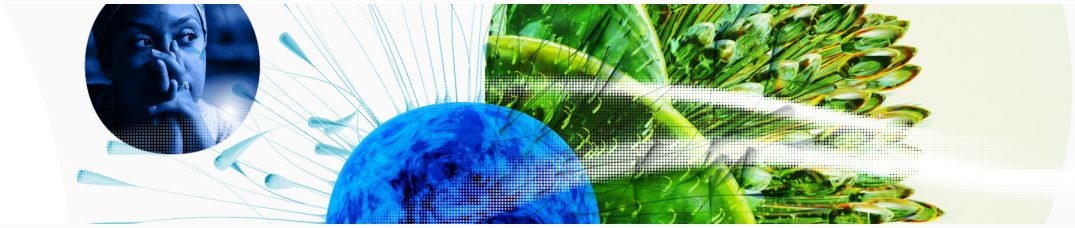
Infrastructure

- Top 10 | 62.83
- High income | 55.85
- Panama | 45.02
- LCN | 35.88

Institutions

- Top 10 | 79.85
- High income | 68.16
- Panama | 46.96
- LCN | 41.12

Global Innovation Index 2023



→ Innovation strengths and weaknesses in Panama

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

> Panama's main innovation strengths are **GDP/unit of energy use** (rank 5), **Creative goods exports, % total trade** (rank 14) and **Gross capital formation, % GDP** (rank 14).

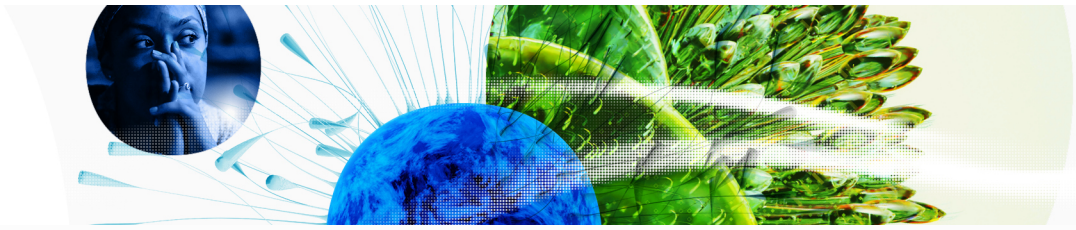
Strengths

Rank	Code	Indicator name
5	3.3.1	GDP/unit of energy use
14	7.2.4	Creative goods exports, % total trade
14	3.2.3	Gross capital formation, % GDP
19	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69
19	6.3.3	High-tech exports, % total trade
26	4.1.2	Domestic credit to private sector, % GDP
40	6.3.2	Production and export complexity
40	3.3.2	Environmental performance
44	5.2.3	GERD financed by abroad, % GDP
58	5.2.5	Patent families/bn PPP$ GDP

Weaknesses

Rank	Code	Indicator name
127	5.3.2	High-tech imports, % total trade
121	5.3.3	ICT services imports, % total trade
118	7.1.4	Industrial designs by origin/bn PPP$ GDP
108	4.3.2	Domestic industry diversification
92	5.1.3	GERD performed by business, % GDP
91	5.1.4	GERD financed by business, %
76	2.1.4	PISA scales in reading, maths and science
71	2.3.4	QS university ranking, top 3
48	6.2.2	Unicorn valuation, % GDP
40	2.3.3	Global corporate R&D investors, top 3, mn US$

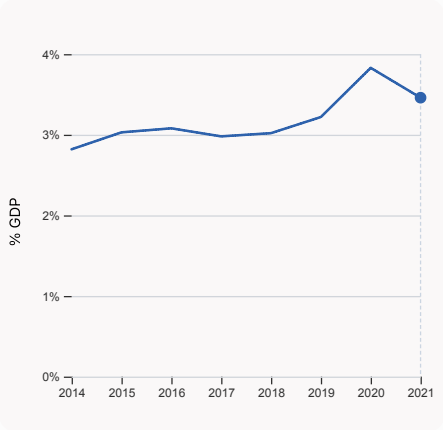
Global Innovation Index 2023



→ Panama's innovation system

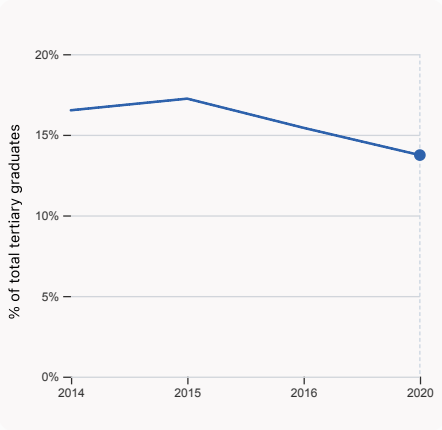
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Panama



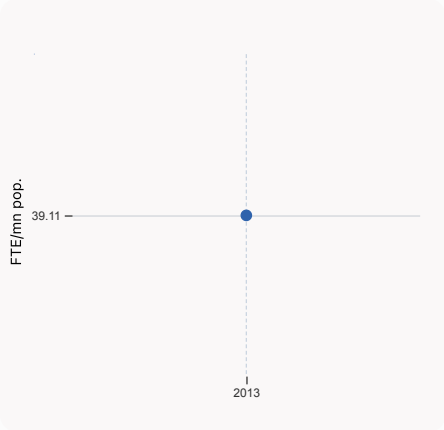
2.1.1 Expenditure on education, % GDP

was equal to 3.46% GDP in 2021, down by 0.37 percentage points from the year prior – and equivalent to an indicator rank of 91.



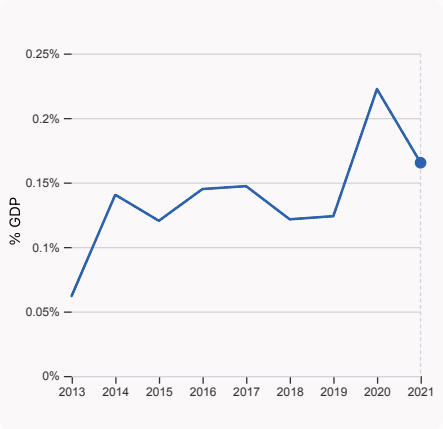
2.2.2 Graduates in science and engineering, %

was equal to 13.74% of total tertiary graduates in 2020, down by 1.69 percentage points from the year prior – and equivalent to an indicator rank of 102.



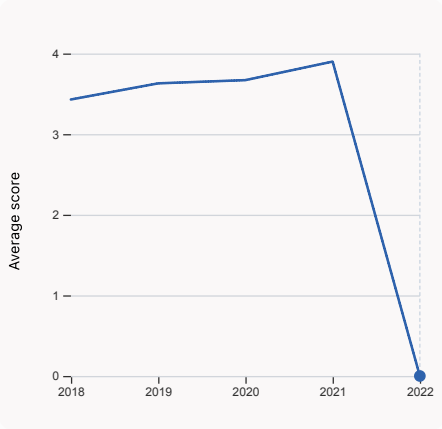
2.3.1 Researchers, FTE/mn pop.

was equal to 39.11 FTE/mn pop. in 2013, equivalent to an indicator rank of 97.



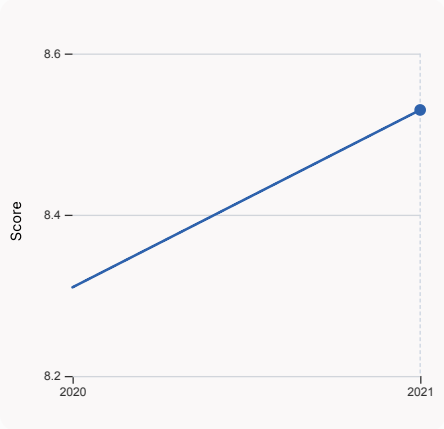
2.3.2 Gross expenditure on R&D, % GDP

was equal to 0.165% GDP in 2021, down by 0.057 percentage points from the year prior – and equivalent to an indicator rank of 93.



2.3.4 QS university ranking, top 3

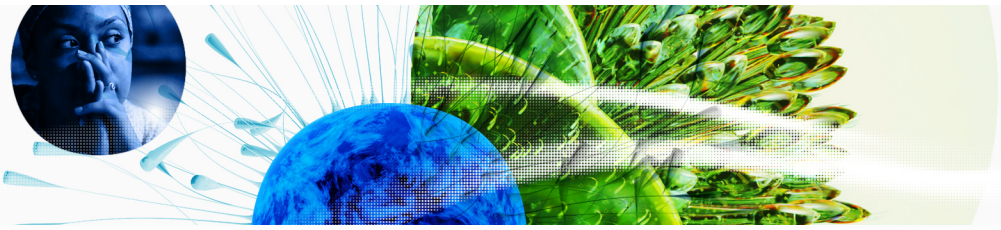
was equal to an average score of 0 for the top 3 universities in 2022, down by 100% from the year prior – and equivalent to an indicator rank of 71.

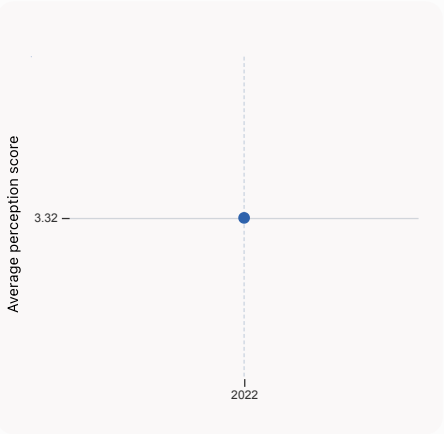


3.1.1 ICT access

was equal to a score of 8.53 in 2021, up by 2.65% from the year prior – and equivalent to an indicator rank of 79.

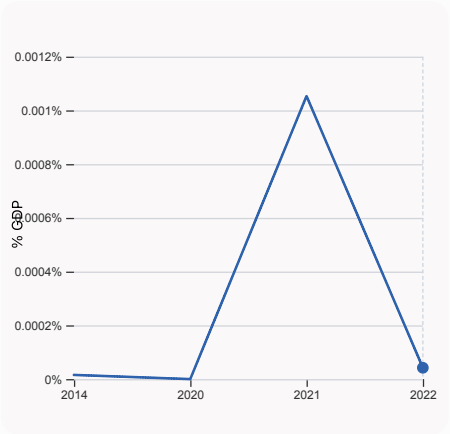
Global Innovation Index 2023





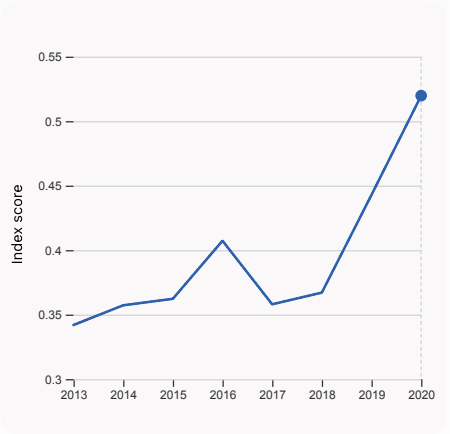
4.1.1 Finance for startups and scaleups

was equal to an average perception score of 3.32 in 2022, equivalent to an indicator rank of 77.



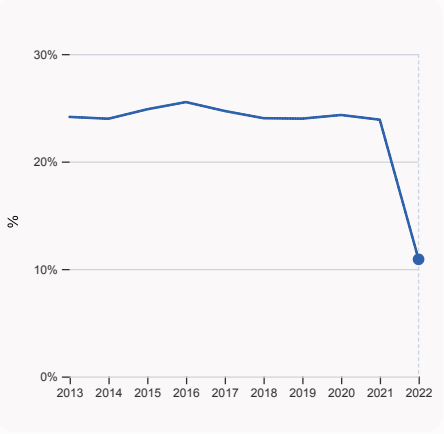
4.2.4 VC received, value, % GDP

was equal to 0.00004% GDP in 2022, down by 0.001 percentage points from the year prior – and equivalent to an indicator rank of 68.



4.3.2 Domestic industry diversification

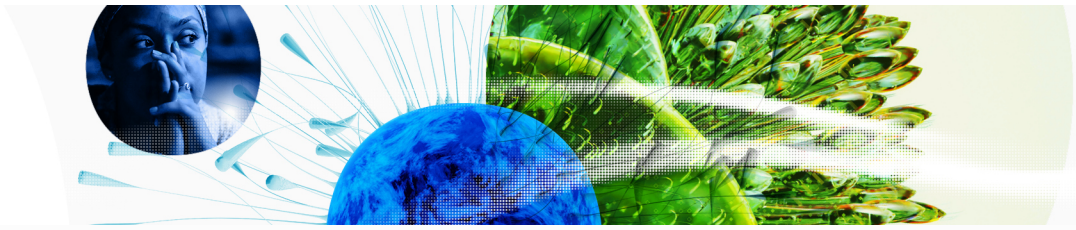
was equal to an index score of 0.52 in 2020, up by 17.37% from the year prior – and equivalent to an indicator rank of 108.



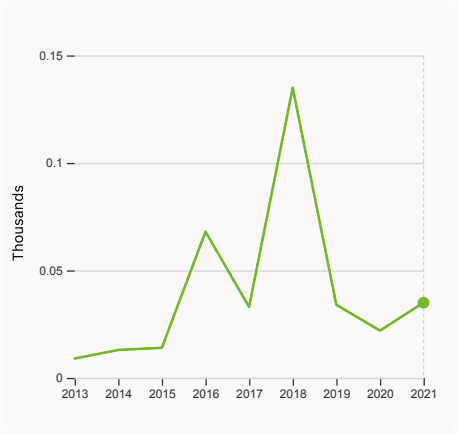
5.1.1 Knowledge-intensive employment, %

was equal to 10.9% in 2022, down by 12.99 percentage points from the year prior – and equivalent to an indicator rank of 103.

Global Innovation Index 2023

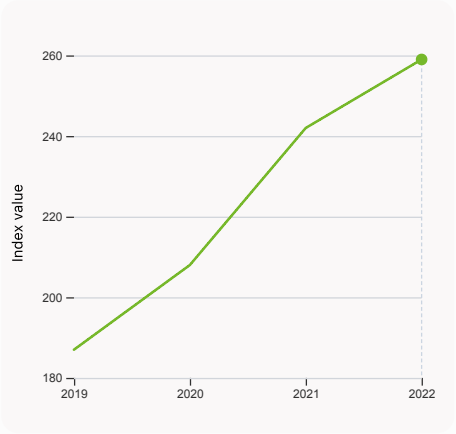


> Innovation outputs in Panama



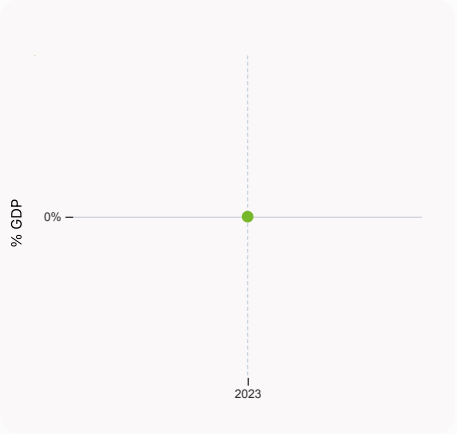
6.1.1 Patents by origin

was equal to 0.035 Thousands in 2021, up by 59.091% from the year prior – and equivalent to an indicator rank of 92.



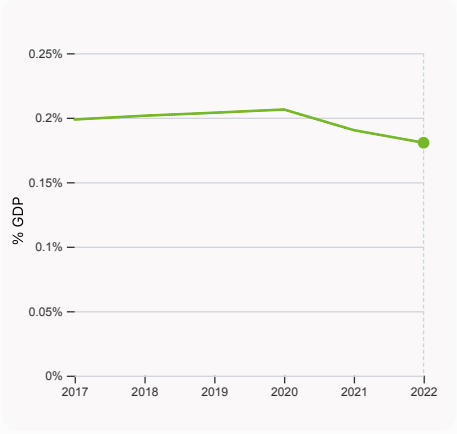
6.1.5 Citable documents H-index

was equal to an index value of 259 in 2022, up by 7.025% from the year prior – and equivalent to an indicator rank of 67.



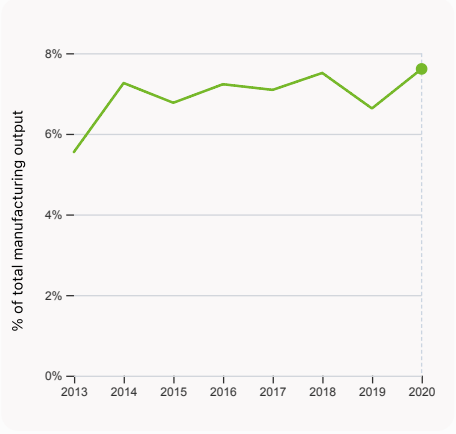
6.2.2 Unicorn valuation, % GDP

was equal to 0 % GDP in 2023 – and equivalent to an indicator rank of 48.



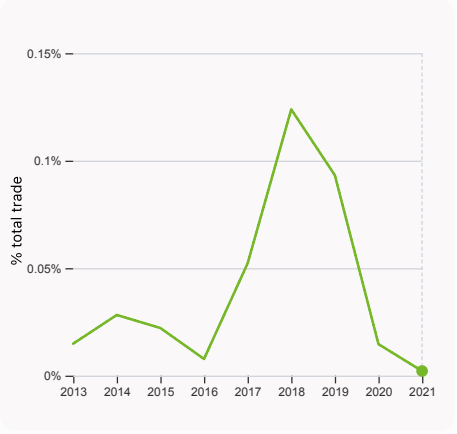
6.2.3 Software spending, % GDP

was equal to 0.181% GDP in 2022, down by 0.0098 percentage points from the year prior – and equivalent to an indicator rank of 77.



6.2.4 High-tech manufacturing, %

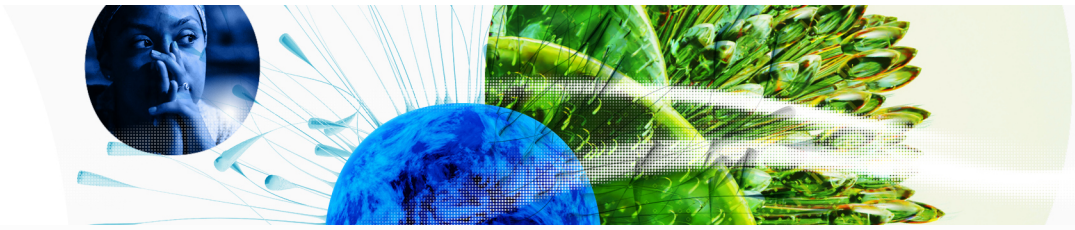
was equal to 7.61% of total manufacturing output in 2020, up by 0.98 percentage points from the year prior – and equivalent to an indicator rank of 96.

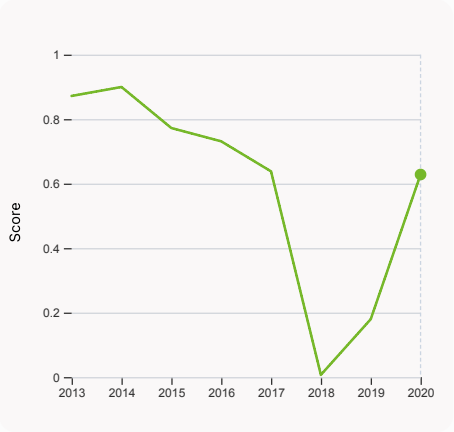


6.3.1 Intellectual property receipts, % total trade

was equal to 0.002% total trade in 2021, down by 0.013 percentage points from the year prior – and equivalent to an indicator rank of 76.

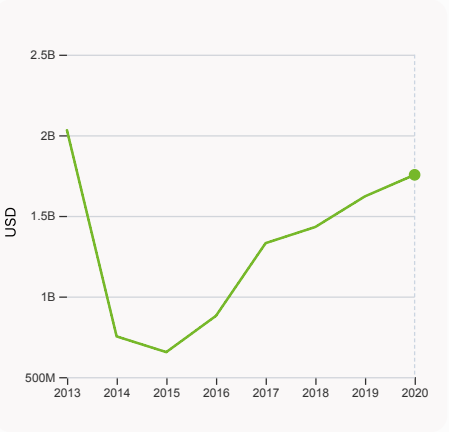
Global Innovation Index 2023





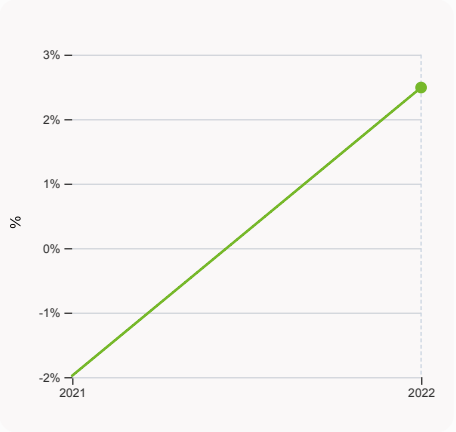
6.3.2 Production and export complexity

was equal to a score of 0.628 in 2020, up by 249.96% from the year prior – and equivalent to an indicator rank of 40.



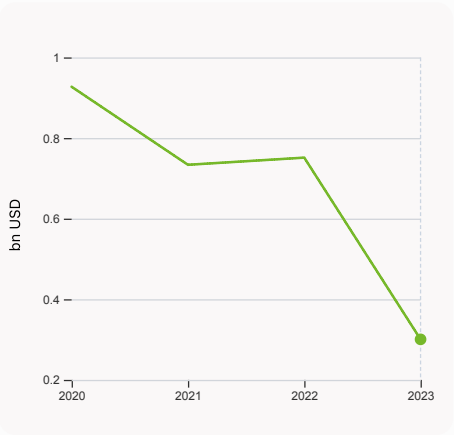
6.3.3 High-tech exports

was equal to 1,754,733,818 USD in 2020, up by 8.24% from the year prior – and equivalent to an indicator rank of 19.



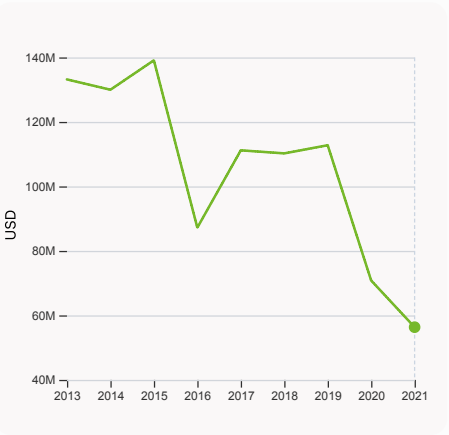
7.1.1 Intangible asset intensity, top 15, %

was equal to 2.49% in 2022, up by 4.47 percentage points from the year prior – and equivalent to an indicator rank of 69.



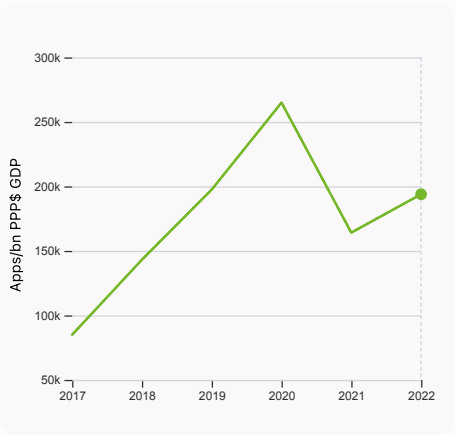
7.1.3 Global brand value, top 5,000

was equal to 0.301 bn USD in 2023, down by 60.00076% from the year prior – and equivalent to an indicator rank of 67.



7.2.1 Cultural and creative services exports

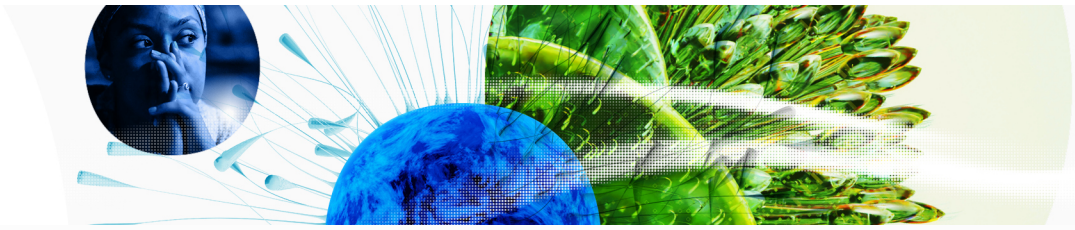
was equal to 56,343,000 USD in 2021, down by 20.44% from the year prior – and equivalent to an indicator rank of 69.



7.3.4 Mobile app creation/bn PPP$ GDP

was equal to 193,906.88 Apps/bn PPP$ GDP in 2022, up by 18.11% from the year prior – and equivalent to an indicator rank of 62.

Global Innovation Index 2023



→ Panama's innovation top performers

> 2.3.4 QS university ranking of Panama's top universities

Rank	University	Score
1001-1200	UNIVERSIDAD TECNOLOGICA DE PANAMA (UTP)	10.60
1201-1400	UNIVERSIDAD DE PANAMA	5.20

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".

> 7.1.1 Top 15 intangible-asset intensive companies in Panama

Rank	Firm	Intensity, %
1	BANESCO SA	95.56
2	COPA HOLDINGS SA	50.63
3	EMPRESA GENERAL DE INVERSIONES SA	37.71

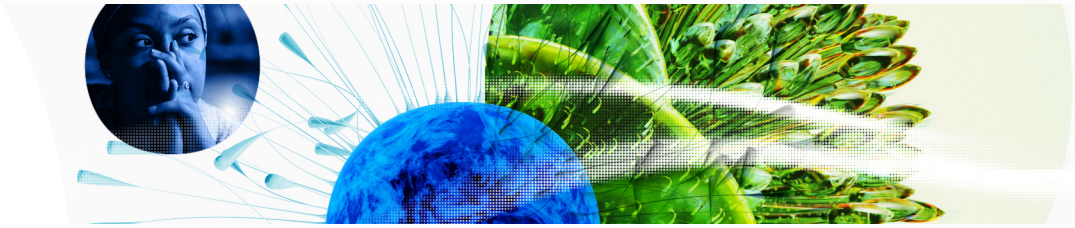
Source: Brand Finance (https://brandirectory.com/reports/gift-2022).
Note: Brand Finance only provides within economy ranks.

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

Rank	Brand	Industry	Brand Value, mn USD
1	COPA AIRLINES	Airlines	300.6

Source: Brand Finance (https://brandirectory.com).
Note: Rank corresponds to within economy ranks.

Global Innovation Index 2023



Panama

GII 2023 rank **84**

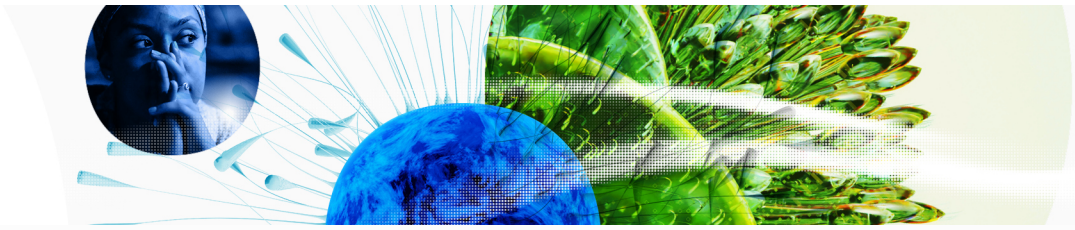
Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
75	93	High	LCN	4.4	159.9	36,370.4

	Score / Value	Rank	
Institutions	**47.0**	**77**	◇
1.1 Institutional environment	**47.7**	**58**	◇
1.1.1 Operational stability for businesses*	54.2	62	◇
1.1.2 Government effectiveness*	41.1	61	◇
1.2 Regulatory environment	**59.9**	**73**	◇
1.2.1 Regulatory quality*	47.1	61	◇
1.2.2 Rule of law*	32.5	77	◇
1.2.3 Cost of redundancy dismissal	18.1	78	
1.3 Business environment	**33.4**	**93**	◇
1.3.1 Policies for doing business†	37.9	93	◇
1.3.2 Entrepreneurship policies and culture†	28.9	59	
Human capital and research	**19.1**	**103**	◇
2.1 Education	**40.2**	**99**	◇
2.1.1 Expenditure on education, % GDP	3.5	91	◇
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3 School life expectancy, years	12.9	83	◇
2.1.4 PISA scales in reading, maths and science	364.8	76	○ ◇
2.1.5 Pupil-teacher ratio, secondary	13.6	67	
2.2 Tertiary education	**16.4**	**98**	◇
2.2.1 Tertiary enrolment, % gross	44.4	72	◇
2.2.2 Graduates in science and engineering, %	13.7	102	◇
2.2.3 Tertiary inbound mobility, %	3.1	64	
2.3 Research and development (R&D)	**0.8**	**104**	◇
2.3.1 Researchers, FTE/mn pop.	39.1	97	
2.3.2 Gross expenditure on R&D, % GDP	0.2	93	◇
2.3.3 Global corporate R&D investors, top 3, mn US$	0.0	40	○ ◇
2.3.4 QS university ranking, top 3*	0.0	71	○ ◇
Infrastructure	**45.0**	**55**	◇
3.1 Information and communication technologies (ICTs)	**63.3**	**79**	◇
3.1.1 ICT access*	77.9	79	◇
3.1.2 ICT use*	61.4	90	◇
3.1.3 Government's online service*	64.0	71	◇
3.1.4 E-participation*	50.0	75	◇
3.2 General infrastructure	**31.7**	**51**	◇
3.2.1 Electricity output, GWh/mn pop.	2,533.0	74	◇
3.2.2 Logistics performance*	45.5	56	◇
3.2.3 Gross capital formation, % GDP	34.3	14	●
3.3 Ecological sustainability	**40.1**	**31**	
3.3.1 GDP/unit of energy use	24.5	5	●
3.3.2 Environmental performance*	53.6	40	●
3.3.3 ISO 14001 environment/bn PPP$ GDP	0.2	111	◇
Market sophistication	**23.5**	**102**	◇
4.1 Credit	**31.4**	**61**	
4.1.1 Finance for startups and scaleups†	23.2	77	◇
4.1.2 Domestic credit to private sector, % GDP	105.9	26	●
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	
4.2 Investment	**4.3**	**83**	◇
4.2.1 Market capitalization, % GDP	25.2	52	
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.0	86	
4.2.3 VC recipients, deals/bn PPP$ GDP	0.0	87	
4.2.4 VC received, value, % GDP	0.0	68	
4.3 Trade, diversification, and market scale	**34.9**	**113**	◇
4.3.1 Applied tariff rate, weighted avg., %	5.8	95	◇
4.3.2 Domestic industry diversification	38.8	108	○ ◇
4.3.3 Domestic market scale, bn PPP$	159.9	76	

	Score / Value	Rank	
Business sophistication	**16.2**	**124**	◇
5.1 Knowledge workers	**12.8**	**114**	◇
5.1.1 Knowledge-intensive employment, %	10.9	103	◇
5.1.2 Firms offering formal training, %	n/a	n/a	
5.1.3 GERD performed by business, % GDP	0.0	92	○ ◇
5.1.4 GERD financed by business, %	1.1	91	○ ◇
5.1.5 Females employed w/advanced degrees, %	11.3	68	◇
5.2 Innovation linkages	**13.6**	**105**	◇
5.2.1 University-industry R&D collaboration†	23.5	108	◇
5.2.2 State of cluster development†	29.5	95	◇
5.2.3 GERD financed by abroad, % GDP	0.1	44	●
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	102	◇
5.2.5 Patent families/bn PPP$ GDP	0.1	58	●
5.3 Knowledge absorption	**22.3**	**118**	◇
5.3.1 Intellectual property payments, % total trade	0.5	70	
5.3.2 High-tech imports, % total trade	3.8	127	○ ◇
5.3.3 ICT services imports, % total trade	0.4	121	○ ◇
5.3.4 FDI net inflows, % GDP	1.6	85	
5.3.5 Research talent, % in businesses	n/a	n/a	
Knowledge and technology outputs	**17.1**	**87**	◇
6.1 Knowledge creation	**4.9**	**114**	◇
6.1.1 Patents by origin/bn PPP$ GDP	0.3	92	◇
6.1.2 PCT patents by origin/bn PPP$ GDP	0.1	74	◇
6.1.3 Utility models by origin/bn PPP$ GDP	0.0	68	◇
6.1.4 Scientific and technical articles/bn PPP$ GDP	n/a	n/a	
6.1.5 Citable documents H-index	12.0	67	
6.2 Knowledge impact	**18.1**	**114**	◇
6.2.1 Labor productivity growth, %	0.4	84	
6.2.2 Unicorn valuation, % GDP	0.0	48	○ ◇
6.2.3 Software spending, % GDP	0.2	77	
6.2.4 High-tech manufacturing, %	7.6	96	◇
6.3 Knowledge diffusion	**28.4**	**55**	
6.3.1 Intellectual property receipts, % total trade	0.0	76	
6.3.2 Production and export complexity	65.7	40	●
6.3.3 High-tech exports, % total trade	9.4	19	●
6.3.4 ICT services exports, % total trade	1.2	79	
6.3.5 ISO 9001 quality/bn PPP$ GDP	1.9	88	◇
Creative outputs	**23.9**	**67**	◇
7.1 Intangible assets	**20.0**	**85**	◇
7.1.1 Intangible asset intensity, top 15, %	2.5	69	◇
7.1.2 Trademarks by origin/bn PPP$ GDP	34.5	69	
7.1.3 Global brand value, top 5,000	0.4	67	◇
7.1.4 Industrial designs by origin/bn PPP$ GDP	0.0	118	○ ◇
7.2 Creative goods and services	**28.3**	**32**	
7.2.1 Cultural and creative services exports, % total trade	0.2	69	
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	4.5	14	●
7.3 Online creativity	**27.2**	**46**	
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	37.4	19	●
7.3.2 Country-code TLDs/th pop. 15-69	1.4	77	◇
7.3.3 GitHub commits/mn pop. 15-69	3.4	86	◇
7.3.4 Mobile app creation/bn PPP$ GDP	66.6	62	

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.

Global Innovation Index 2023



→ Data availability

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

> Panama has missing data for six indicators and outdated data for seven indicators.

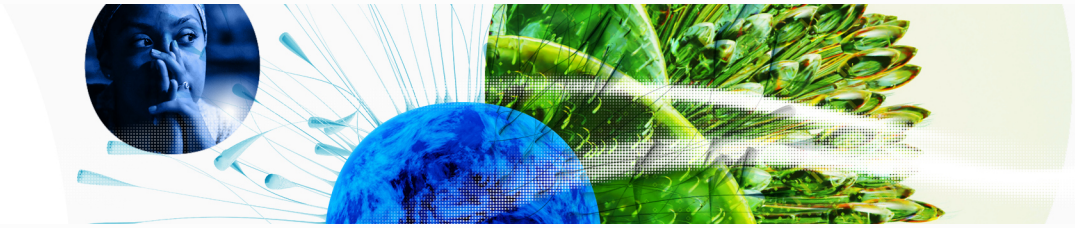
> Missing data for Panama

Code	Indicator name	Economy Year	Model Year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2019	UNESCO Institute for Statistics
4.1.3	Loans from microfinance institutions, % GDP	n/a	2021	International Monetary Fund, Financial Access Survey (FAS)
5.1.2	Firms offering formal training, %	n/a	2019	World Bank Enterprise Surveys
5.3.5	Research talent, % in businesses	n/a	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
7.2.2	National feature films/mn pop. 15-69	n/a	2021	OMDIA; United Nations, World Population Prospects
7.2.3	Entertainment and media market/th pop. 15-69	n/a	2022	PwC, GEMO; United Nations, World Population Prospects; International Monetary Fund

> Outdated data for Panama

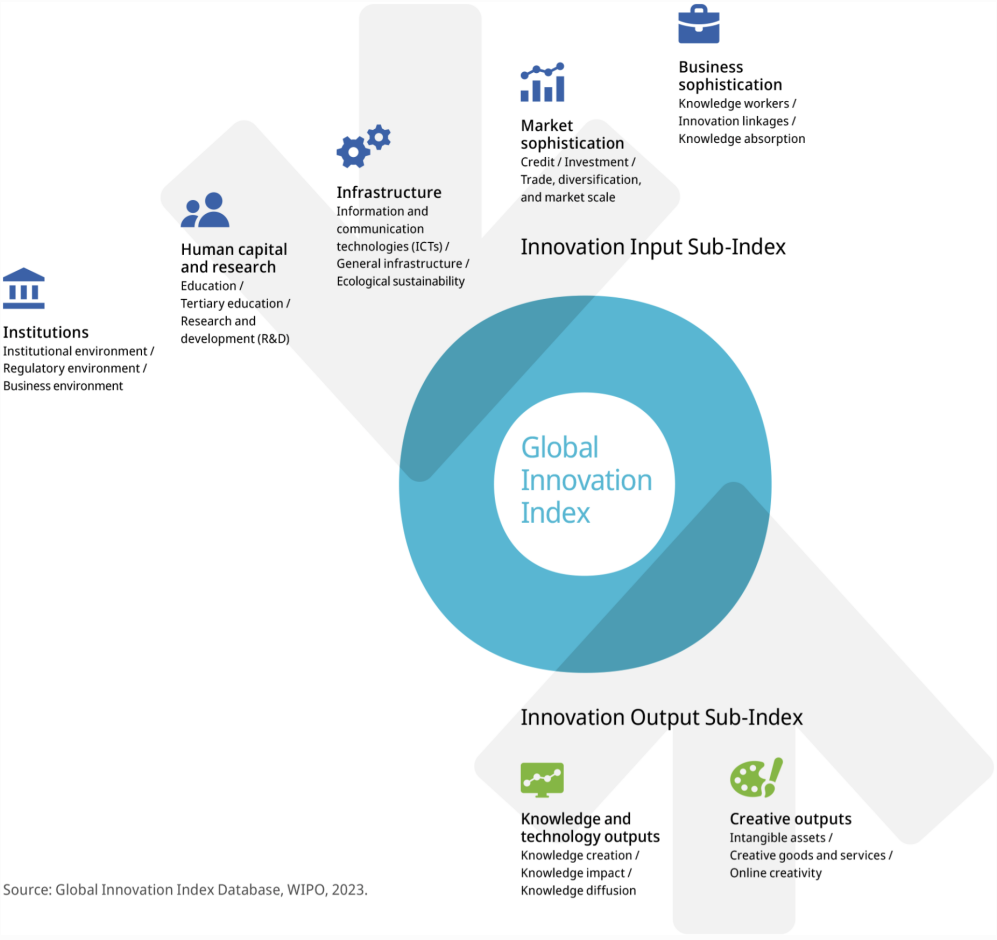
Code	Indicator name	Economy Year	Model Year	Source
2.1.3	School life expectancy, years	2016	2020	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2017	2020	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2013	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
3.2.1	Electricity output, GWh/mn pop.	2020	2021	International Energy Agency
5.1.3	GERD performed by business, % GDP	2017	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
6.3.3	High-tech exports, % total trade	2020	2021	United Nations Comtrade Database; World Trade Organization and United Nations Conference on Trade and Development; Trade Data Monitor.
7.2.4	Creative goods exports, % total trade	2020	2021	United Nations Comtrade Database; World Trade Organization and United Nations Conference on Trade and Development

Global Innovation Index 2023



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, 2023.

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.