Global Innovation Index 2022

PANAMA

81st Panama ranks 81st 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 Panama 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 Panama in the GII 2022 is between ranks 79 and 83.

Rankings for Panama (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	73	82	70
2021	83	83	79
2022	81	83	80

- Panama performs better in innovation outputs than innovation inputs in 2022.
- This year Panama ranks 83rd in innovation inputs, the same as last year but lower than 2020.
- As for innovation outputs, Panama ranks 80th. This position is lower than both 2021 and 2020.

26th Panama ranks 26th among the 36 upper-middle-income group economies.

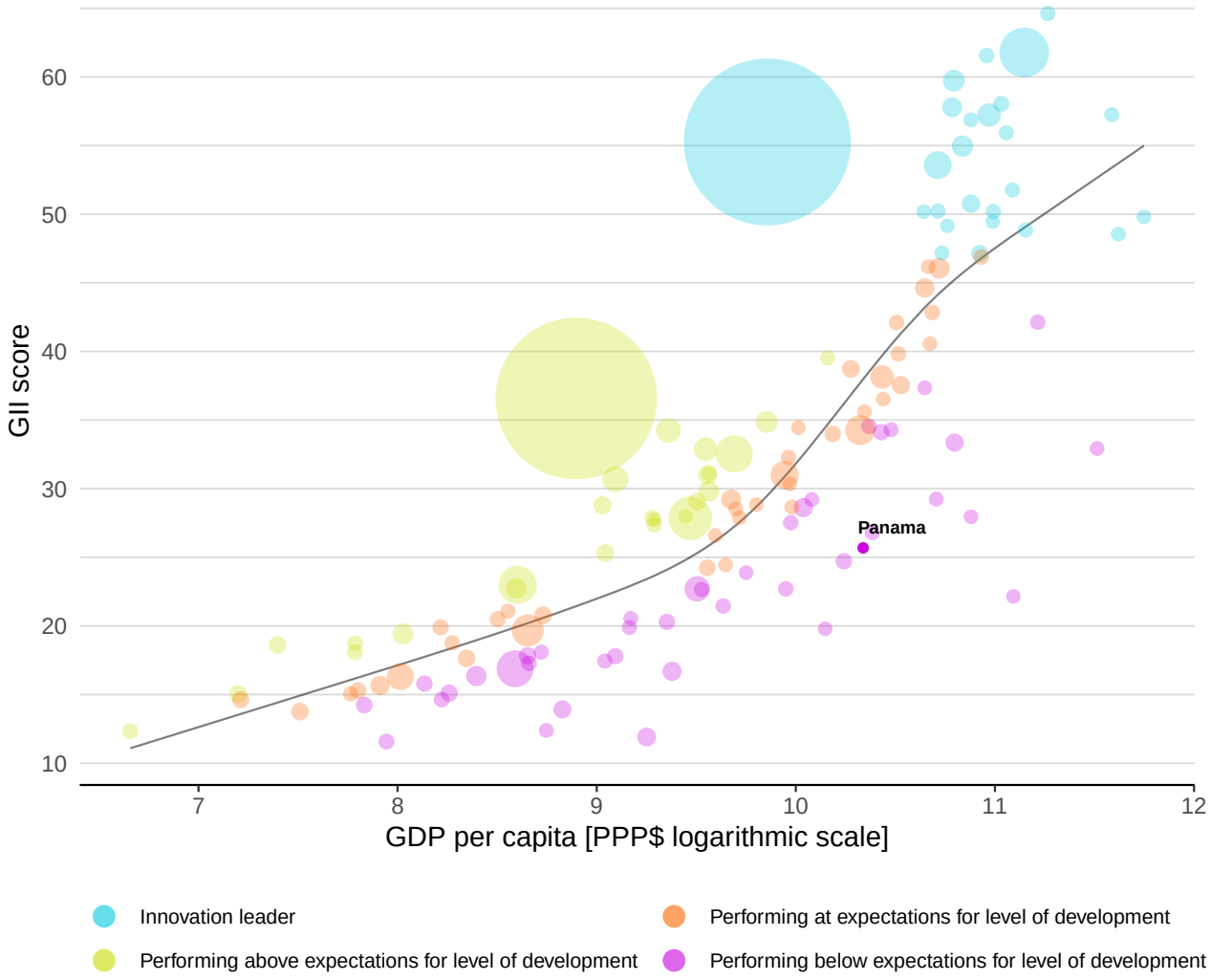
10th Panama ranks 10th among the 18 economies in Latin America and the Caribbean.

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

The positive relationship between innovation and development

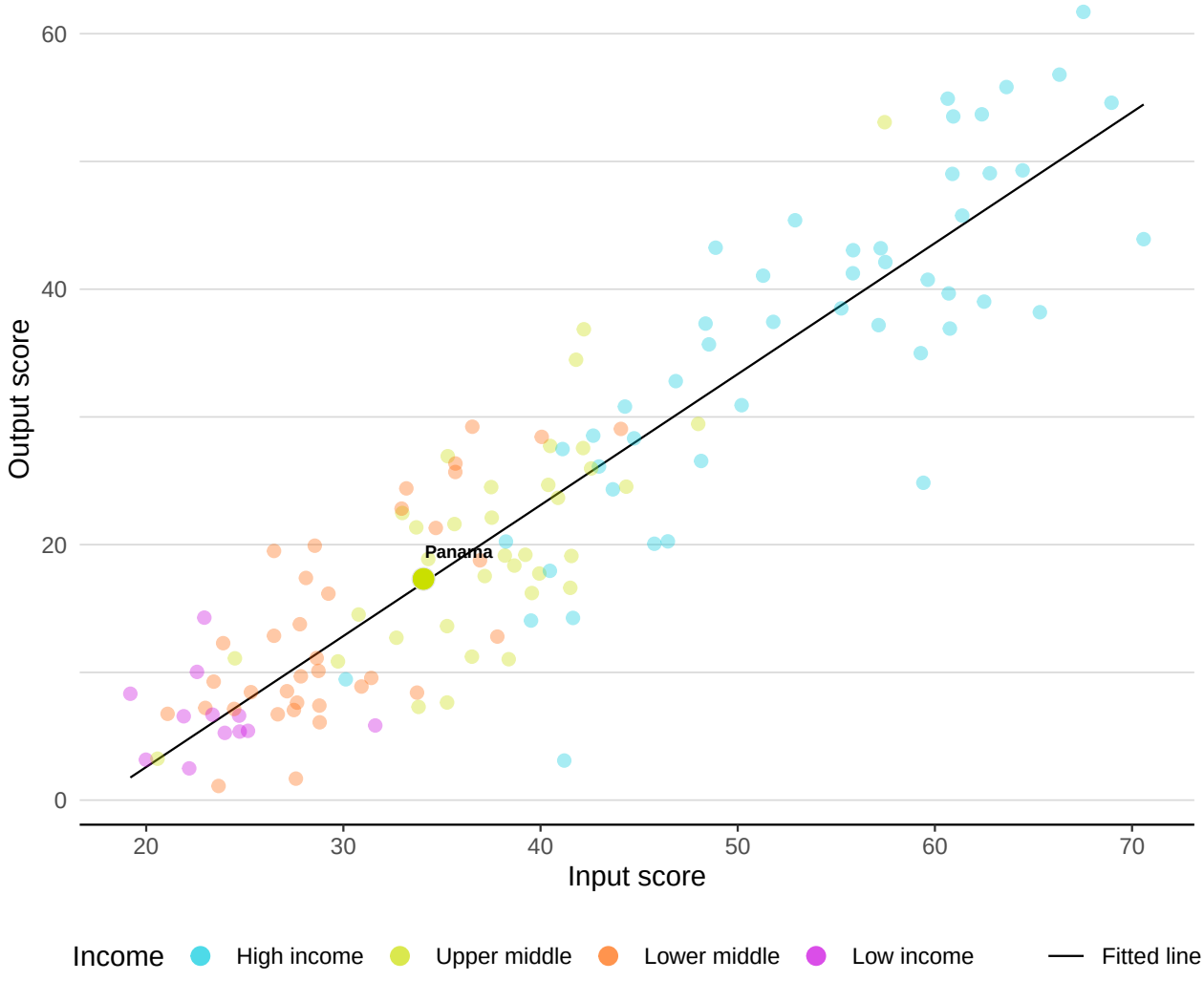


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

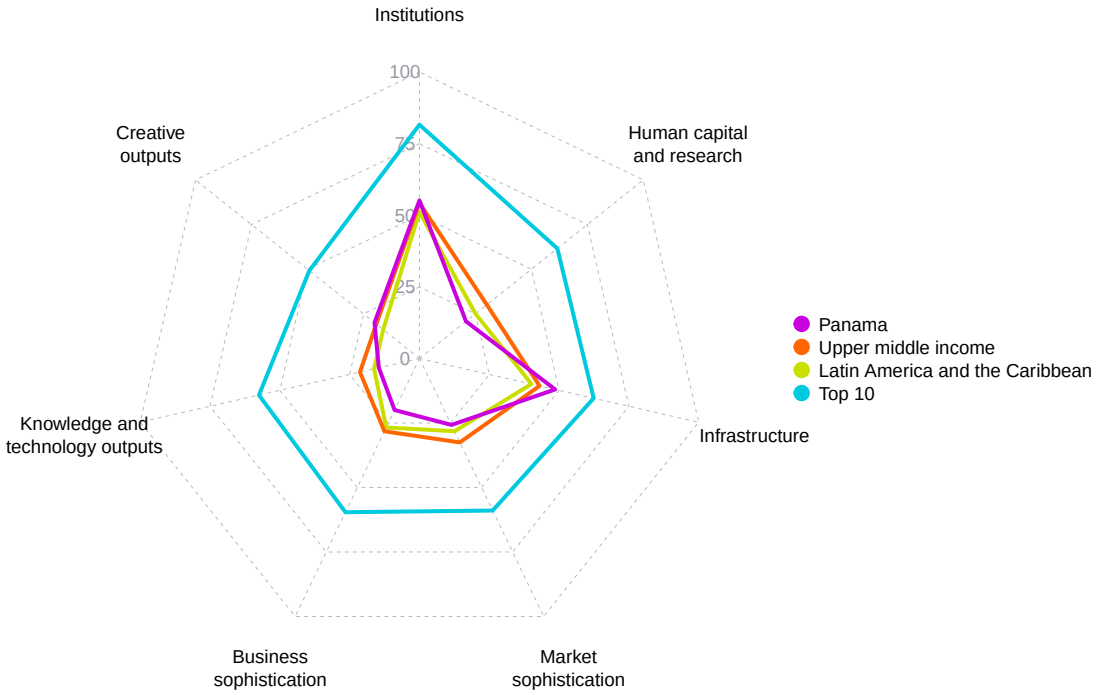
Panama produces more innovation outputs relative to its level of innovation investments.

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 Panama



Upper-middle-income group economies

Panama performs above the upper-middle-income group average in three pillars, namely: Institutions; Infrastructure; and, Creative outputs.

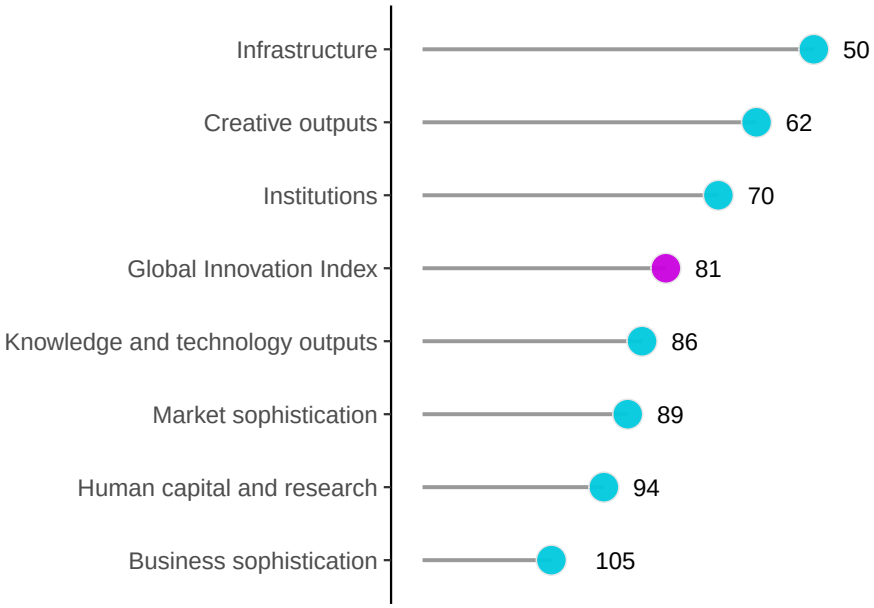
Latin America and the Caribbean

Panama performs above the regional average in three pillars, namely: Institutions; Infrastructure; and, Creative outputs.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Panama performs best in Infrastructure and its weakest performance is in Business sophistication.

The seven GII pillar ranks for Panama



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

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

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

INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths and weaknesses for Panama

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
3.2.2	Logistics performance	37	2.1.2	Government funding/pupil, secondary, % GDP/cap	99
3.2.3	Gross capital formation, % GDP	13	2.1.4	PISA scales in reading, maths and science	75
3.3.1	GDP/unit of energy use	6	2.3.1	Researchers, FTE/mn pop.	98
4.1.2	Domestic credit to private sector, % GDP	24	2.3.3	Global corporate R&D investors, top 3, mn USD	38
5.3.4	FDI net inflows, % GDP	31	4.2.2	Venture capital investors, deals/bn PPP$ GDP	88
6.2.2	New businesses/th pop. 15–64	34	4.3.2	Domestic industry diversification	101
6.3.3	High-tech exports, % total trade	37	5.1.3	GERD performed by business, % GDP	92
7.2.4	Printing and other media, % manufacturing	7	5.1.4	GERD financed by business, %	92
7.2.5	Creative goods exports, % total trade	17	7.1.1	Intangible asset intensity, top 15, %	74
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	20	7.1.4	Industrial designs by origin/bn PPP$ GDP	121

GII 2022 rank

Panama

81

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
80	83	Upper middle	LCN	4.4	134.0	30,889

		Score/ Value	Rank	
Institutions		**55.2**	**70**	
1.1	**Political environment**	61.1	60	
1.1.1	Political and operational stability*	70.9	53	
1.1.2	Government effectiveness*	51.2	64	
1.2	**Regulatory environment**	63.4	69	
1.2.1	Regulatory quality*	52.9	56	
1.2.2	Rule of law*	40.7	73	
1.2.3	Cost of redundancy dismissal	18.1	77	
1.3	**Business environment**	41.1	85	
1.3.1	Policies for doing business†	47.6	71	
1.3.2	Entrepreneurship policies and culture*	34.6	45	
Human capital and research		**20.8**	**94**	◇
2.1	**Education**	35.4	109	◇
2.1.1	Expenditure on education, % GDP	3.9	80	
2.1.2	Government funding/pupil, secondary, % GDP/cap	9.2	99 ○	◇
2.1.3	School life expectancy, years	12.9	83	◇
2.1.4	PISA scales in reading, maths and science	364.8	75 ○	◇
2.1.5	Pupil-teacher ratio, secondary	13.6	62	
2.2	**Tertiary education**	25.2	81	
2.2.1	Tertiary enrolment, % gross	47.8	67	
2.2.2	Graduates in science and engineering, %	15.4	94	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research and development (R&D)**	1.8	89	
2.3.1	Researchers, FTE/mn pop.	39.1	98 ○	◇
2.3.2	Gross expenditure on R&D, % GDP	0.1	96	
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○	◇
2.3.4	QS university ranking, top 3*	3.9	71	
Infrastructure		**48.6**	**50**	
3.1	**Information and communication technologies (ICTs)**	64.7	87	
3.1.1	ICT access*	83.1	77	
3.1.2	ICT use*	55.2	86	
3.1.3	Government's online service*	62.4	83	
3.1.4	E-participation*	58.3	88	
3.2	**General infrastructure**	39.8	39 ●	◆
3.2.1	Electricity output, GWh/mn pop.	2,741.2	66	
3.2.2	Logistics performance*	57.2	37 ●	◆
3.2.3	Gross capital formation, % GDP	32.5	13 ●	◆
3.3	**Ecological sustainability**	41.3	29 ●	
3.3.1	GDP/unit of energy use	24.3	6 ●	◆
3.3.2	Environmental performance*	50.5	40	◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	106	
Market sophistication		**25.7**	**89**	
4.1	**Credit**	33.1	42	
4.1.1	Finance for startups and scaleups*	26.5	64	
4.1.2	Domestic credit to private sector, % GDP	105.9	24 ●	◆
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	
4.2	**Investment**	5.0	78	
4.2.1	Market capitalization, % GDP	25.2	54	
4.2.2	Venture capital investors, deals/bn PPP$ GDP	0.0	88 ○	
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	0.0	83	
4.2.4	Venture capital received, value, % GDP	0.0	56	
4.3	**Trade, diversification, and market scale**	39.1	102	◇
4.3.1	Applied tariff rate, weighted avg., %	5.8	95	◇
4.3.2	Domestic industry diversification	51.9	101 ○	◇
4.3.3	Domestic market scale, bn PPP$	134.0	78	

		Score/ Value	Rank	
Business sophistication		**20.0**	**105**	◇
5.1	**Knowledge workers**	18.9	100	◇
5.1.1	Knowledge-intensive employment, %	23.9	64	
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, %	1.5	92 ○	◇
5.1.5	Females employed w/advanced degrees, %	11.7	65	
5.2	**Innovation linkages**	19.7	95	
5.2.1	University-industry R&D collaboration†	35.7	99	
5.2.2	State of cluster development and depth†	46.5	71	
5.2.3	GERD financed by abroad, % GDP	0.1	46	
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	96	
5.2.5	Patent families/bn PPP$ GDP	0.1	54	
5.3	**Knowledge absorption**	21.4	103	◇
5.3.1	Intellectual property payments, % total trade	0.2	94	
5.3.2	High-tech imports, % total trade	7.7	78	
5.3.3	ICT services imports, % total trade	0.5	111	◇
5.3.4	FDI net inflows, % GDP	3.6	31 ●	
5.3.5	Research talent, % in businesses	n/a	n/a	
Knowledge and technology outputs		**14.6**	**86**	
6.1	**Knowledge creation**	4.6	108	
6.1.1	Patents by origin/bn PPP$ GDP	0.2	100	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	66	
6.1.3	Utility models by origin/bn PPP$ GDP	0.0	69	
6.1.4	Scientific and technical articles/bn PPP$ GDP	5.5	111	
6.1.5	Citable documents H-index	11.6	65	
6.2	**Knowledge impact**	12.0	114	◇
6.2.1	Labor productivity growth, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	4.2	34 ●	
6.2.3	Software spending, % GDP	0.2	69	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.0	84	
6.2.5	High-tech manufacturing, %	7.5	91	◇
6.3	**Knowledge diffusion**	27.0	53	
6.3.1	Intellectual property receipts, % total trade	0.1	68	
6.3.2	Production and export complexity	47.2	48	
6.3.3	High-tech exports, % total trade	5.1	37 ●	
6.3.4	ICT services exports, % total trade	1.7	72	
Creative outputs		**20.1**	**62**	
7.1	**Intangible assets**	17.1	86	
7.1.1	Intangible asset intensity, top 15, %	−2.0	74 ○	◇
7.1.2	Trademarks by origin/bn PPP$ GDP	46.8	52	
7.1.3	Global brand value, top 5,000, % GDP	12.5	55	
7.1.4	Industrial designs by origin/bn PPP$ GDP	0.0	121 ○	◇
7.2	**Creative goods and services**	36.2	[16]	
7.2.1	Cultural and creative services exports, % total trade	0.4	62	
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	2.5	7 ●	◆
7.2.5	Creative goods exports, % total trade	2.9	17 ●	
7.3	**Online creativity**	9.9	44	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	32.1	20 ●	◆
7.3.2	Country-code TLDs/th pop. 15–69	1.2	82	
7.3.3	GitHub commit pushes received/mn pop. 15–69	1.8	88	
7.3.4	Mobile app creation/bn PPP$ GDP	4.4	57	

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 Panama.

Missing data for Panama

Code	Indicator name	Economy year	Model year	Source
2.2.3	Tertiary inbound mobility, %	n/a	2019	UNESCO Institute for Statistics
4.1.3	Loans from microfinance institutions, % GDP	n/a	2020	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	2020	UNESCO Institute for Statistics
6.2.1	Labor productivity growth, %	n/a	2021	The Conference Board
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

Outdated data for Panama

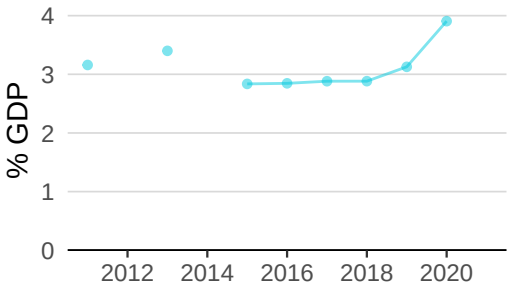
Code	Indicator name	Economy year	Model year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	2011	2018	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	2016	2019	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2017	2019	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2016	2019	UNESCO Institute for Statistics
2.2.2	Graduates in science and engineering, %	2016	2020	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2013	2020	UNESCO Institute for Statistics
2.3.2	Gross expenditure on R&D, % GDP	2017	2020	UNESCO Institute for Statistics
3.2.1	Electricity output, GWh/mn pop.	2019	2020	International Energy Agency
4.3.2	Domestic industry diversification	2018	2019	United Nations Industrial Development Organization
5.1.3	GERD performed by business, % GDP	2017	2020	UNESCO Institute for Statistics
5.1.4	GERD financed by business, %	2017	2019	UNESCO Institute for Statistics
5.2.3	GERD financed by abroad, % GDP	2017	2019	UNESCO Institute for Statistics
5.3.2	High-tech imports, % total trade	2017	2020	United Nations Comtrade Database
6.2.5	High-tech manufacturing, %	2018	2019	United Nations Industrial Development Organization
6.3.3	High-tech exports, % total trade	2017	2020	United Nations Comtrade Database

Code	Indicator name	Economy year	Model year	Source
7.2.4	Printing and other media, % manufacturing	2018	2019	United Nations Industrial Development Organization
7.2.5	Creative goods exports, % total trade	2017	2020	United Nations Comtrade Database

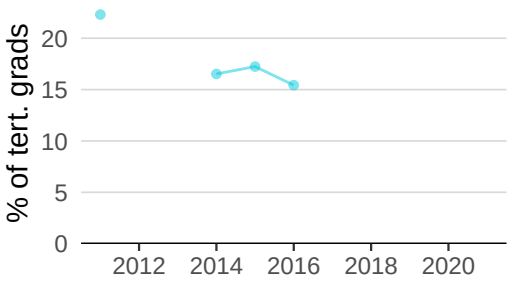
PANAMA'S INNOVATION SYSTEM

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

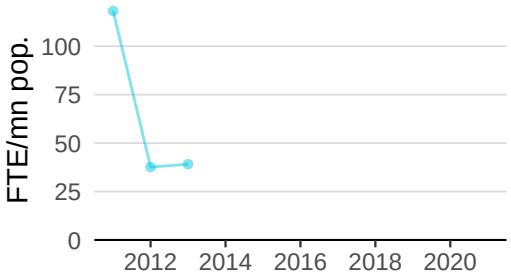
Innovation inputs



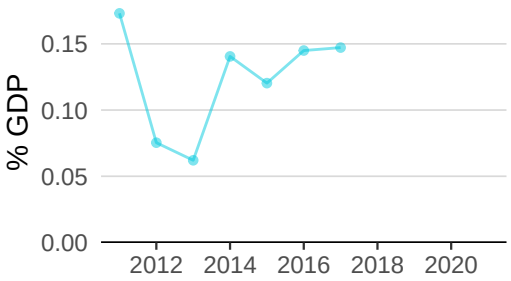
2.1.1 Expenditure on education was equal to 3.9% GDP in 2020–up by 25 percentage points from the year prior–and equivalent to an indicator rank of 80.



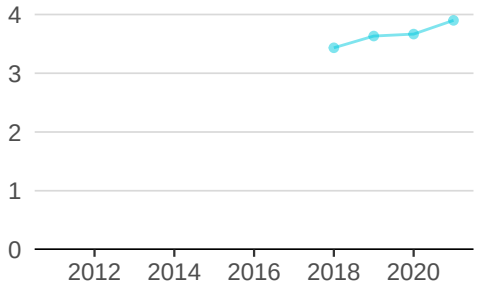
2.2.2 Graduates in science and engineering was equal to 15.4% of tert. grads in 2016–down by 11 percentage points from the year prior–and equivalent to an indicator rank of 94.



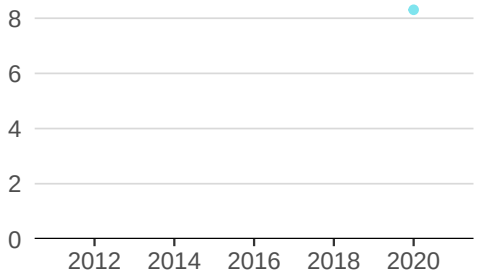
2.3.1 Researchers was equal to 39.1 FTE/mn pop. in 2013–up by 4 percentage points from the year prior–and equivalent to an indicator rank of 98.



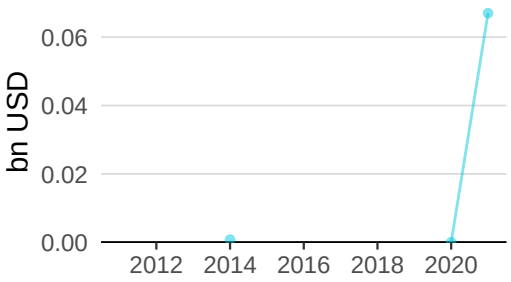
2.3.2 Gross expenditure on R&D was equal to 0.1% GDP in 2017–up by 2 percentage points from the year prior–and equivalent to an indicator rank of 96.



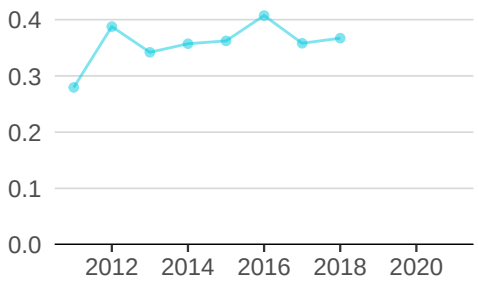
2.3.4 QS university ranking was equal to 3.9 in 2021–up by 6 percentage points from the year prior–and equivalent to an indicator rank of 71.



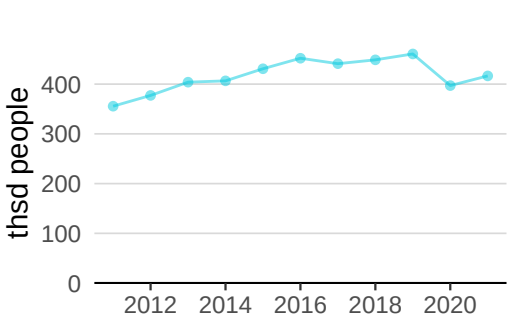
3.1.1 ICT access was equal to 8.3 in 2020 and equivalent to an indicator rank of 77.



4.2.4 Venture capital received was equal to 0.1 bn USD in 2021–up by Inf percentage points from the year prior–and equivalent to an indicator rank of 56.

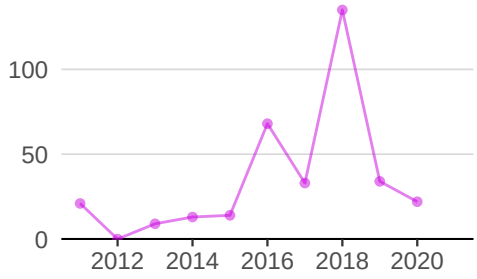


4.3.2 Domestic industry diversification was equal to 0.4 in 2018–up by 3 percentage points from the year prior–and equivalent to an indicator rank of 101.

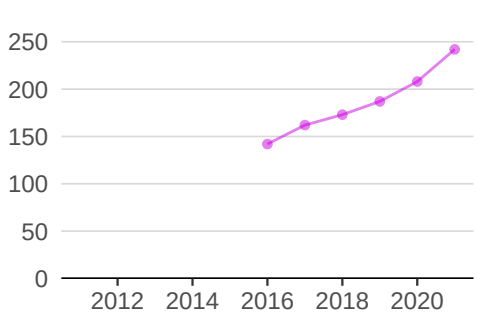


5.1.1 Knowledge-intensive employment was equal to 416.5 thsd people in 2021–up by 5 percentage points from the year prior–and equivalent to an indicator rank of 64.

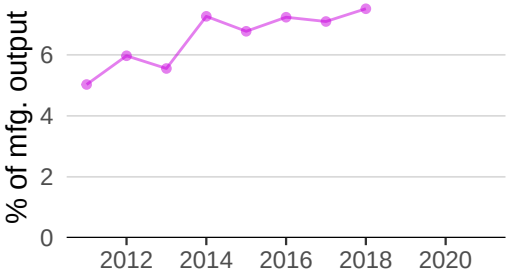
Innovation outputs



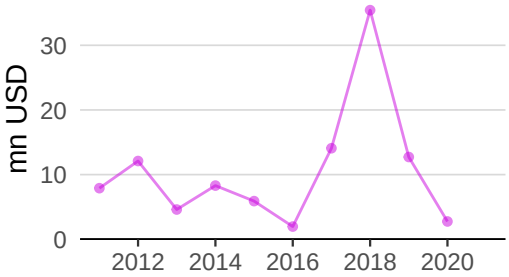
6.1.1 Patents by origin was equal to 22.0 in 2020–down by 35 percentage points from the year prior–and equivalent to an indicator rank of 100.



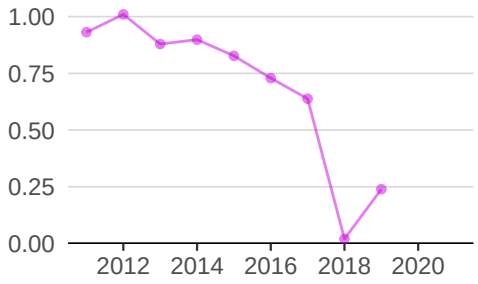
6.1.5 Citable documents H-index was equal to 242.0 in 2021–up by 16 percentage points from the year prior–and equivalent to an indicator rank of 65.



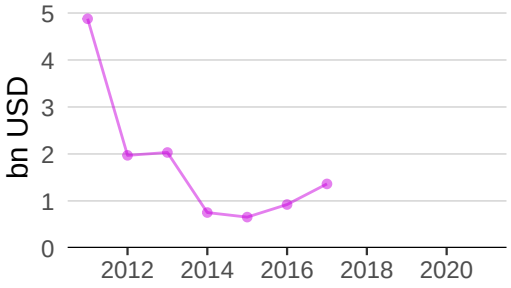
6.2.5 High-tech manufacturing was equal to 7.5% of mfg. output in 2018–up by 6 percentage points from the year prior–and equivalent to an indicator rank of 91.



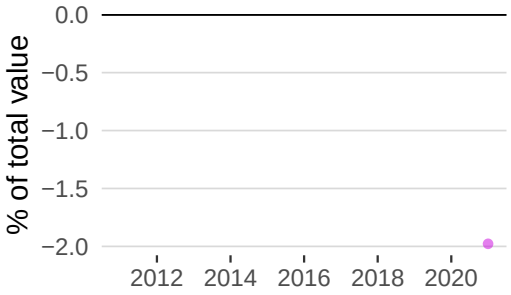
6.3.1 Intellectual property receipts was equal to 2.8 mn USD in 2020–down by 78 percentage points from the year prior–and equivalent to an indicator rank of 68.



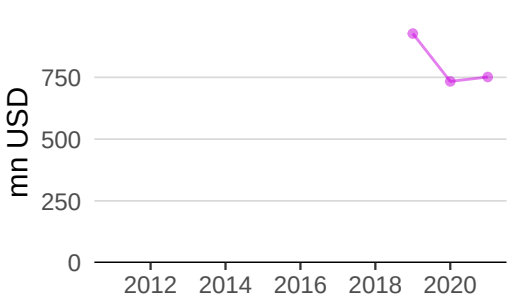
6.3.2 Production and export complexity was equal to 0.2 in 2019–up by 1083 percentage points from the year prior–and equivalent to an indicator rank of 48.



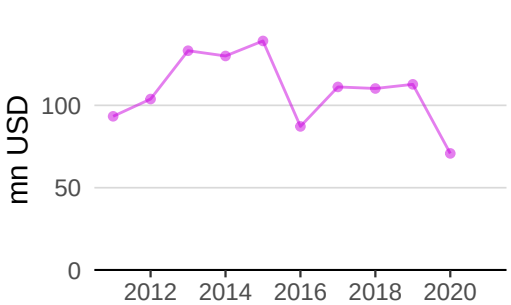
6.3.3 High-tech exports was equal to 1.4 bn USD in 2017–up by 48 percentage points from the year prior–and equivalent to an indicator rank of 37.



7.1.1 Intangible asset intensity was equal to -2.0% of total value in 2021 and equivalent to an indicator rank of 74.



7.1.3 Global brand value was equal to 751.4 mn USD in 2021–up by 2 percentage points from the year prior–and equivalent to an indicator rank of 55.



7.2.1 Cultural and creative services exports was equal to 70.8 mn USD in 2020–down by 37 percentage points from the year prior–and equivalent to an indicator rank of 62.

PANAMA'S INNOVATION TOP PERFORMERS

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank

No observations

Source: European Commission's Joint Research Centre (https://iri.jrc.ec.europa.eu/scoreboard/2021-eu-industrial-rd-investment-scoreboard).

2.3.4 QS university ranking

University	Score	Rank
UNIVERSIDAD TECNOLÓGICA DE PANAMÁ	11.7	801-1000

Source: QS Quacquarelli Symonds Ltd (https://www.topuniversities.com/university-rankings/world-university-rankings/2022).
Note: QS Quacquarelli Symonds Ltd annually assesses over 1,200 universities across the globe and scores them between [0,100]. Ranks can represent a single value "x", a tie "x=" or a range "x-y".

7.1.1 Intangible asset intensity, top 15

Firm	Rank
COPA	1
EMPRESA GENL DE INVERSIONES	2
REY	3

Source: Brand Finance (https://brandirectory.com/reports/gift-2021).
Note: Brand Finance only provides within economy ranks.

7.1.3 Global brand value, top 5,000

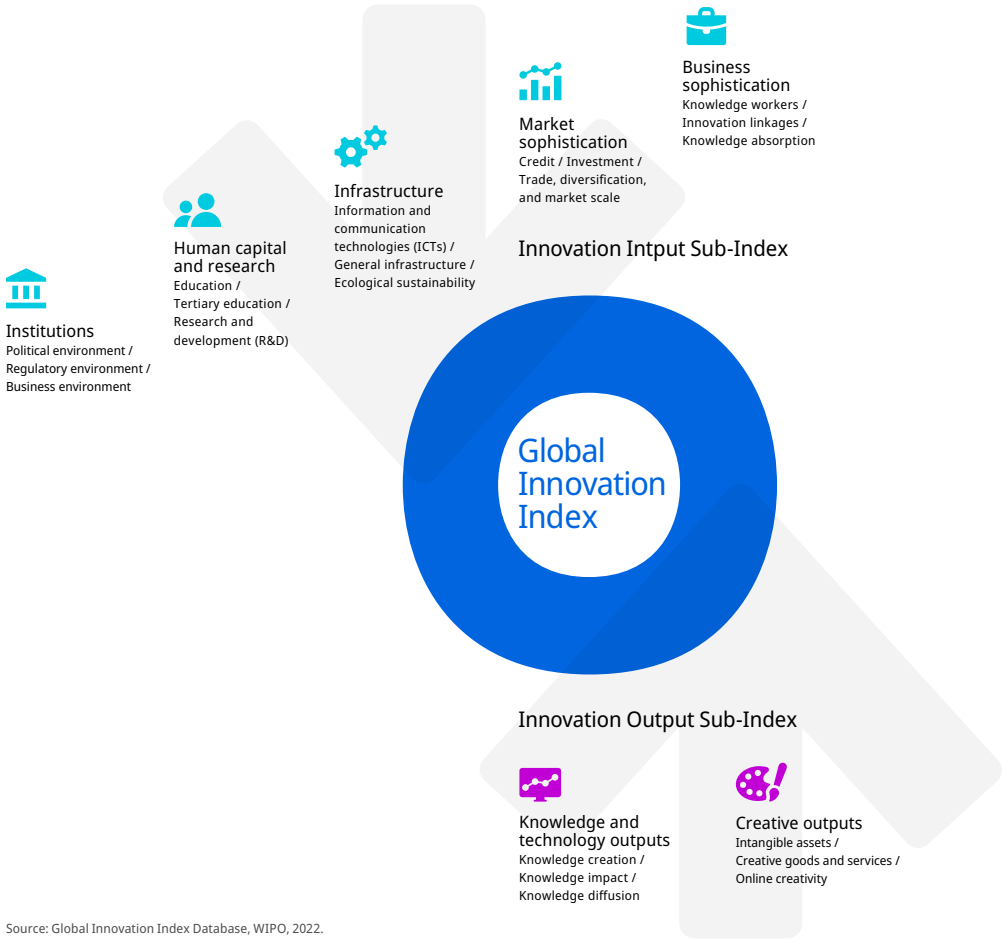
Brand	Industry	Rank
AVIANCA	Airlines	1
COPA AIRLINES	Airlines	2
MOVIL	Telecoms	3

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

ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is published by the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations.

Recognizing that innovation is a key driver of economic development, the GII aims to provide an innovation ranking and rich analysis referencing around 130 economies. Over the last decade, the GII has established itself as both a leading reference on innovation and a “tool for action” for economies that incorporate the GII into their innovation agendas.



Source: Global Innovation Index Database, WIPO, 2022.

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.