

# Global Innovation Index 2023

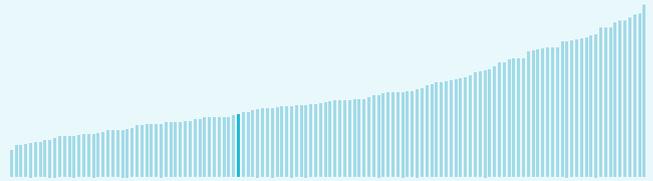


The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities.**

Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation.**

## Botswana ranking in the Global Innovation Index 2023

> Botswana ranks **85th** among the 132 economies featured in the GII 2023.



> Botswana ranks **27th** among the 33 upper-middle-income group economies.



> Botswana ranks **3rd** among the 28 economies in Sub-Saharan Africa.



### > Botswana GII Ranking (2020-2023)

The table shows the rankings of Botswana 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 Botswana in the GII 2023 is between ranks 83 and 104.

	GII Position	Innovation Inputs	Innovation Outputs
2020	89th	84th	105th
2021	106th	98th	109th
2022	86th	74th	94th
2023	85th	61st	110th

Botswana performs worse in innovation outputs than innovation inputs in 2023.

This year Botswana ranks **61st** in innovation inputs. This position is higher than last year.

Botswana ranks **110th** in innovation outputs. This position is lower than last year.

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## → Expected vs. observed innovation performance

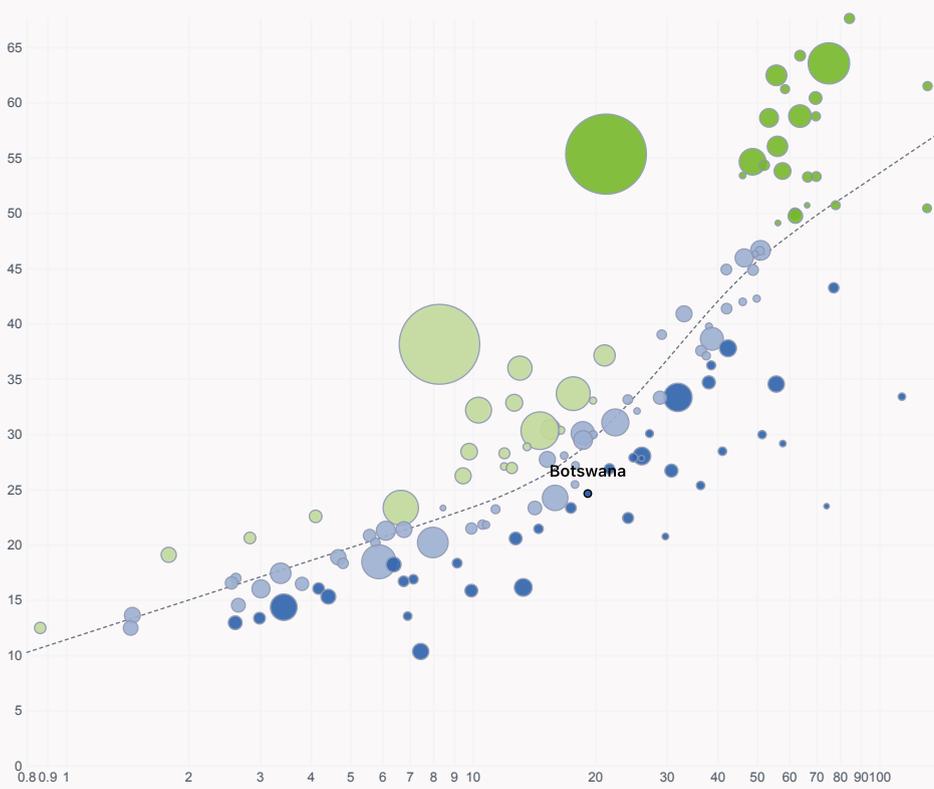
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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



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

## > Innovation overperformers relative to their economic development

↑ **GII Score**



- Innovation leader
- Performing above expectations for level of development
- Performing at expectations for level of development
- Performing below expectations for level of development

Size legend (Population)



→ GDP per capita, PPP logarithmic scale (thousands of \$)

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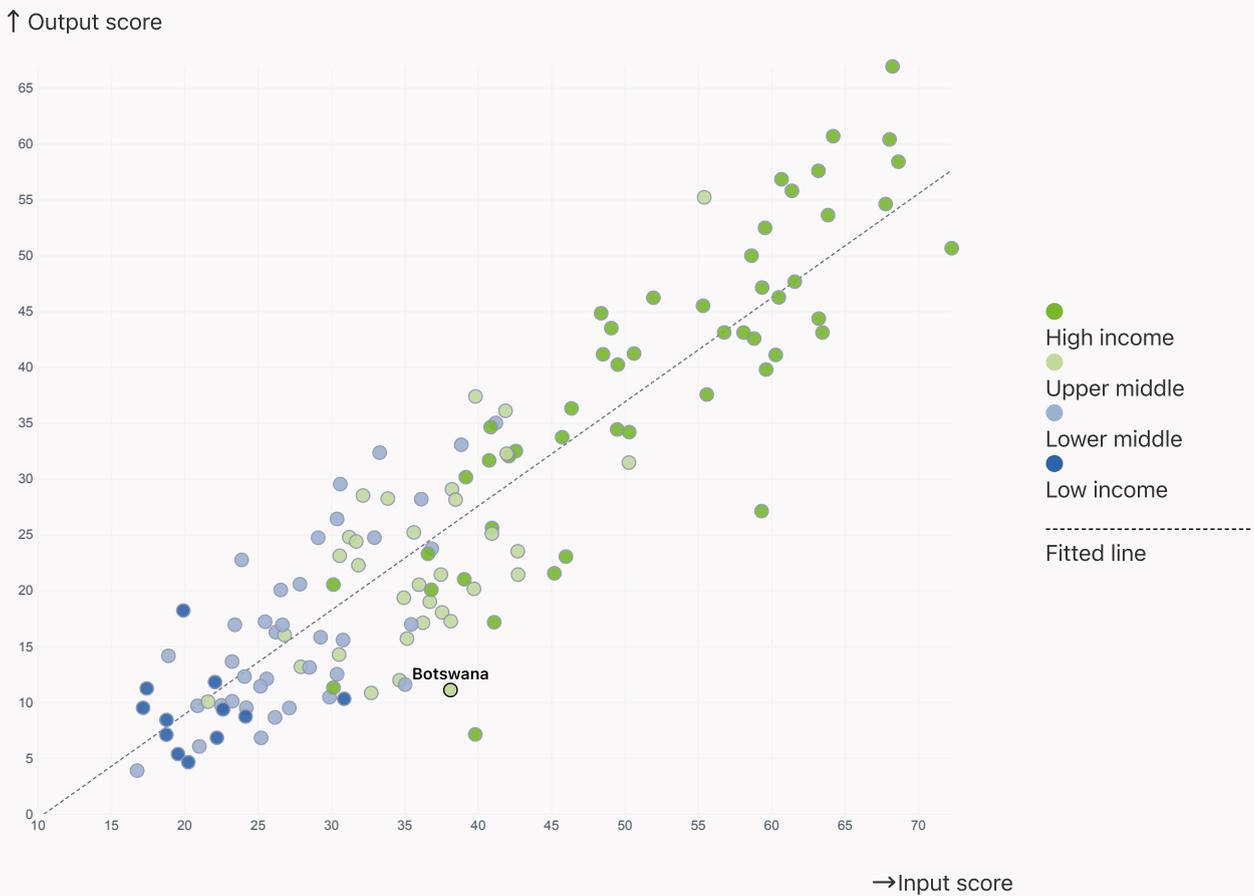
## → Effectively translating innovation investments into innovation outputs

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.

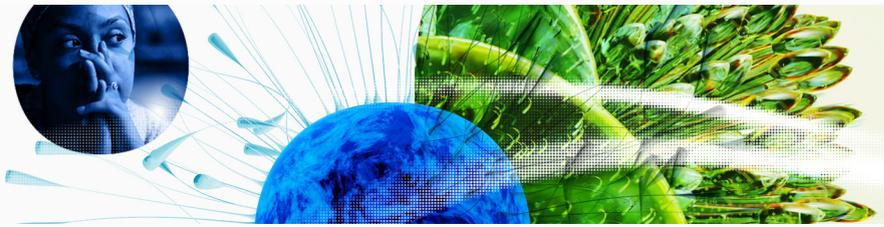


> Botswana produces less innovation outputs relative to its level of innovation investments.

### > Relationship between innovation inputs and outputs

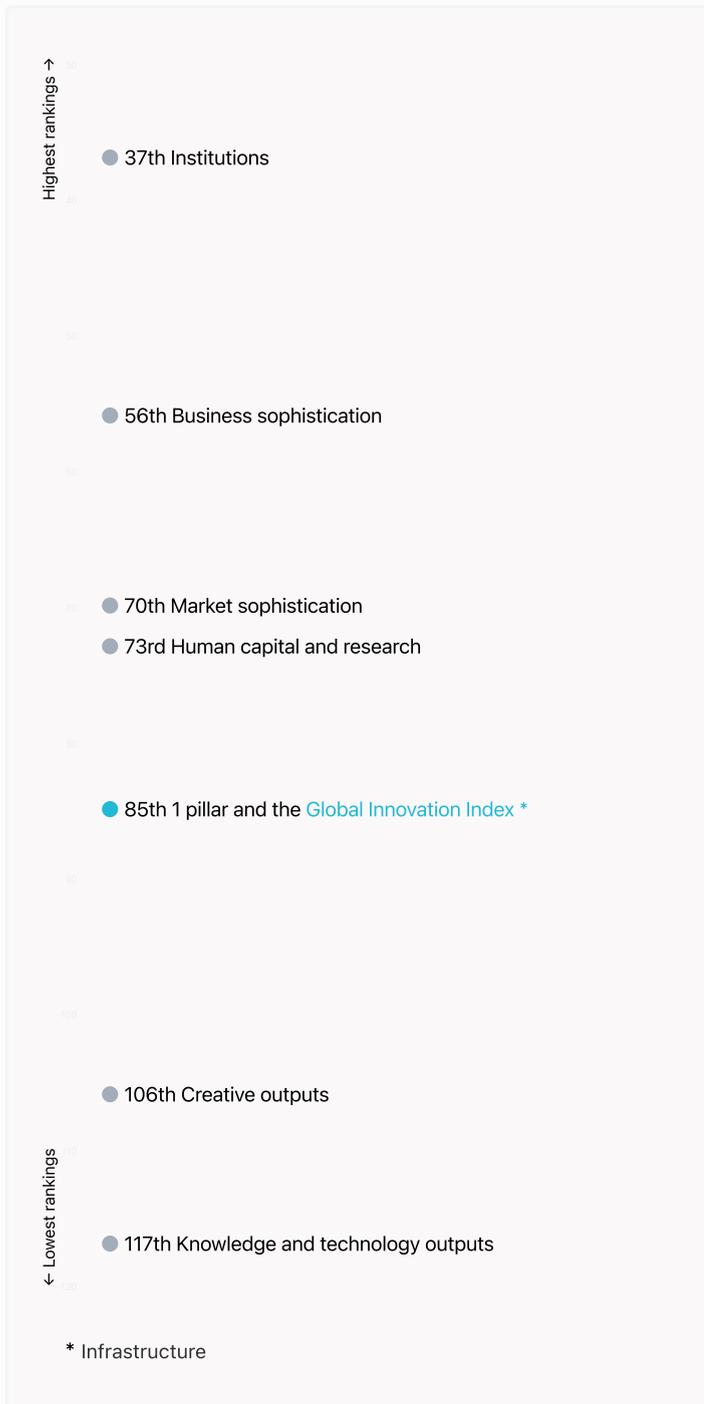


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## → Overview of Botswana's rankings in the seven areas of the GII in 2023

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



### > Highest rankings



Botswana ranks highest in Institutions (37th), Business sophistication (56th), Market sophistication (70th), Human capital and research (73rd) and Infrastructure (85th).

### > Lowest rankings



Botswana ranks lowest in Knowledge and technology outputs (117th), Creative outputs (106th) and Infrastructure, GII Index (85th).



The full WIPO Intellectual Property Statistics profile for Botswana can be found on [this link](#).

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

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

### > Upper-Middle-Income economies

Botswana performs below the upper-middle-income group average in Knowledge and technology outputs, Creative outputs, Market sophistication, Human capital and research, Infrastructure.



### > Sub-Saharan Africa

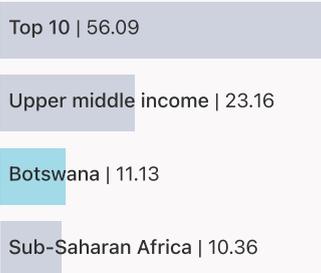
Botswana performs above the regional average in Creative outputs, Business sophistication, Market sophistication, Human capital and research, Infrastructure, Institutions.



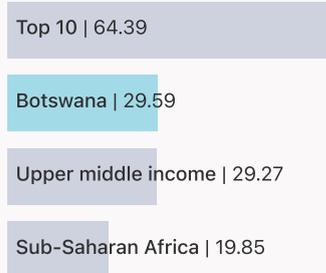
### Knowledge and technology outputs



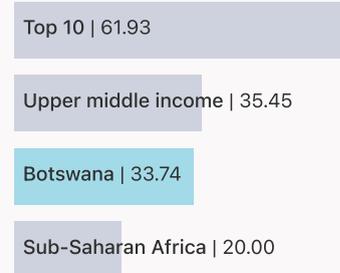
### Creative outputs



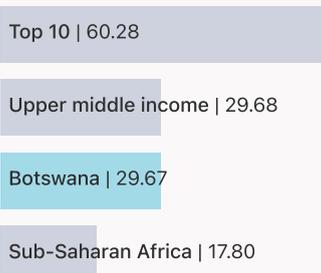
### Business sophistication



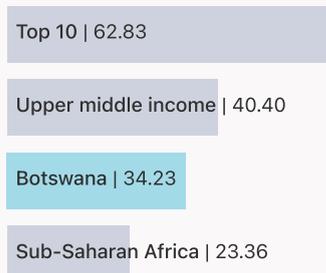
### Market sophistication



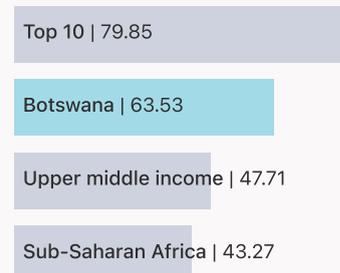
### Human capital and research



### Infrastructure



### Institutions





## → Innovation strengths and weaknesses in Botswana

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



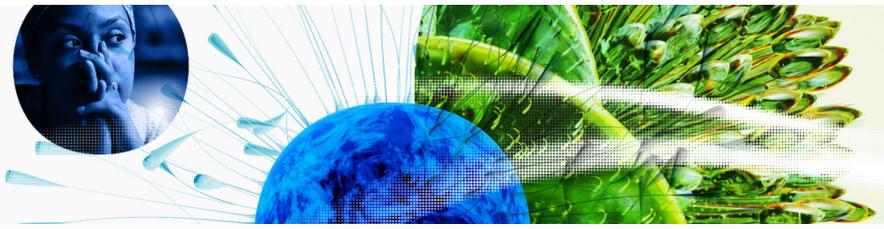
> Botswana's main innovation strengths are **Expenditure on education, % GDP (rank 3)**, **Applied tariff rate, weighted avg., % (rank 8)** and **Loans from microfinance institutions, % GDP (rank 12)**.

### Strengths

### Weaknesses

Rank	Code	Indicator name	Rank	Code	Indicator name
3	2.1.1	Expenditure on education, % GDP	129	3.1.3	Government's online service
8	4.3.1	Applied tariff rate, weighted avg., %	128	3.1.4	E-participation
12	4.1.3	Loans from microfinance institutions, % GDP	122	7.3.4	Mobile app creation/bn PPP\$ GDP
16	5.3.3	ICT services imports, % total trade	101	6.1.2	PCT patents by origin/bn PPP\$ GDP
17	1.3.1	Policies for doing business	95	5.2.5	Patent families/bn PPP\$ GDP
29	3.3.1	GDP/unit of energy use	74	7.1.3	Global brand value, top 5,000
29	1.1.1	Operational stability for businesses	71	2.3.4	QS university ranking, top 3
33	3.3.2	Environmental performance	48	6.2.2	Unicorn valuation, % GDP
35	5.2.2	State of cluster development	40	2.3.3	Global corporate R&D investors, top 3, mn US\$

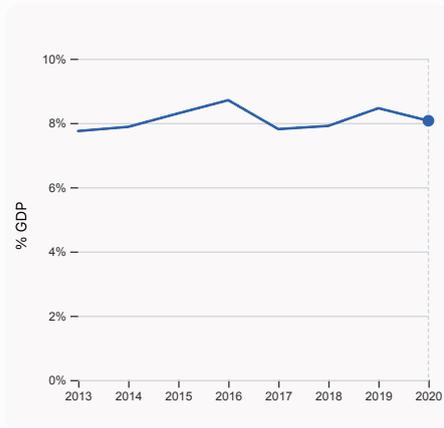
# Global Innovation Index 2023



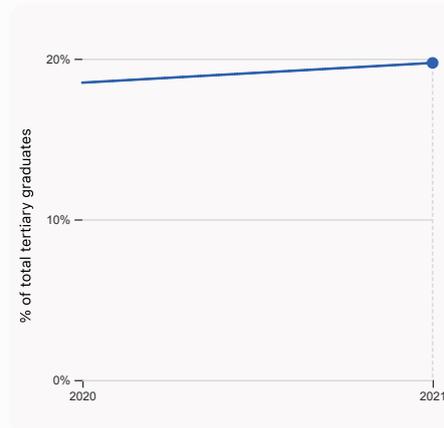
## → Botswana's innovation system

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

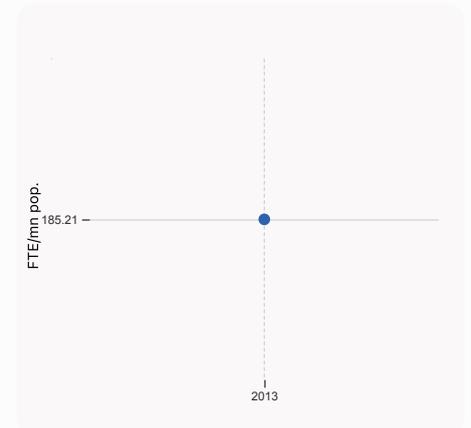
### > Innovation inputs in Botswana



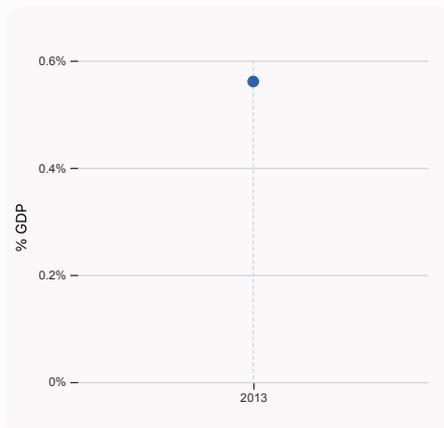
**2.1.1 Expenditure on education, % GDP** was equal to 8.07% GDP in 2020, down by 0.39 percentage points from the year prior – and equivalent to an indicator rank of 3.



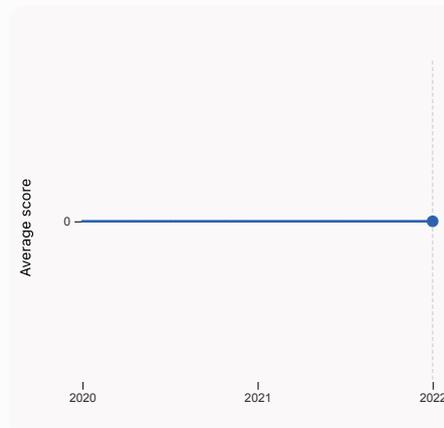
**2.2.2 Graduates in science and engineering, %** was equal to 19.74% of total tertiary graduates in 2021, up by 1.23 percentage points from the year prior – and equivalent to an indicator rank of 71.



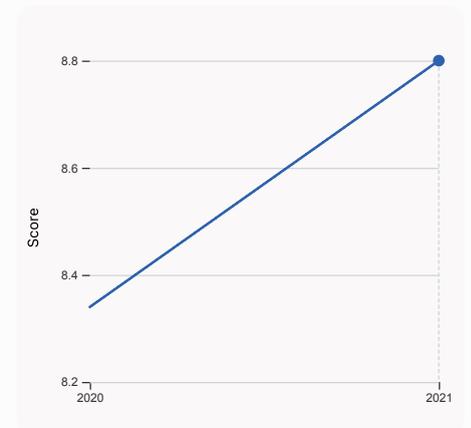
**2.3.1 Researchers, FTE/mn pop.** was equal to 185.21 FTE/mn pop. in 2013, equivalent to an indicator rank of 83.



**2.3.2 Gross expenditure on R&D, % GDP** was equal to 0.56 % GDP in 2013, equivalent to an indicator rank of 57.

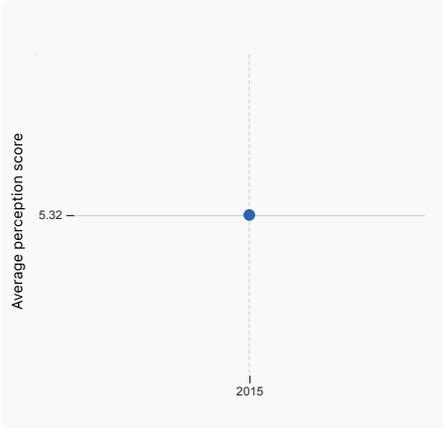


**2.3.4 QS university ranking, top 3** was equal to an average score of 0 for the top 3 universities in 2022, equivalent to an indicator rank of 71.

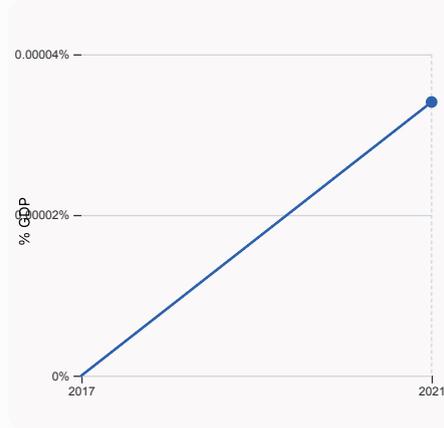


**3.1.1 ICT access** was equal to a score of 8.8 in 2021, up by 5.52% from the year prior – and equivalent to an indicator rank of 69.

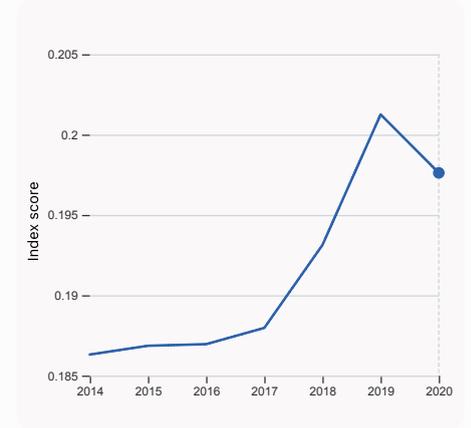
# Global Innovation Index 2023



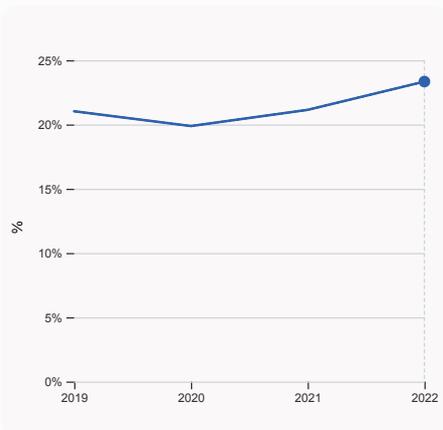
**4.1.1 Finance for startups and scaleups** was equal to an average perception score of 5.32 in 2015, equivalent to an indicator rank of 24.



**4.2.4 VC received, value, % GDP** was equal to 0.00003 % GDP in 2021, equivalent to an indicator rank of 92.

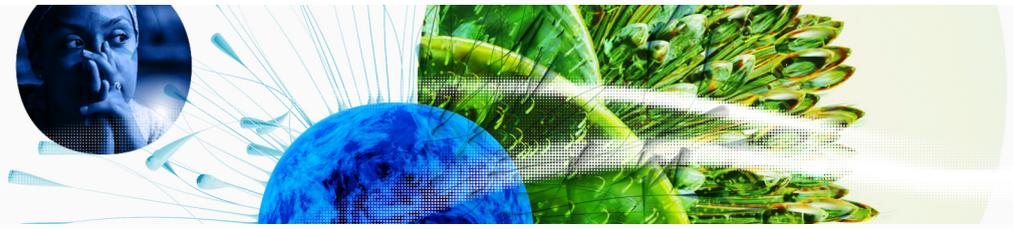


**4.3.2 Domestic industry diversification** was equal to an index score of 0.198 in 2020, down by 1.81% from the year prior – and equivalent to an indicator rank of 67.

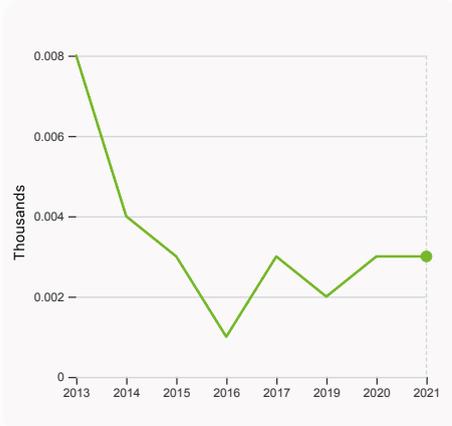


**5.1.1 Knowledge-intensive employment, %** was equal to 23.34% in 2022, up by 2.2 percentage points from the year prior – and equivalent to an indicator rank of 61.

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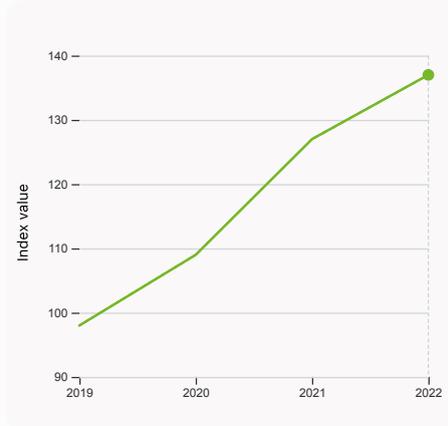


## > Innovation outputs in Botswana



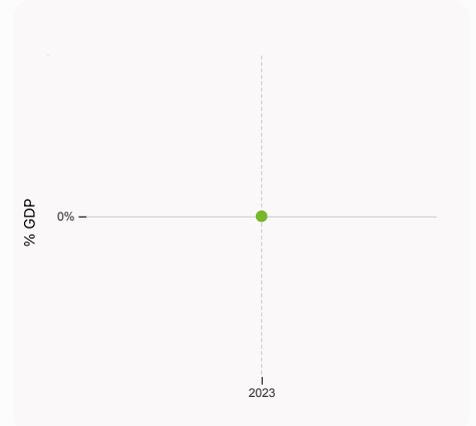
### 6.1.1 Patents by origin

was equal to 0.003 Thousands in 2021, up by with no change from the year prior – and equivalent to an indicator rank of 116.



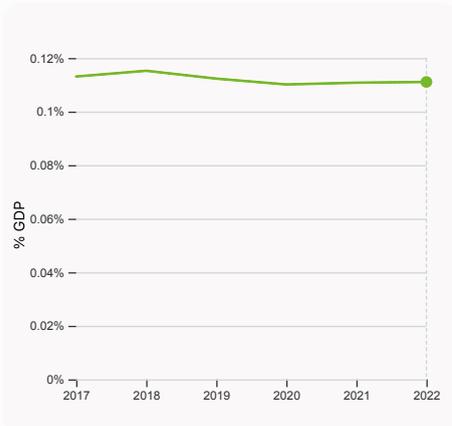
### 6.1.5 Citable documents H-index

was equal to an index value of 137 in 2022, up by 7.87% from the year prior – and equivalent to an indicator rank of 100.



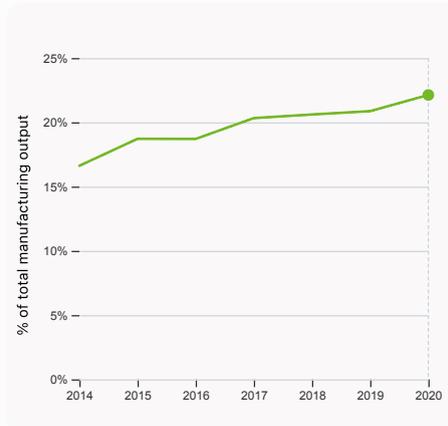
### 6.2.2 Unicorn valuation, % GDP

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



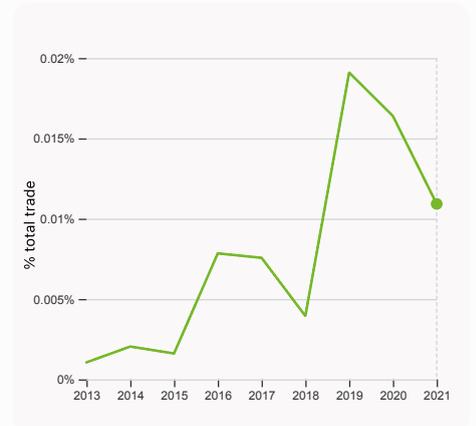
### 6.2.3 Software spending, % GDP

was equal to 0.111% GDP in 2022, up by 0.00028 percentage points from the year prior – and equivalent to an indicator rank of 90.



### 6.2.4 High-tech manufacturing, %

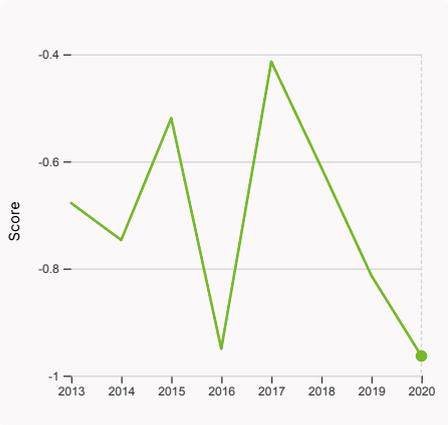
was equal to 22.13% of total manufacturing output in 2020, up by 1.26 percentage points from the year prior – and equivalent to an indicator rank of 58.



### 6.3.1 Intellectual property receipts, % total trade

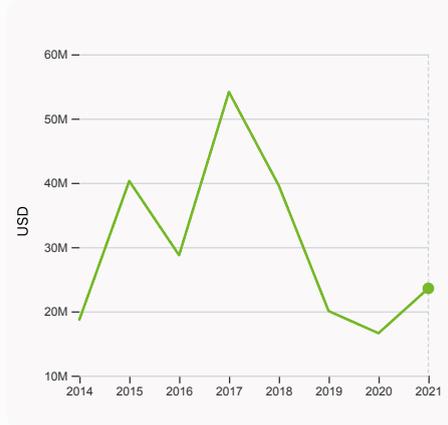
was equal to 0.011% total trade in 2021, down by 0.0055 percentage points from the year prior – and equivalent to an indicator rank of 90.

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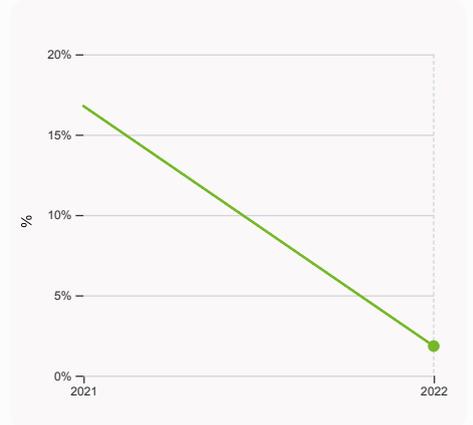
## 6.3.2 Production and export complexity

was equal to a score of -0.963 in 2020, down by 18.47% from the year prior – and equivalent to an indicator rank of 109.



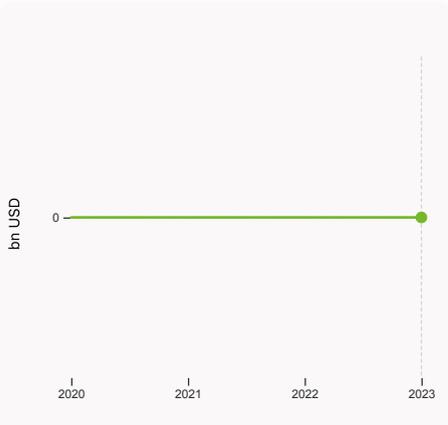
## 6.3.3 High-tech exports

was equal to 23,583,718 USD in 2021, up by 42.072% from the year prior – and equivalent to an indicator rank of 101.



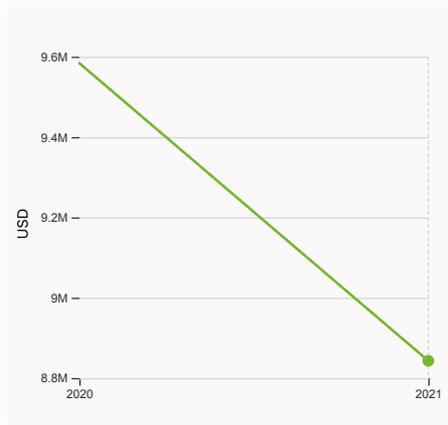
## 7.1.1 Intangible asset intensity, top 15, %

was equal to 1.84% in 2022, down by 14.94 percentage points from the year prior – and equivalent to an indicator rank of 70.



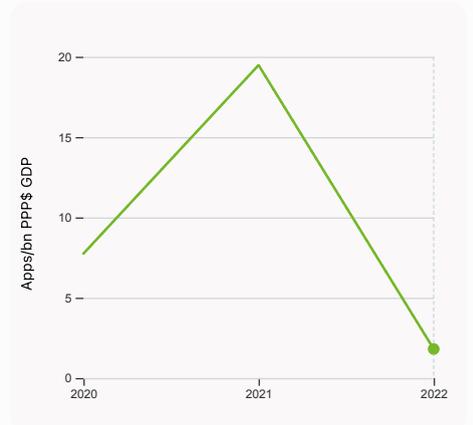
## 7.1.3 Global brand value, top 5,000

was equal to 0 bn USD in 2023 – and equivalent to an indicator rank of 74.



## 7.2.1 Cultural and creative services exports

was equal to 8,843,000 USD in 2021, down by 7.73% from the year prior – and equivalent to an indicator rank of 84.



## 7.3.4 Mobile app creation/bn PPP\$ GDP

was equal to 1.81 Apps/bn PPP\$ GDP in 2022, down by 90.71% from the year prior – and equivalent to an indicator rank of 122.

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## → Botswana's innovation top performers

### > 7.1.1 Top 15 intangible-asset intensive companies in Botswana

Rank	Firm	Intensity, %
1	ABSA BANK BOTSWANA LTD	26.16
2	BOTSWANA INSURANCE HOLDINGS LTD	19.95
3	SECHABA BREWERIES HOLDINGS LTD	53.21

Source: Brand Finance (<https://brandirectory.com/reports/gift-2022>).

Note: Brand Finance only provides within economy ranks.

# Global Innovation Index 2023



GII 2023 rank

# 85

## Botswana

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
110	61	Upper middle	SSA	2.6	47.0	19,198.6
Score / Value Rank				Score / Value Rank		
<b>Institutions</b> 63.5 37 ◆				<b>Business sophistication</b> 29.6 56		
<b>1.1 Institutional environment</b> 58.0 42 ◆				<b>5.1 Knowledge workers</b> 28.8 74		
1.1.1 Operational stability for businesses* 69.4 29 ●◆				5.1.1 Knowledge-intensive employment, % 23.3 61		
1.1.2 Government effectiveness* 46.5 51				5.1.2 Firms offering formal training, % n/a n/a		
<b>1.2 Regulatory environment</b> 65.8 58				5.1.3 GERD performed by business, % GDP 0.1 63		
1.2.1 Regulatory quality* 58.0 44 ◆				5.1.4 GERD financed by business, % 17.7 70		
1.2.2 Rule of law* 53.8 42 ◆				5.1.5 Females employed w/advanced degrees, % 17.9 40		
1.2.3 Cost of redundancy dismissal 20.3 88				<b>5.2 Innovation linkages</b> 29.2 42 ◆		
<b>1.3 Business environment</b> 66.8 26 ●◆				5.2.1 University-industry R&D collaboration+ 57.4 39		
1.3.1 Policies for doing business* 75.3 17 ●◆				5.2.2 State of cluster development+ 62.9 35 ●◆		
1.3.2 Entrepreneurship policies and culture* 58.3 25				5.2.3 GERD financed by abroad, % GDP 0.1 33		
<b>Human capital and research</b> 29.7 73				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP 0.0 62		
<b>2.1 Education</b> 68.9 [9]				5.2.5 Patent families/bn PPP\$ GDP 0.0 95 ○◇		
2.1.1 Expenditure on education, % GDP 8.1 3 ●◆				<b>5.3 Knowledge absorption</b> 30.7 77		
2.1.2 Government funding/pupil, secondary, % GDP/cap n/a n/a				5.3.1 Intellectual property payments, % total trade 0.8 51		
2.1.3 School life expectancy, years 12.1 92 ◇				5.3.2 High-tech imports, % total trade 5.3 111		
2.1.4 PISA scales in reading, maths and science n/a n/a				5.3.3 ICT services imports, % total trade 3.0 16 ●◆		
2.1.5 Pupil-teacher ratio, secondary 11.5 46				5.3.4 FDI net inflows, % GDP 0.4 120 ◇		
<b>2.2 Tertiary education</b> 17.2 96				5.3.5 Research talent, % in businesses 1.0 79		
2.2.1 Tertiary enrolment, % gross 24.7 94 ◇				<b>Knowledge and technology outputs</b> 11.0 117 ◇		
2.2.2 Graduates in science and engineering, % 19.7 71				<b>6.1 Knowledge creation</b> 5.9 108		
2.2.3 Tertiary inbound mobility, % 2.5 72				6.1.1 Patents by origin/bn PPP\$ GDP 0.1 116		
<b>2.3 Research and development (R&amp;D)</b> 2.9 88				6.1.2 PCT patents by origin/bn PPP\$ GDP 0.0 101 ○◇		
2.3.1 Researchers, FTE/mn pop. 185.2 83				6.1.3 Utility models by origin/bn PPP\$ GDP 0.1 51		
2.3.2 Gross expenditure on R&D, % GDP 0.6 57				6.1.4 Scientific and technical articles/bn PPP\$ GDP n/a n/a		
2.3.3 Global corporate R&D investors, top 3, mn US\$ 0.0 40 ○◇				6.1.5 Citable documents H-index 5.2 100		
2.3.4 QS university ranking, top 3* 0.0 71 ○◇				<b>6.2 Knowledge impact</b> 18.9 111		
<b>Infrastructure</b> 34.2 85				6.2.1 Labor productivity growth, % -0.6 113		
<b>3.1 Information and communication technologies (ICTs)</b> 45.6 105 ◇				6.2.2 Unicorn valuation, % GDP 0.0 48 ○◇		
3.1.1 ICT access* 82.0 69				6.2.3 Software spending, % GDP 0.1 90		
3.1.2 ICT use* 65.4 85				6.2.4 High-tech manufacturing, % 22.1 58		
3.1.3 Government's online service* 19.8 129 ○◇				<b>6.3 Knowledge diffusion</b> 8.3 114 ◇		
3.1.4 E-participation* 15.1 128 ○◇				6.3.1 Intellectual property receipts, % total trade 0.0 90		
<b>3.2 General infrastructure</b> 24.3 76				6.3.2 Production and export complexity 32.3 109 ◇		
3.2.1 Electricity output, GWh/mn pop. 926.9 100 ◇				6.3.3 High-tech exports, % total trade 0.3 101		
3.2.2 Logistics performance* 45.5 56				6.3.4 ICT services exports, % total trade 0.2 118		
3.2.3 Gross capital formation, % GDP 25.8 45				6.3.5 ISO 9001 quality/bn PPP\$ GDP 0.5 120		
<b>3.3 Ecological sustainability</b> 32.8 44				<b>Creative outputs</b> 11.1 106 ◇		
3.3.1 GDP/unit of energy use 14.3 29 ●◆				<b>7.1 Intangible assets</b> 19.1 88		
3.3.2 Environmental performance* 59.5 33 ●◆				7.1.1 Intangible asset intensity, top 15, % 1.8 70		
3.3.3 ISO 14001 environment/bn PPP\$ GDP 0.5 82				7.1.2 Trademarks by origin/bn PPP\$ GDP 18.2 95 ◇		
<b>Market sophistication</b> 33.7 70				7.1.3 Global brand value, top 5,000 0.0 74 ○◇		
<b>4.1 Credit</b> 38.2 44				7.1.4 Industrial designs by origin/bn PPP\$ GDP 0.4 87		
4.1.1 Finance for startups and scaleups+ 66.2 24				<b>7.2 Creative goods and services</b> 1.9 [104]		
4.1.2 Domestic credit to private sector, % GDP 39.8 81				7.2.1 Cultural and creative services exports, % total trade 0.1 84		
4.1.3 Loans from microfinance institutions, % GDP 3.0 12 ●◆				7.2.2 National feature films/mn pop. 15-69 n/a n/a		
<b>4.2 Investment</b> 3.2 [90]				7.2.3 Entertainment and media market/th pop. 15-69 n/a n/a		
4.2.1 Market capitalization, % GDP n/a n/a				7.2.4 Creative goods exports, % total trade 0.1 92		
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP n/a n/a				<b>7.3 Online creativity</b> 4.5 122 ◇		
4.2.3 VC recipients, deals/bn PPP\$ GDP 0.0 75				7.3.1 Generic top-level domains (TLDs)/th pop. 15-69 1.1 95		
4.2.4 VC received, value, % GDP 0.0 92				7.3.2 Country-code TLDs/th pop. 15-69 1.9 73		
<b>4.3 Trade, diversification, and market scale</b> 59.8 57				7.3.3 GitHub commits/mn pop. 15-69 1.3 109		
4.3.1 Applied tariff rate, weighted avg., % 0.8 8 ●◆				7.3.4 Mobile app creation/bn PPP\$ GDP 13.5 122 ○◇		
4.3.2 Domestic industry diversification 83.6 67						
4.3.3 Domestic market scale, bn PPP\$ 47.0 112						

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.



## → Data availability

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



> Botswana has missing data for seven indicators and outdated data for fourteen indicators.

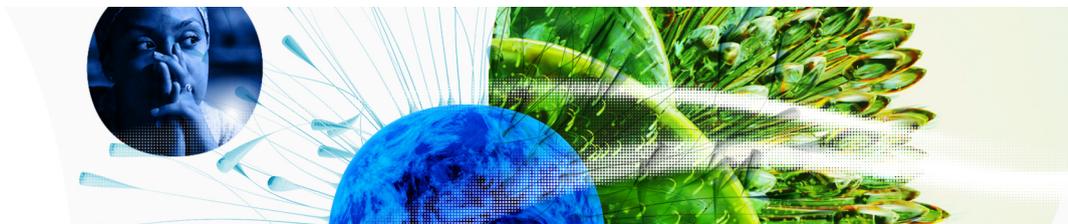
## > Missing data for Botswana

Code	Indicator name	Economy Year	Model Year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2019	UNESCO Institute for Statistics
2.1.4	PISA scales in reading, maths and science	n/a	2018	OECD, PISA
4.2.1	Market capitalization, % GDP	n/a	2020	World Federation of Exchanges; World Bank
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	2022	Refinitiv; International Monetary Fund
5.1.2	Firms offering formal training, %	n/a	2019	World Bank Enterprise Surveys
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 Botswana

Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture	2015	2022	Global Entrepreneurship Monitor
2.1.1	Expenditure on education, % GDP	2020	2021	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2013	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
2.3.2	Gross expenditure on R&D, % GDP	2013	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
3.2.1	Electricity output, GWh/mn pop.	2020	2021	International Energy Agency
4.1.1	Finance for startups and scaleups	2015	2022	Global Entrepreneurship Monitor
4.1.3	Loans from microfinance institutions, % GDP	2020	2021	International Monetary Fund, Financial Access Survey (FAS)

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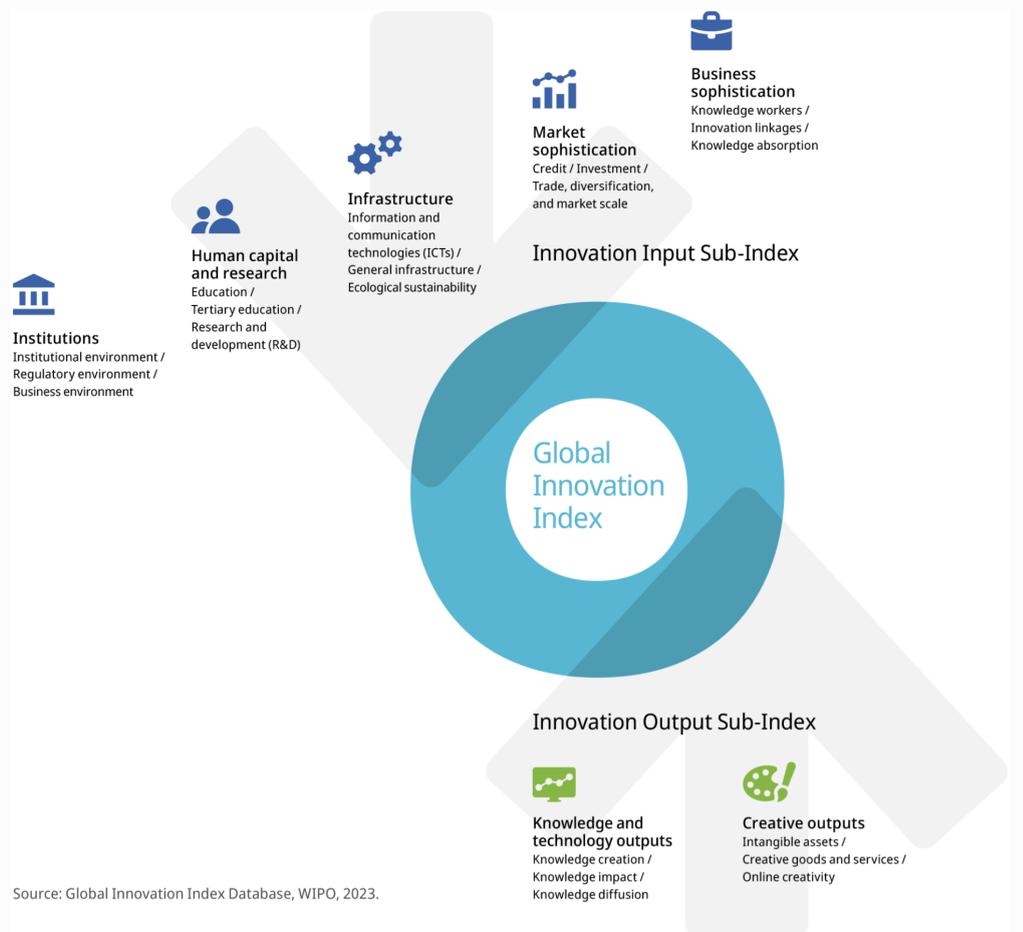
Code	Indicator name	Economy Year	Model Year	Source
4.2.3	VC recipients, deals/bn PPP\$ GDP	2021	2022	Refinitiv; International Monetary Fund
4.2.4	VC received, value, % GDP	2021	2022	Refinitiv; International Monetary Fund
5.1.3	GERD performed by business, % GDP	2013	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.4	GERD financed by business, %	2013	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.2.3	GERD financed by abroad, % GDP	2013	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.3.5	Research talent, % in businesses	2013	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
7.1.2	Trademarks by origin/bn PPP\$ GDP	2020	2021	World Intellectual Property Organization; International Monetary Fund

# 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.



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.