Global Innovation Index 2021

BOTSWANA

106th Botswana ranks 106th among the 132 economies featured in the GII 2021.

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 Botswana 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 Botswana in the GII 2021 is between ranks 96 and 113.

Rankings for Botswana (2019–2021)

	GII	Innovation inputs	Innovation outputs
2021	106	98	109
2020	89	84	105
2019	93	80	117

- Botswana performs better in innovation inputs than innovation outputs in 2021.
- This year Botswana ranks 98th in innovation inputs, lower than both 2020 and 2019.
- As for innovation outputs, Botswana ranks 109th. This position is lower than last year but higher than 2019.

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

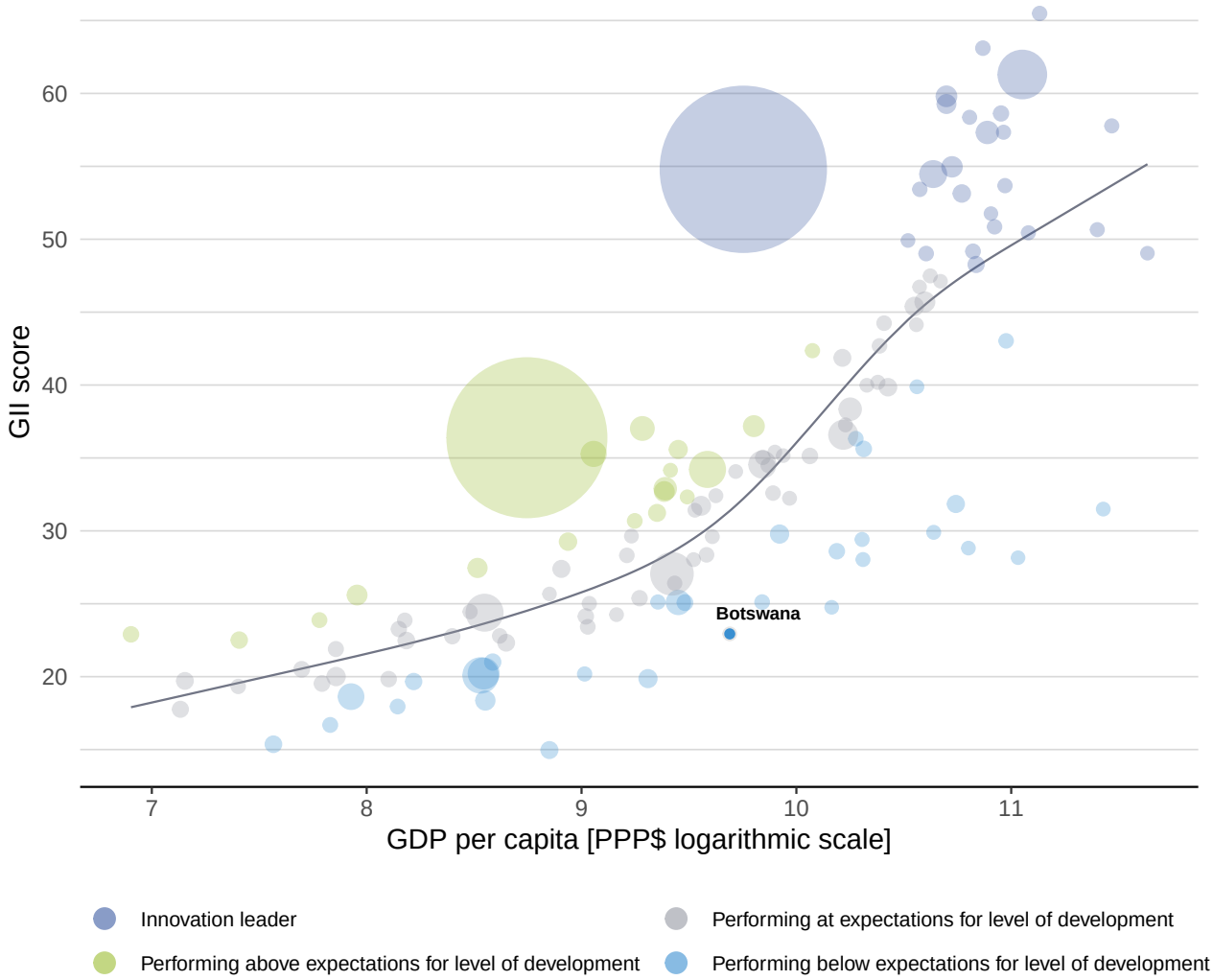
9th Botswana ranks 9th among the 27 economies in Sub-Saharan Africa.

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.

The positive relationship between innovation and development

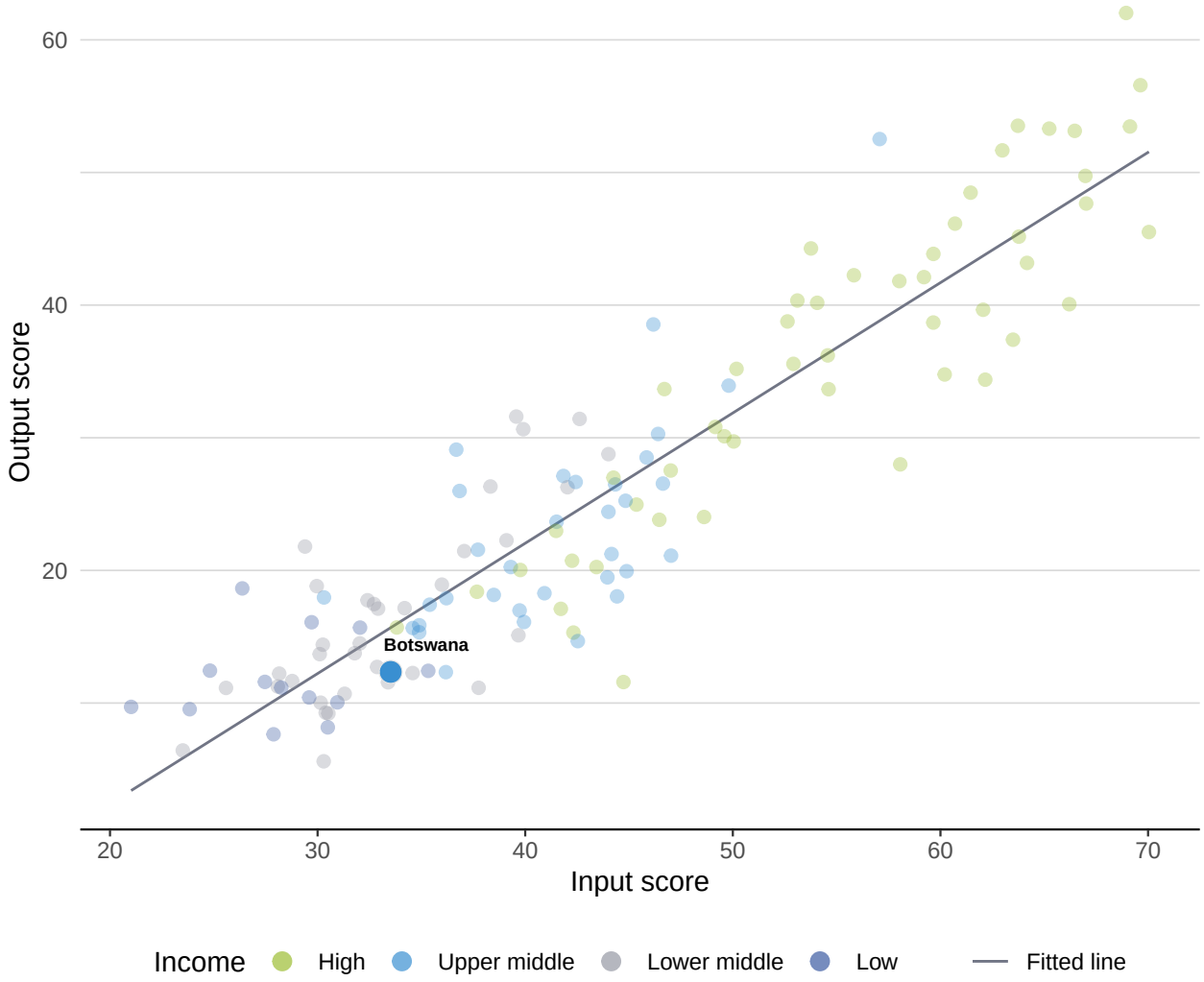


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

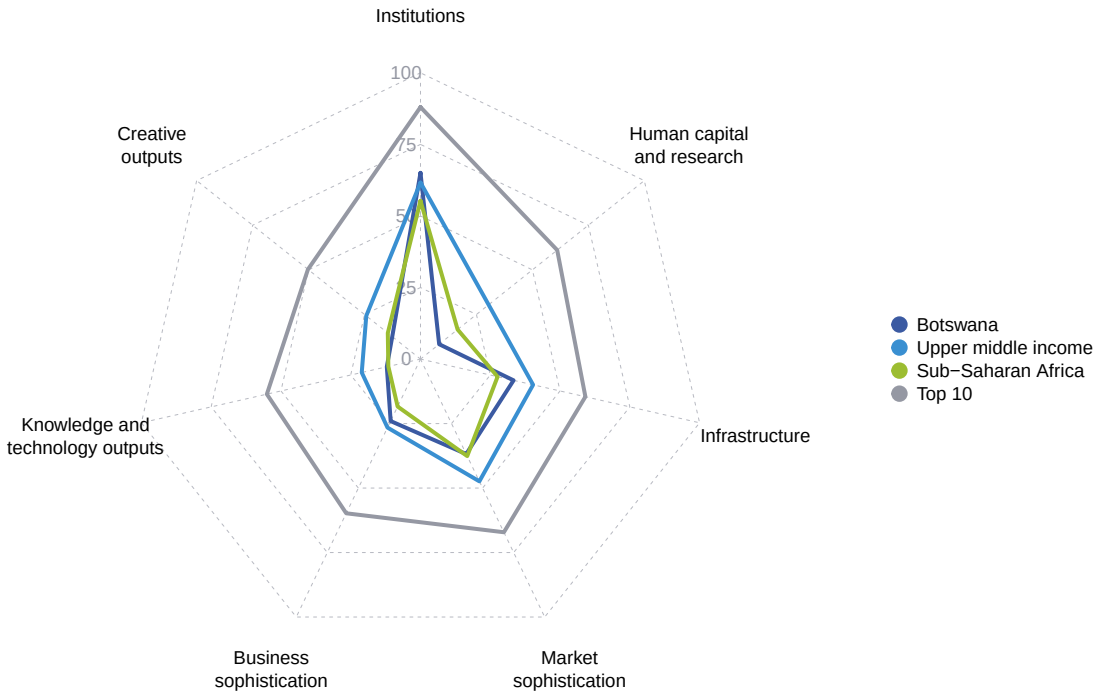
Botswana produces less innovation outputs relative to its level of innovation investments.

Innovation input to output performance



BENCHMARKING AGAINST OTHER UPPER MIDDLE-INCOME GROUP ECONOMIES AND SUB-SAHARAN AFRICA

The seven GII pillar scores for Botswana



Upper middle-income group economies

Botswana performs above the upper middle-income group average in Institutions.

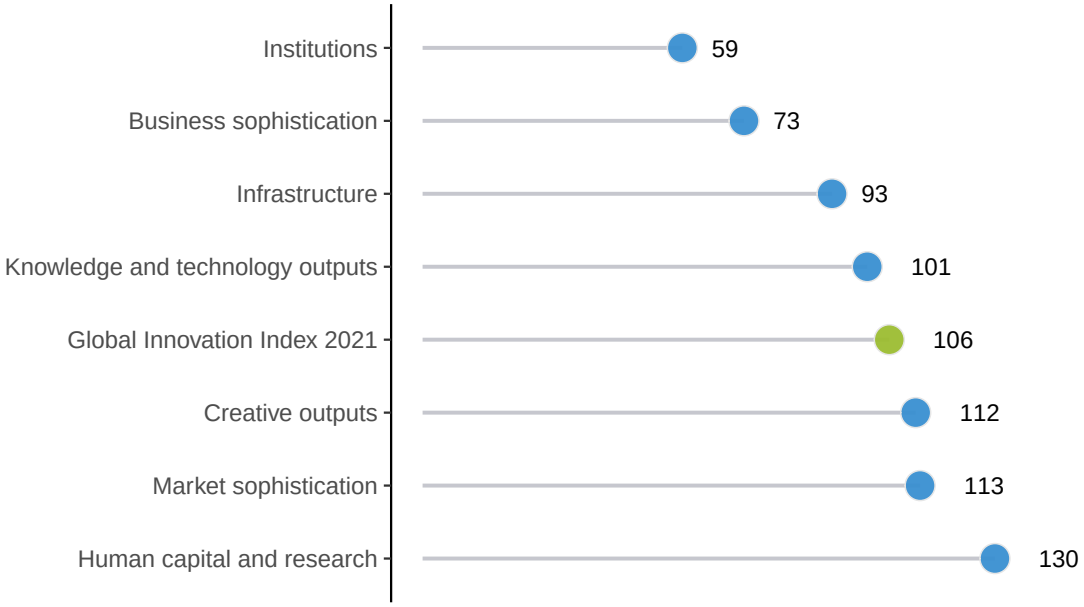
Sub-Saharan Africa

Botswana performs above the regional average in four pillars, namely: Institutions; Infrastructure; Business sophistication; and, Knowledge and technology outputs.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2021 AREAS

Botswana performs best in Institutions and its weakest performance is in Human capital and research.

The seven GII pillar ranks for Botswana



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

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Botswana in the GII 2021.

Strengths and weaknesses for Botswana

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
1.1	Political environment	44	2.3.3	Global corporate R&D investors, top 3, mn US$	41
1.1.1	Political and operational stability	29	2.3.4	QS university ranking, top 3	74
1.2.2	Rule of law	44	4.3	Trade, diversification, and market scale	123
3.2.3	Gross capital formation, % GDP	22	4.3.2	Domestic industry diversification	111
3.3.1	GDP/unit of energy use	31	5.2.5	Patent families/bn PPP$ GDP	100
4.3.1	Applied tariff rate, weighted avg., %	10	6.1.1	Patents by origin/bn PPP$ GDP	121
5.1.2	Firms offering formal training, %	16	6.1.2	PCT patents by origin/bn PPP$ GDP	98
5.1.5	Females employed w/advanced degrees, %	35	6.2.1	Labor productivity growth, %	118
5.2.3	GERD financed by abroad, % GDP	36	6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	126
5.3.1	Intellectual property payments, % total trade	24	6.3.4	ICT services exports, % total trade	121
6.2.2	New businesses/th pop. 15–64	3	7.1.2	Global brand value, top 5,000, % GDP	80

Botswana

GII 2021 rank
106

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$	GII 2020 rank
109	98	Upper middle	SSF	2.4	39.1	16,153	89

		Score/ Value	Rank	
Institutions		**65.1**	**59**	
1.1	**Political environment**	**66.9**	**44**	● ◆
1.1.1	Political and operational stability*	80.4	29	● ◆
1.1.2	Government effectiveness*	60.2	47	
1.2	**Regulatory environment**	**66.1**	**62**	
1.2.1	Regulatory quality*	53.2	54	
1.2.2	Rule of law*	59.9	44	● ◆
1.2.3	Cost of redundancy dismissal	20.3	86	
1.3	**Business environment**	**62.2**	**95**	
1.3.1	Ease of starting a business*	76.2	117	
1.3.2	Ease of resolving insolvency*	48.2	76	
Human capital and research		**8.3**	**130**	○ ◇
2.1	**Education**	**n/a**	**[n/a]**	
2.1.1	Expenditure on education, % GDP	n/a	n/a	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths and science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**13.5**	**107**	◇
2.2.1	Tertiary enrolment, % gross	25.1	91	◇
2.2.2	Graduates in science and engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	2.3	73	
2.3	**Research and development (R&D)**	**3.2**	**86**	
2.3.1	Researchers, FTE/mn pop.	185.2	81	
2.3.2	Gross expenditure on R&D, % GDP	0.5	63	
2.3.3	Global corporate R&D investors, top 3, mn US$	0.0	41	○ ◇
2.3.4	QS university ranking, top 3*	0.0	74	○ ◇
Infrastructure		**33.4**	**93**	◇
3.1	**Information and communication technologies (ICTs)**	**43.3**	**103**	◇
3.1.1	ICT access*	55.2	85	
3.1.2	ICT use*	44.5	93	
3.1.3	Government's online service*	36.5	119	◇
3.1.4	E-participation*	36.9	116	◇
3.2	**General infrastructure**	**29.9**	**62**	
3.2.1	Electricity output, GWh/mn pop.	1,401.1	92	◇
3.2.2	Logistics performance*	n/a	n/a	
3.2.3	Gross capital formation, % GDP	31.7	22	● ◆
3.3	**Ecological sustainability**	**26.9**	**73**	
3.3.1	GDP/unit of energy use	14.0	31	●
3.3.2	Environmental performance*	40.4	87	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	101	
Market sophistication		**36.8**	**113**	◇
4.1	**Credit**	**35.9**	**82**	
4.1.1	Ease of getting credit*	60.0	74	
4.1.2	Domestic credit to private sector, % GDP	32.8	93	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**32.5**	**[59]**	
4.2.1	Ease of protecting minority investors*	60.0	71	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital investors, deals/bn PPP$ GDP	0.0	59	
4.2.4	Venture capital recipients, deals/bn PPP$ GDP	n/a	n/a	
4.3	**Trade, diversification, and market scale**	**42.1**	**123**	○ ◇
4.3.1	Applied tariff rate, weighted avg., %	1.0	10	●
4.3.2	Domestic industry diversification	22.3	111	○ ◇
4.3.3	Domestic market scale, bn PPP$	39.1	113	◇

		Score/ Value	Rank	
Business sophistication		**24.0**	**73**	
5.1	**Knowledge workers**	**33.7**	**59**	
5.1.1	Knowledge-intensive employment, %	24.2	63	
5.1.2	Firms offering formal training, %	51.9	16	●
5.1.3	GERD performed by business, % GDP	0.1	64	
5.1.4	GERD financed by business, %	17.7	70	
5.1.5	Females employed w/advanced degrees, %	18.8	35	●
5.2	**Innovation linkages**	**18.5**	**77**	
5.2.1	University-industry R&D collaboration†	40.0	76	
5.2.2	State of cluster development and depth†	39.1	103	
5.2.3	GERD financed by abroad, % GDP	0.1	36	● ◆
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	61	
5.2.5	Patent families/bn PPP$ GDP	0.0	100	○ ◇
5.3	**Knowledge absorption**	**19.9**	**92**	
5.3.1	Intellectual property payments, % total trade	1.5	24	●
5.3.2	High-tech imports, % total trade	6.0	96	
5.3.3	ICT services imports, % total trade	0.6	99	
5.3.4	FDI net inflows, % GDP	1.5	94	
5.3.5	Research talent, % in businesses	1.0	79	◇
Knowledge and technology outputs		**12.1**	**101**	
6.1	**Knowledge creation**	**7.5**	**93**	
6.1.1	Patents by origin/bn PPP$ GDP	0.0	121	○
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	98	○ ◇
6.1.3	Utility models by origin/bn PPP$ GDP	0.4	40	
6.1.4	Scientific and technical articles/bn PPP$ GDP	12.4	69	
6.1.5	Citable documents H-index	5.4	100	
6.2	**Knowledge impact**	**22.2**	**92**	
6.2.1	Labor productivity growth, %	–4.4	118	○ ◇
6.2.2	New businesses/th pop. 15–64	20.1	3	● ◆
6.2.3	Software spending, % GDP	0.1	85	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.4	126	○
6.2.5	High-tech manufacturing, %	n/a	n/a	
6.3	**Knowledge diffusion**	**6.5**	**113**	
6.3.1	Intellectual property receipts, % total trade	0.0	96	
6.3.2	Production and export complexity	32.7	83	
6.3.3	High-tech exports, % total trade	0.3	100	
6.3.4	ICT services exports, % total trade	0.2	121	○
Creative outputs		**12.6**	**112**	◇
7.1	**Intangible assets**	**15.1**	**118**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	14.2	102	◇
7.1.2	Global brand value, top 5,000, % GDP	0.0	80	○ ◇
7.1.3	Industrial designs by origin/bn PPP$ GDP	0.4	94	
7.1.4	ICTs and organizational model creation†	41.9	109	◇
7.2	**Creative goods and services**	**1.7**	**[120]**	
7.2.1	Cultural and creative services exports, % total trade	0.1	93	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing and other media, % manufacturing	n/a	n/a	
7.2.5	Creative goods exports, % total trade	0.2	87	
7.3	**Online creativity**	**18.6**	**62**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.1	94	
7.3.2	Country-code TLDs/th pop. 15–69	1.3	80	
7.3.3	Wikipedia edits/mn pop. 15–69	53.0	60	
7.3.4	Mobile app creation/bn PPP$ GDP	n/a	n/a	

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 IV 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 Botswana.

Missing data for Botswana

Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	n/a	2017	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2017	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	n/a	2018	UNESCO Institute for Statistics
2.1.4	PISA scales in reading, maths and science	n/a	2018	OECD Programme for International Student Assessment (PISA)
2.1.5	Pupil-teacher ratio, secondary	n/a	2019	UNESCO Institute for Statistics
2.2.2	Graduates in science and engineering, %	n/a	2018	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
3.2.2	Logistics performance	n/a	2018	World Bank
4.1.3	Microfinance gross loans, % GDP	n/a	2018	Microfinance Information Exchange
4.2.2	Market capitalization, % GDP	n/a	2019	World Federation of Exchanges
4.2.4	Venture capital recipients, deals/bn PPP$ GDP	n/a	2020	Refinitiv Eikon
6.2.5	High-tech manufacturing, %	n/a	2018	United Nations Industrial Development Organization
7.2.2	National feature films/mn pop. 15–69	n/a	2017	UNESCO Institute for Statistics
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2020	PwC
7.2.4	Printing and other media, % manufacturing	n/a	2018	United Nations Industrial Development Organization
7.3.4	Mobile app creation/bn PPP$ GDP	n/a	2020	App Annie

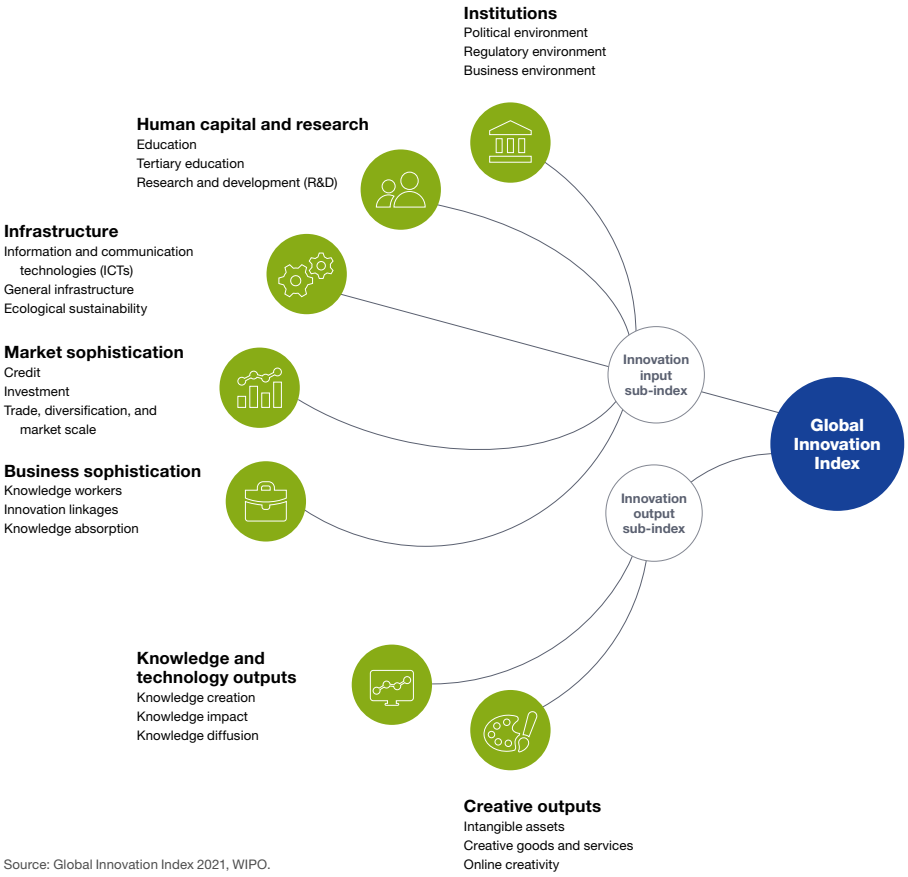
Outdated data for Botswana

Code	Indicator name	Economy year	Model year	Source
2.3.1	Researchers, FTE/mn pop.	2013	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
2.3.2	Gross expenditure on R&D, % GDP	2013	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
4.2.3	Venture capital investors, deals/bn PPP$ GDP	2019	2020	Refinitiv Eikon
5.1.2	Firms offering formal training, %	2010	2019	World Bank
5.1.3	GERD performed by business, % GDP	2013	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.4	GERD financed by business, %	2013	2018	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.2.3	GERD financed by abroad, % GDP	2013	2018	UNESCO Institute for Statistics
5.3.5	Research talent, % in businesses	2013	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
6.2.2	New businesses/th pop. 15–64	2016	2018	World Bank
7.1.3	Industrial designs by origin/bn PPP$ GDP	2014	2019	World Intellectual Property Organization
7.2.1	Cultural and creative services exports, % total trade	2017	2019	World Trade Organization

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 2021, WIPO.

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.