Global Innovation Index 2022

ZAMBIA

118th

Zambia ranks 118th 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 Zambia 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 Zambia in the GII 2022 is between ranks 113 and 120.

Rankings for Zambia (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	122	109	128
2021	121	111	127
2022	118	118	115

- Zambia performs better in innovation outputs than innovation inputs in 2022.
- This year Zambia ranks 118th in innovation inputs, lower than both 2021 and 2020.
- As for innovation outputs, Zambia ranks 115th. This position is higher than both 2021 and 2020.

32nd

Zambia ranks 32nd among the 36 lower-middle-income group economies.

15th

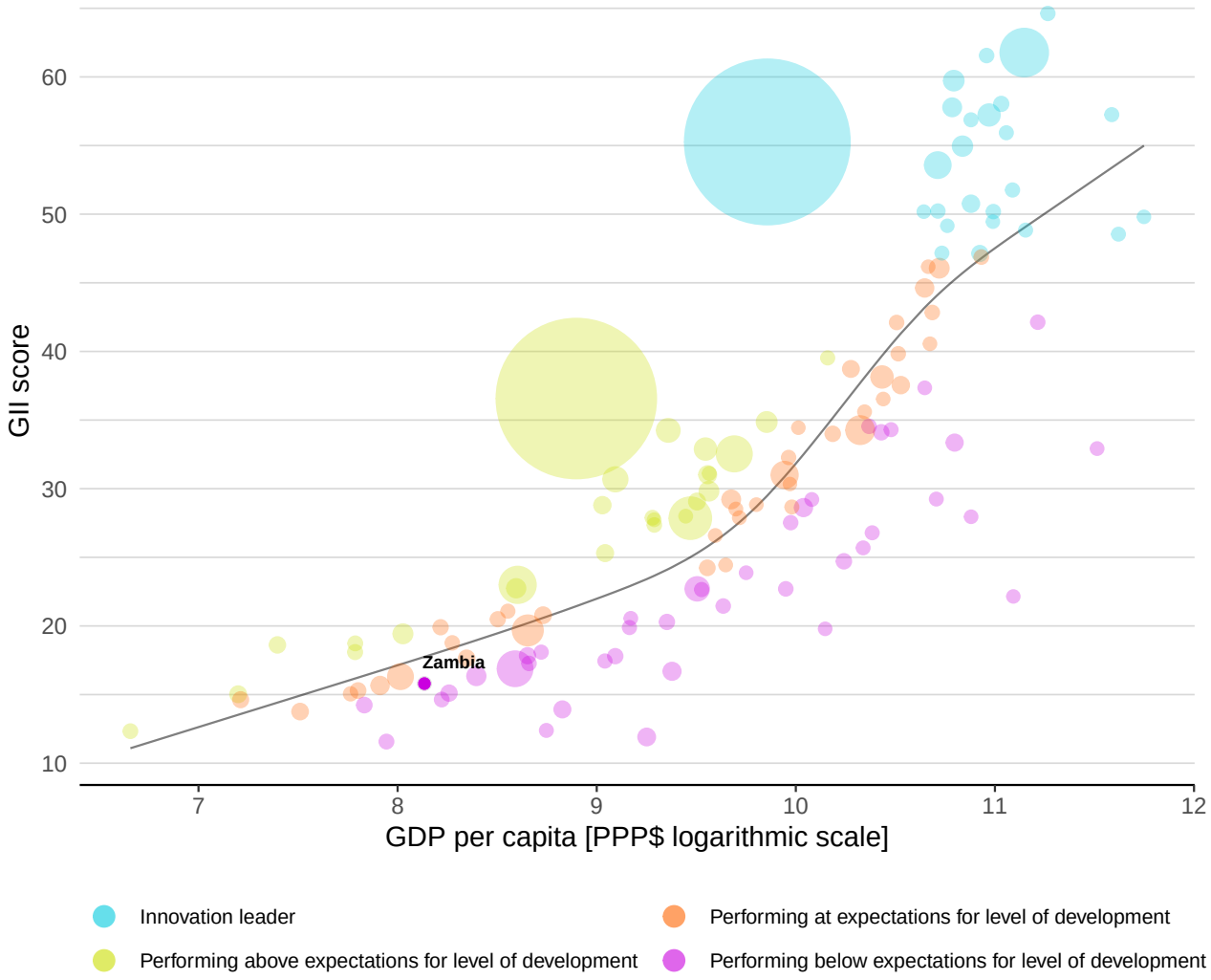
Zambia ranks 15th among the 27 economies in Sub-Saharan Africa.

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

The positive relationship between innovation and development

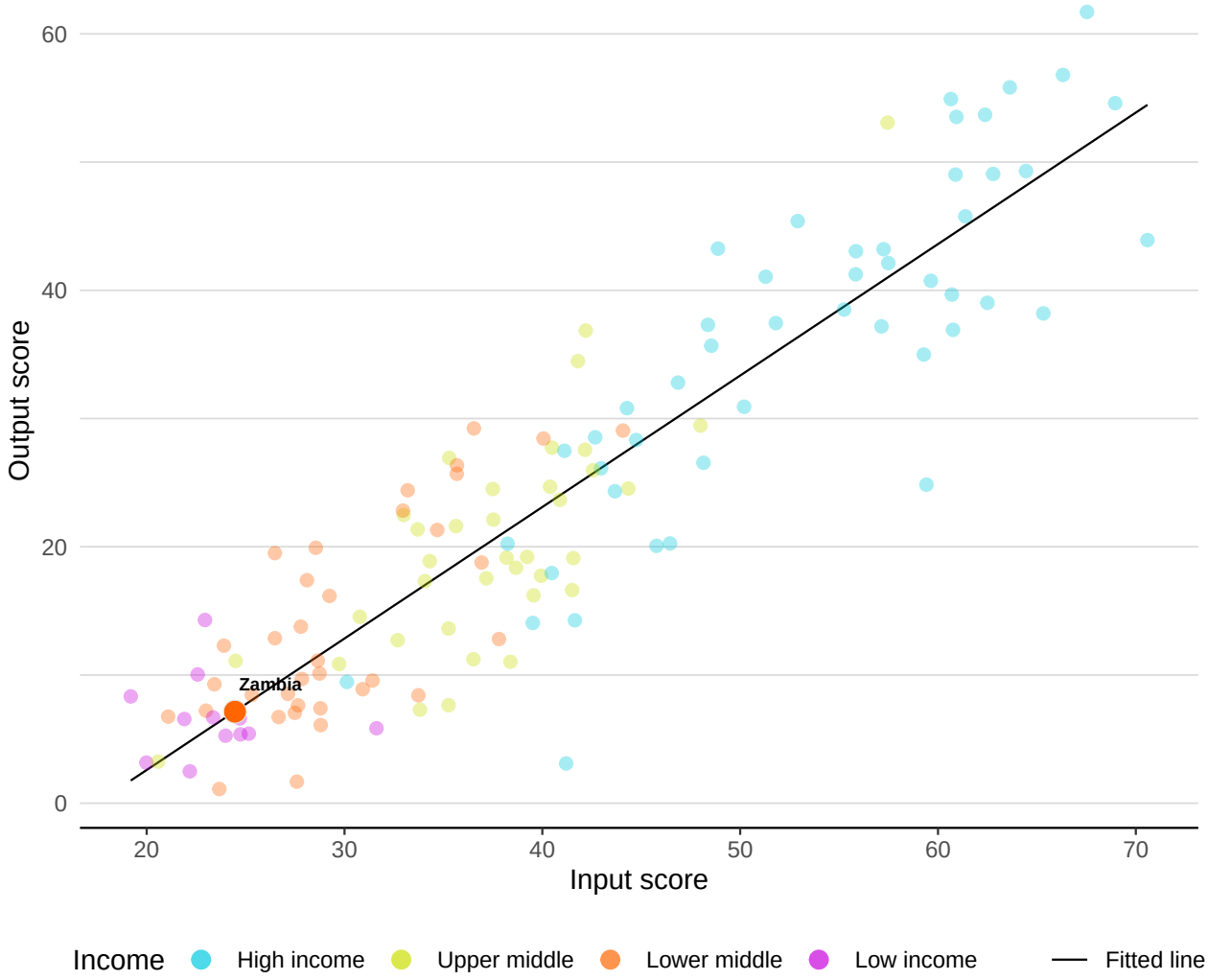


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

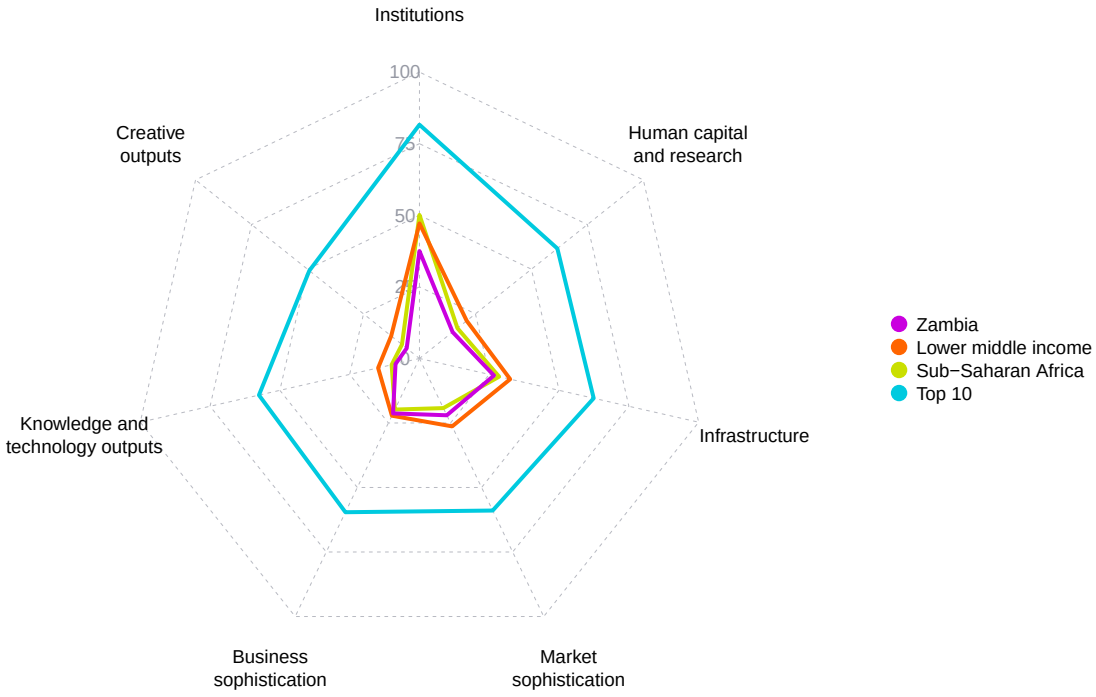
Zambia produces less innovation outputs relative to its level of innovation investments.

Innovation input to output performance



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

The seven GII pillar scores for Zambia



Lower-middle-income group economies

Zambia performs below the lower-middle-income group average in all GII pillars.

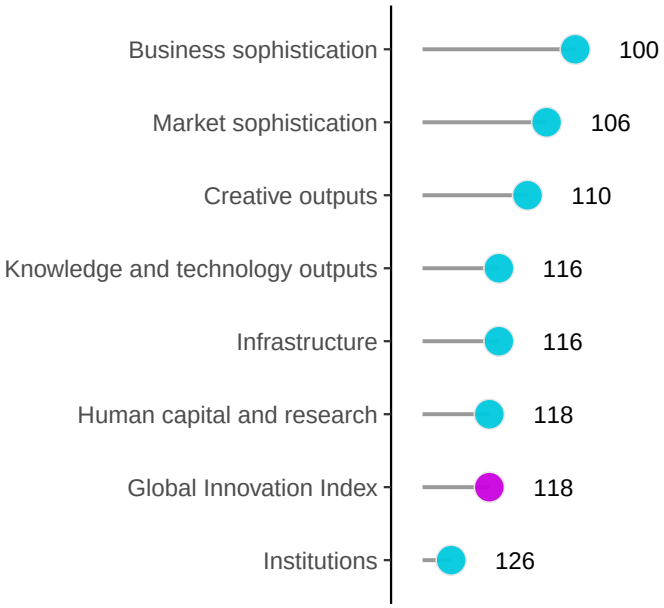
Sub-Saharan Africa

Zambia performs above the regional average in two pillars, namely: Market sophistication; and, Business sophistication.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Zambia performs best in Business sophistication and its weakest performance is in Institutions.

The seven GII pillar ranks for Zambia



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

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

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

INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths and weaknesses for Zambia

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
1.3.1	Policies for doing business	81	1.2.3	Cost of redundancy dismissal	129
3.2.3	Gross capital formation, % GDP	12	2.2.1	Tertiary enrolment, % gross	128
3.3.2	Environmental performance	76	2.3.3	Global corporate R&D investors, top 3, mn USD	38
4.1.3	Loans from microfinance institutions, % GDP	21	2.3.4	QS university ranking, top 3	72
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	55	3.1.3	Government's online service	127
5.1.2	Firms offering formal training, %	41	5.2.5	Patent families/bn PPP$ GDP	101
5.2.2	State of cluster development and depth	82	6.1.2	PCT patents by origin/bn PPP$ GDP	101
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	72	6.3.1	Intellectual property receipts, % total trade	113
7.1.2	Trademarks by origin/bn PPP$ GDP	72	7.1.3	Global brand value, top 5,000, % GDP	77
7.1.4	Industrial designs by origin/bn PPP$ GDP	49	7.2.1	Cultural and creative services exports, % total trade	113

GII 2022 rank

Zambia

118

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
115	118	Lower middle	SSA	18.9	66.4	3,410

		Score/ Value	Rank	
Institutions		**37.5**	**126**	◇
1.1	**Political environment**	45.7	109	
1.1.1	Political and operational stability*	58.2	103	
1.1.2	Government effectiveness*	33.2	115	
1.2	**Regulatory environment**	22.7	130	○ ◇
1.2.1	Regulatory quality*	29.5	105	
1.2.2	Rule of law*	29.9	101	
1.2.3	Cost of redundancy dismissal	50.6	129	○ ◇
1.3	**Business environment**	44.2	[76]	
1.3.1	Policies for doing business†	44.2	81	●
1.3.2	Entrepreneurship policies and culture*	n/a	n/a	
Human capital and research		**14.8**	**[118]**	
2.1	**Education**	44.4	[83]	
2.1.1	Expenditure on education, % GDP	3.7	90	
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	21.1	98	
2.2	**Tertiary education**	0.0	[129]	
2.2.1	Tertiary enrolment, % gross	4.1	128	○ ◇
2.2.2	Graduates in science and engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research and development (R&D)**	0.0	[120]	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	○ ◇
2.3.4	QS university ranking, top 3*	0.0	72	○ ◇
Infrastructure		**26.7**	**116**	
3.1	**Information and communication technologies (ICTs)**	37.5	122	◇
3.1.1	ICT access*	67.9	102	
3.1.2	ICT use*	25.4	119	◇
3.1.3	Government's online service*	25.9	127	○ ◇
3.1.4	E-participation*	30.9	122	◇
3.2	**General infrastructure**	25.3	79	●
3.2.1	Electricity output, GWh/mn pop.	824.8	100	
3.2.2	Logistics performance*	22.3	102	
3.2.3	Gross capital formation, % GDP	33.0	12	●
3.3	**Ecological sustainability**	17.3	109	
3.3.1	GDP/unit of energy use	5.9	113	
3.3.2	Environmental performance*	38.4	76	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	119	
Market sophistication		**22.0**	**106**	
4.1	**Credit**	12.8	106	
4.1.1	Finance for startups and scaleups*	n/a	n/a	
4.1.2	Domestic credit to private sector, % GDP	15.2	117	
4.1.3	Loans from microfinance institutions, % GDP	1.5	21	●
4.2	**Investment**	5.2	75	
4.2.1	Market capitalization, % GDP	13.6	68	
4.2.2	Venture capital investors, deals/bn PPP$ GDP	n/a	n/a	
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	0.0	55	●
4.2.4	Venture capital received, value, % GDP	0.0	68	
4.3	**Trade, diversification, and market scale**	48.1	85	
4.3.1	Applied tariff rate, weighted avg., %	4.8	89	
4.3.2	Domestic industry diversification	74.1	79	
4.3.3	Domestic market scale, bn PPP$	66.4	93	

		Score/ Value	Rank	
Business sophistication		**21.3**	**100**	
5.1	**Knowledge workers**	23.1	[84]	
5.1.1	Knowledge-intensive employment, %	10.2	107	
5.1.2	Firms offering formal training, %	36.6	41	●
5.1.3	GERD performed by business, % GDP	n/a	n/a	
5.1.4	GERD financed by business, %	n/a	n/a	
5.1.5	Females employed w/advanced degrees, %	4.5	94	
5.2	**Innovation linkages**	22.1	71	●
5.2.1	University-industry R&D collaboration†	38.3	90	
5.2.2	State of cluster development and depth†	44.2	82	●
5.2.3	GERD financed by abroad, % GDP	n/a	n/a	
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	72	●
5.2.5	Patent families/bn PPP$ GDP	0.0	101	○ ◇
5.3	**Knowledge absorption**	18.6	120	
5.3.1	Intellectual property payments, % total trade	0.3	85	
5.3.2	High-tech imports, % total trade	5.6	114	
5.3.3	ICT services imports, % total trade	0.4	114	
5.3.4	FDI net inflows, % GDP	1.0	102	
5.3.5	Research talent, % in businesses	n/a	n/a	
Knowledge and technology outputs		**8.6**	**116**	
6.1	**Knowledge creation**	5.6	104	
6.1.1	Patents by origin/bn PPP$ GDP	0.3	92	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	101	○ ◇
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific and technical articles/bn PPP$ GDP	10.5	84	
6.1.5	Citable documents H-index	6.1	91	
6.2	**Knowledge impact**	12.6	112	
6.2.1	Labor productivity growth, %	−0.3	97	◇
6.2.2	New businesses/th pop. 15–64	1.1	79	
6.2.3	Software spending, % GDP	0.0	108	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.4	122	
6.2.5	High-tech manufacturing, %	10.1	89	
6.3	**Knowledge diffusion**	7.5	113	
6.3.1	Intellectual property receipts, % total trade	0.0	113	○ ◇
6.3.2	Production and export complexity	24.8	92	
6.3.3	High-tech exports, % total trade	0.2	114	
6.3.4	ICT services exports, % total trade	0.3	119	
Creative outputs		**5.7**	**110**	
7.1	**Intangible assets**	11.2	97	
7.1.1	Intangible asset intensity, top 15, %	n/a	n/a	
7.1.2	Trademarks by origin/bn PPP$ GDP	31.4	72	●
7.1.3	Global brand value, top 5,000, % GDP	0.0	77	○ ◇
7.1.4	Industrial designs by origin/bn PPP$ GDP	2.0	49	●
7.2	**Creative goods and services**	0.2	[129]	
7.2.1	Cultural and creative services exports, % total trade	0.0	113	○ ◇
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	0.0	113	
7.3	**Online creativity**	0.2	122	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	123	
7.3.2	Country-code TLDs/th pop. 15–69	0.1	115	
7.3.3	GitHub commit pushes received/mn pop. 15–69	0.3	115	
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 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 Zambia.

Missing data for Zambia

Code	Indicator name	Economy year	Model year	Source
1.3.2	Entrepreneurship policies and culture	n/a	2021	Global Entrepreneurship Monitor
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2018	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	n/a	2019	UNESCO Institute for Statistics
2.1.4	PISA scales in reading, maths and science	n/a	2018	OECD, PISA
2.2.2	Graduates in science and engineering, %	n/a	2020	UNESCO Institute for Statistics
2.2.3	Tertiary inbound mobility, %	n/a	2019	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	n/a	2020	UNESCO Institute for Statistics
2.3.2	Gross expenditure on R&D, % GDP	n/a	2020	UNESCO Institute for Statistics
4.1.1	Finance for startups and scaleups	n/a	2021	Global Entrepreneurship Monitor
4.2.2	Venture capital investors, deals/bn PPP$ GDP	n/a	2021	Refinitiv
5.1.3	GERD performed by business, % GDP	n/a	2020	UNESCO Institute for Statistics
5.1.4	GERD financed by business, %	n/a	2019	UNESCO Institute for Statistics
5.2.3	GERD financed by abroad, % GDP	n/a	2019	UNESCO Institute for Statistics
5.3.5	Research talent, % in businesses	n/a	2020	UNESCO Institute for Statistics
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2020	World Intellectual Property Organization
7.1.1	Intangible asset intensity, top 15, %	n/a	2021	Brand Finance
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
7.2.4	Printing and other media, % manufacturing	n/a	2019	United Nations Industrial Development Organization
7.3.4	Mobile app creation/bn PPP$ GDP	n/a	2021	data.ia

Outdated data for Zambia

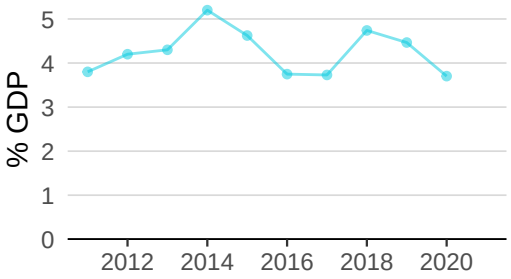
Code	Indicator name	Economy year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	2014	2019	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2012	2019	UNESCO Institute for Statistics
4.2.1	Market capitalization, % GDP	2011	2020	World Federation of Exchanges

Code	Indicator name	Economy year	Model year	Source
4.3.2	Domestic industry diversification	2015	2019	United Nations Industrial Development Organization
5.1.1	Knowledge-intensive employment, %	2020	2021	International Labour Organization
5.1.5	Females employed w/advanced degrees, %	2020	2021	International Labour Organization
6.2.5	High-tech manufacturing, %	2015	2019	United Nations Industrial Development Organization

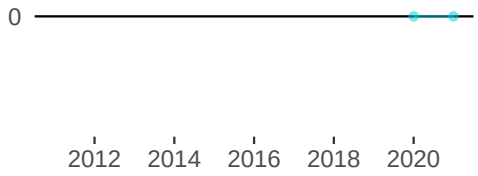
ZAMBIA'S INNOVATION SYSTEM

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

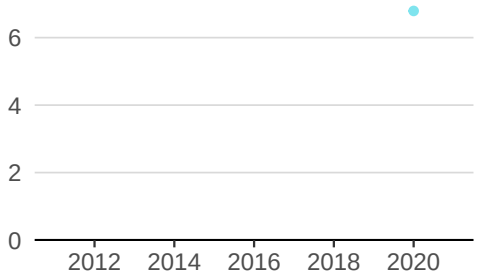
Innovation inputs



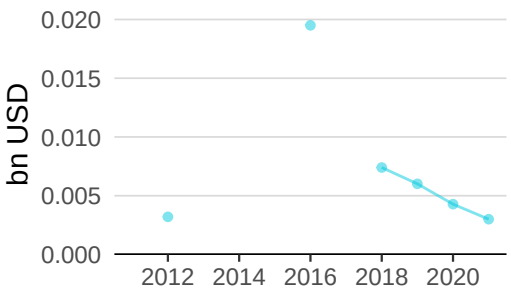
2.1.1 Expenditure on education was equal to 3.7% GDP in 2020–down by 17 percentage points from the year prior–and equivalent to an indicator rank of 90.



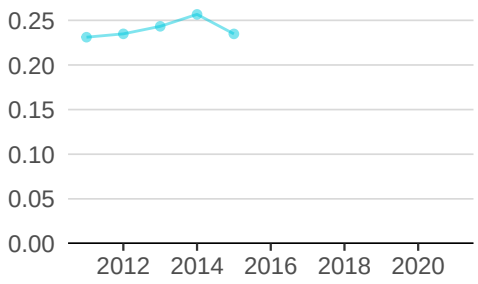
2.3.4 QS university ranking was equal to 0.0 in 2021–effectively unchanged from the year prior–and equivalent to an indicator rank of 72.



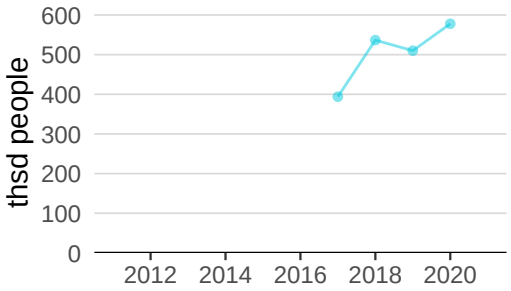
3.1.1 ICT access was equal to 6.8 in 2020 and equivalent to an indicator rank of 102.



4.2.4 Venture capital received was equal to 0.0 bn USD in 2021–down by 30 percentage points from the year prior–and equivalent to an indicator rank of 68.

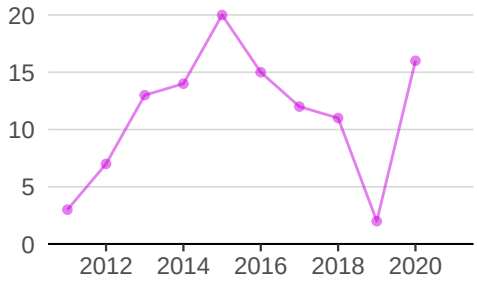


4.3.2 Domestic industry diversification was equal to 0.2 in 2015–down by 9 percentage points from the year prior–and equivalent to an indicator rank of 79.

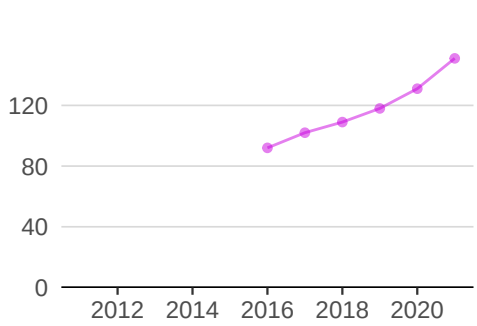


5.1.1 Knowledge-intensive employment was equal to 577.9 thsd people in 2020–up by 13 percentage points from the year prior–and equivalent to an indicator rank of 107.

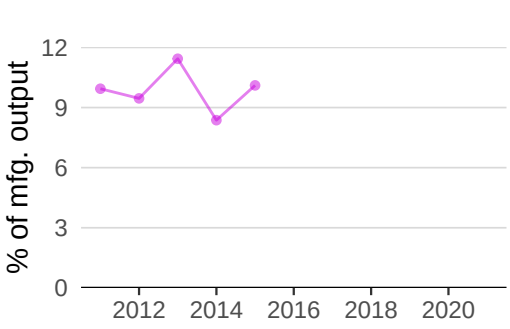
Innovation outputs



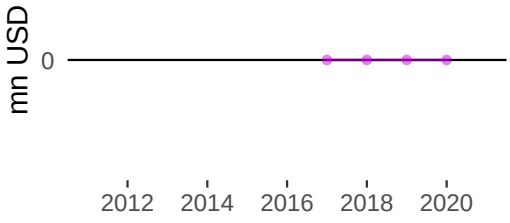
6.1.1 Patents by origin was equal to 16.0 in 2020–up by 700 percentage points from the year prior–and equivalent to an indicator rank of 92.



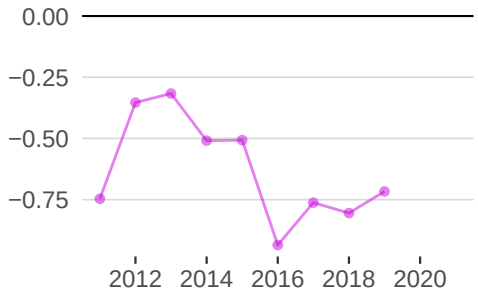
6.1.5 Citable documents H-index was equal to 151.0 in 2021–up by 15 percentage points from the year prior–and equivalent to an indicator rank of 91.



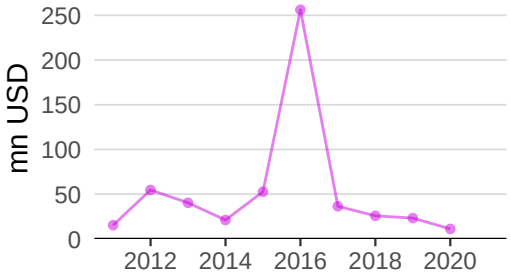
6.2.5 High-tech manufacturing was equal to 10.1% of mfg. output in 2015–up by 21 percentage points from the year prior–and equivalent to an indicator rank of 89.



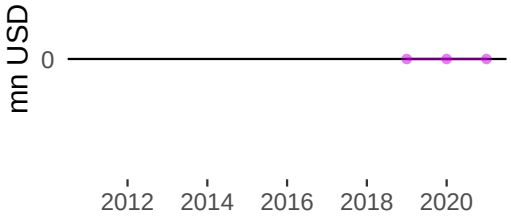
6.3.1 Intellectual property receipts was equal to 0.0 mn USD in 2020–effectively unchanged from the year prior–and equivalent to an indicator rank of 113.



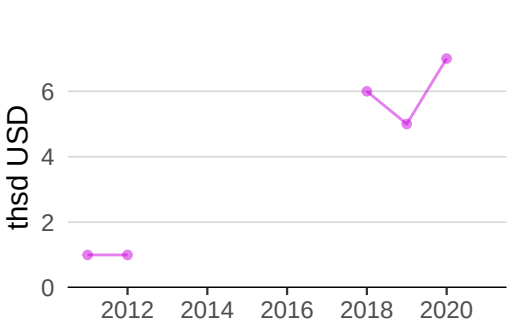
6.3.2 Production and export complexity was equal to -0.7 in 2019–up by 11 percentage points from the year prior–and equivalent to an indicator rank of 92.



6.3.3 High-tech exports was equal to 11.2 mn USD in 2020–down by 52 percentage points from the year prior–and equivalent to an indicator rank of 114.



7.1.3 Global brand value was equal to 0.0 mn USD in 2021–effectively unchanged from the year prior–and equivalent to an indicator rank of 77.



7.2.1 Cultural and creative services exports was equal to 7.0 thsd USD in 2020–up by 40 percentage points from the year prior–and equivalent to an indicator rank of 113.

ZAMBIA'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

No observations

Source: QS Quacquarelli Symonds Ltd (https://www.topuniversities.com/university-rankings/world-university-rankings/2022).

7.1.1 Intangible asset intensity, top 15

Firm	Rank

No observations

Source: Brand Finance (https://brandirectory.com/reports/gift-2021).

7.1.3 Global brand value, top 5,000

Brand	Industry	Rank

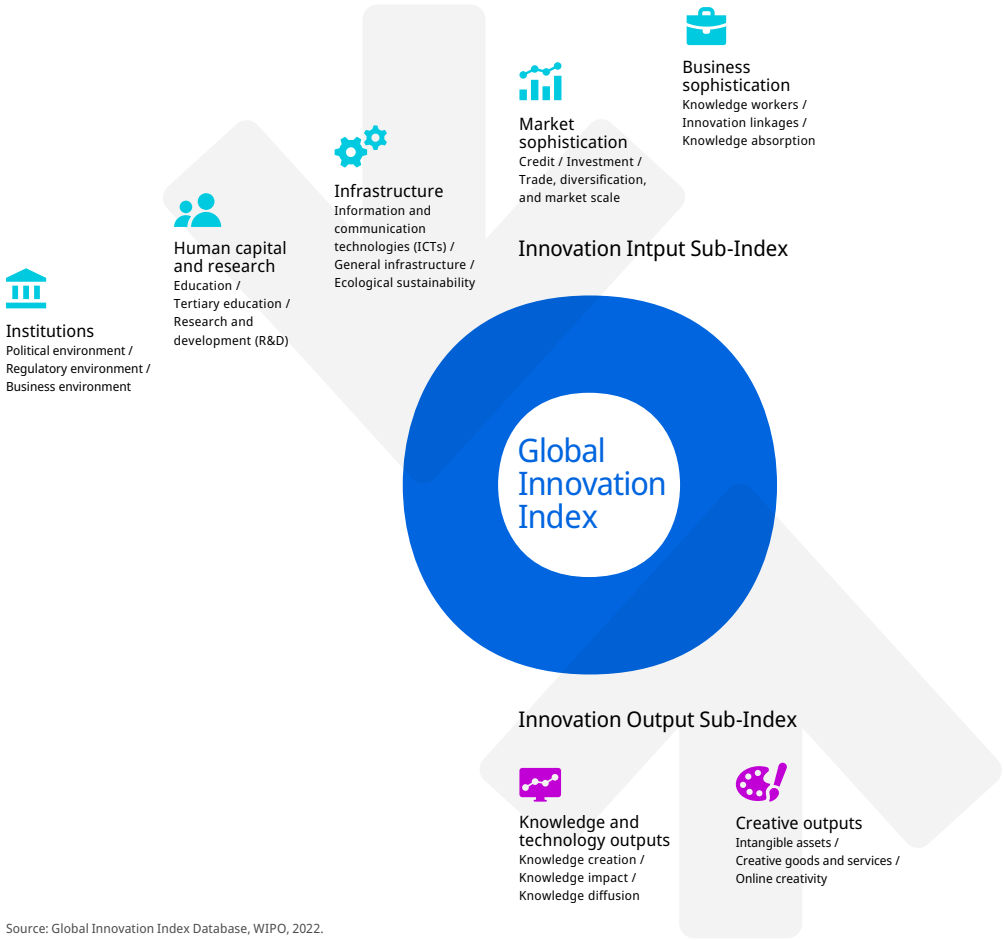
No observations

Source: Brand Finance (https://brandirectory.com).

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.