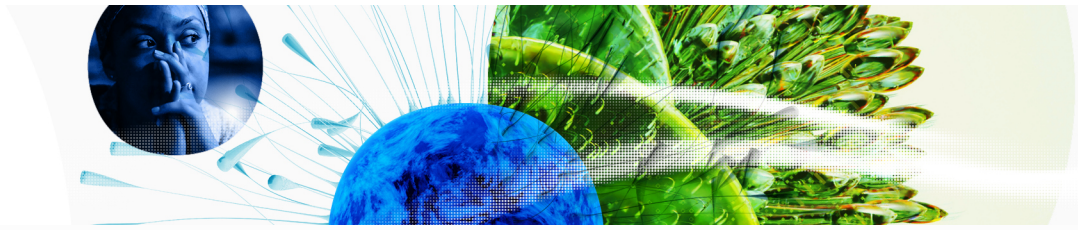
Global Innovation Index 2023



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**.

Nigeria ranking in the Global Innovation Index 2023

> Nigeria ranks 109th among the 132 economies featured in the GII 2023.

> Nigeria ranks 25th among the 37 lower-middle-income group economies.

> Nigeria ranks 11th among the 28 economies in Sub-Saharan Africa.

> Nigeria GII Ranking (2020-2023)

The table shows the rankings of Nigeria 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 Nigeria in the GII 2023 is between ranks 104 and 120.

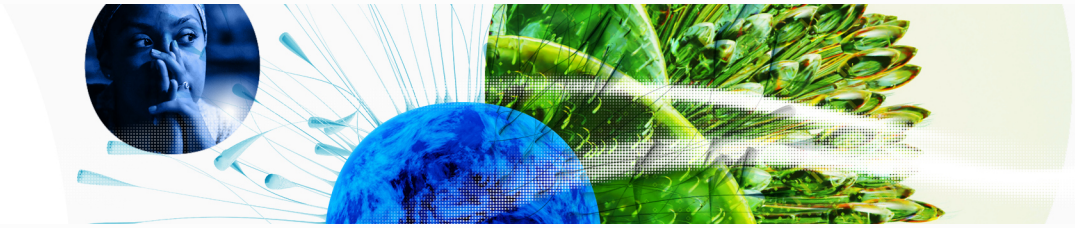
	GII Position	Innovation Inputs	Innovation Outputs
2020	117th	115th	121st
2021	118th	115th	124th
2022	114th	113rd	107th
2023	109th	116th	98th

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

This year **Nigeria ranks 116th in innovation inputs.** This position is lower than last year.

Nigeria ranks 98th in innovation outputs. This position is higher than last year.

Global Innovation Index 2023

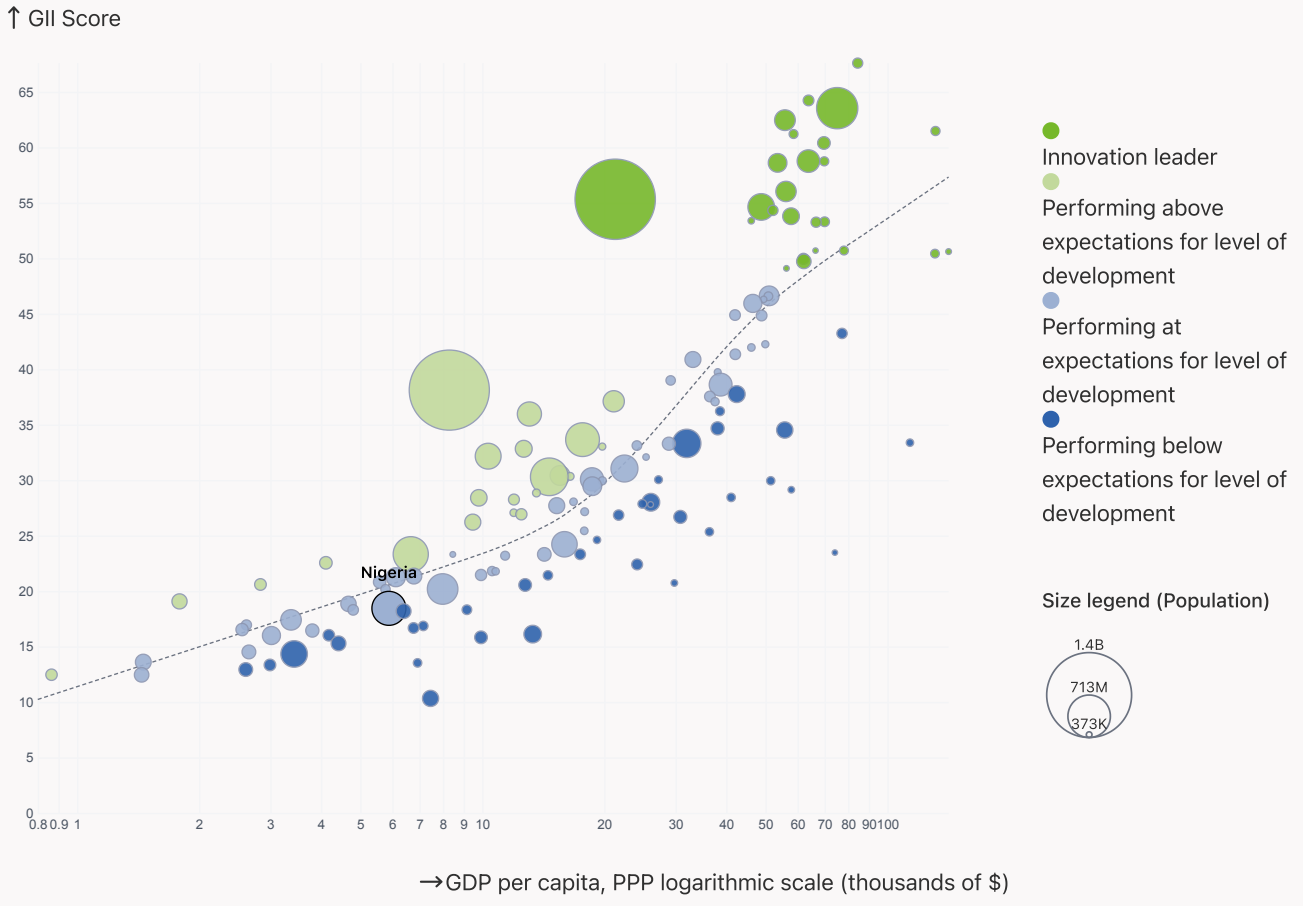


→ Expected vs. observed innovation performance

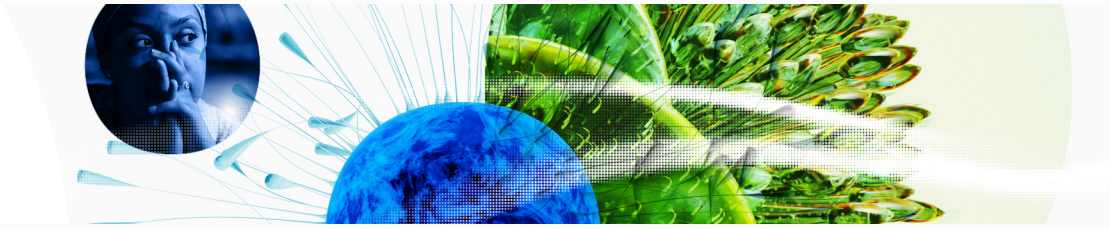
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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

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

> Innovation overperformers relative to their economic development



Global Innovation Index 2023

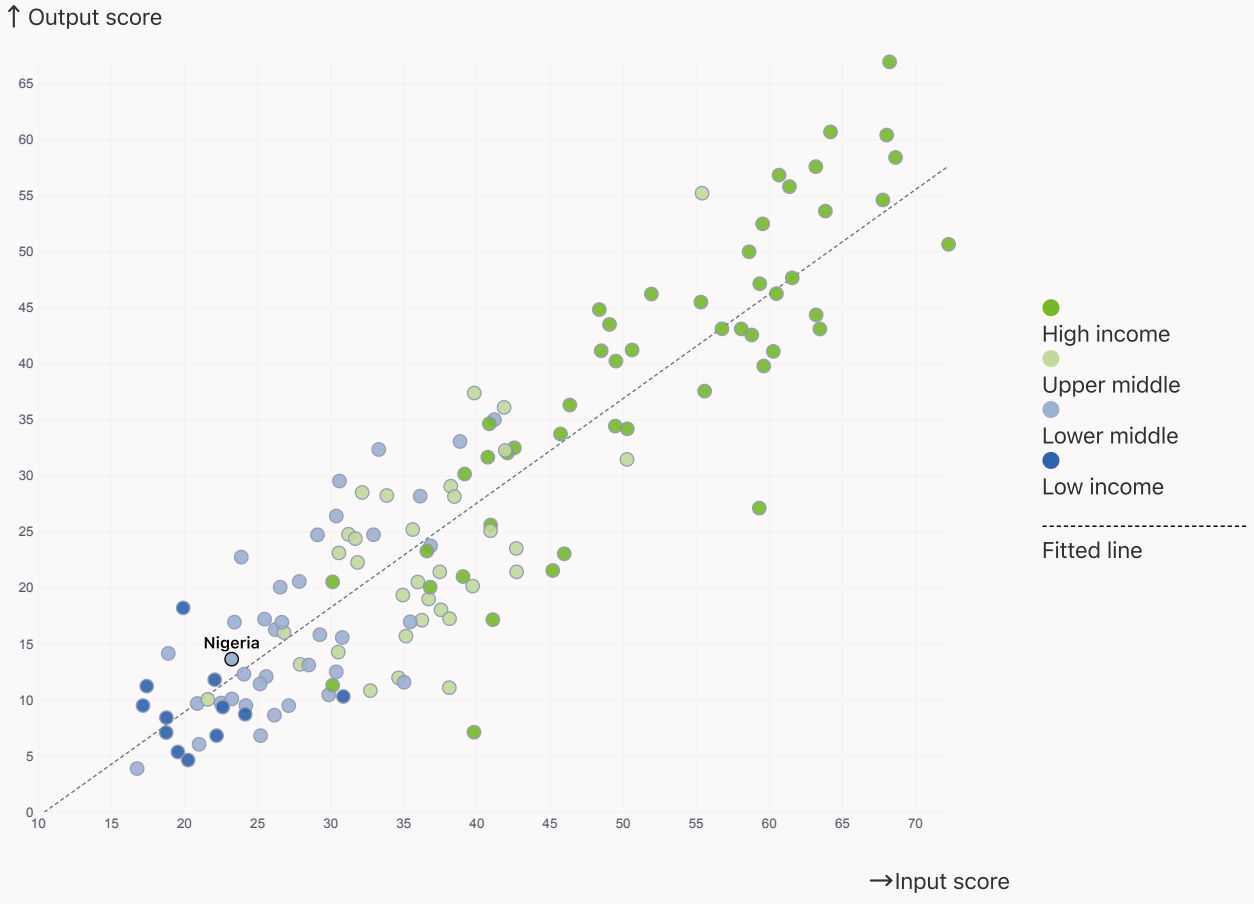


→ Effectively translating innovation investments into innovation outputs

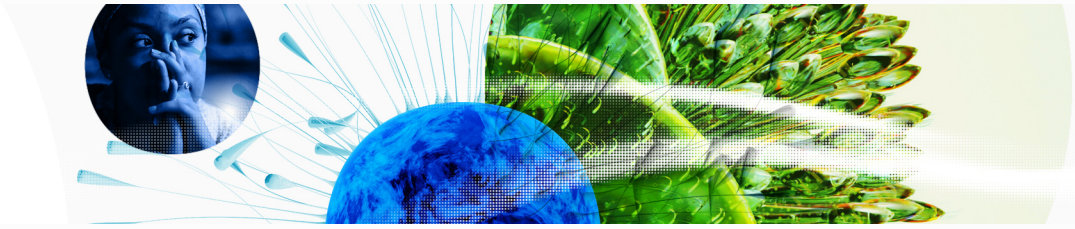
The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

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

> Relationship between innovation inputs and outputs

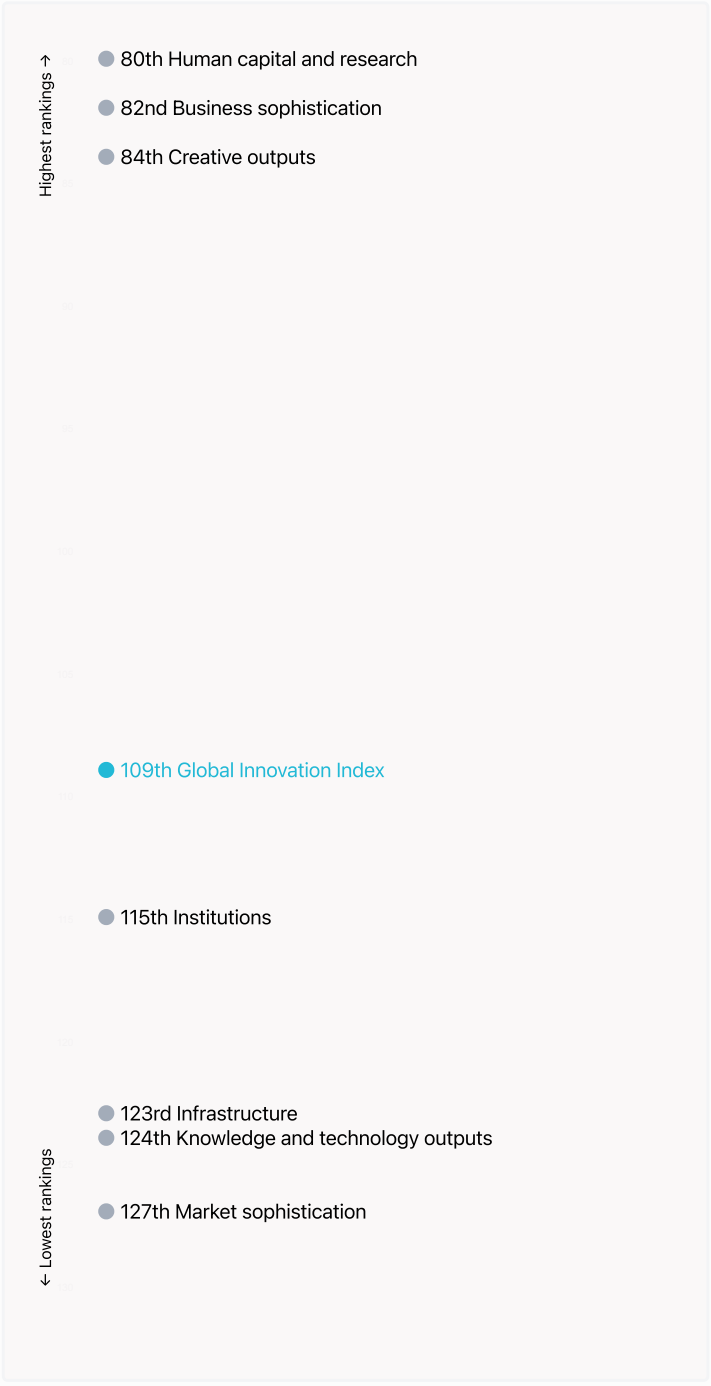


Global Innovation Index 2023



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



> Highest rankings

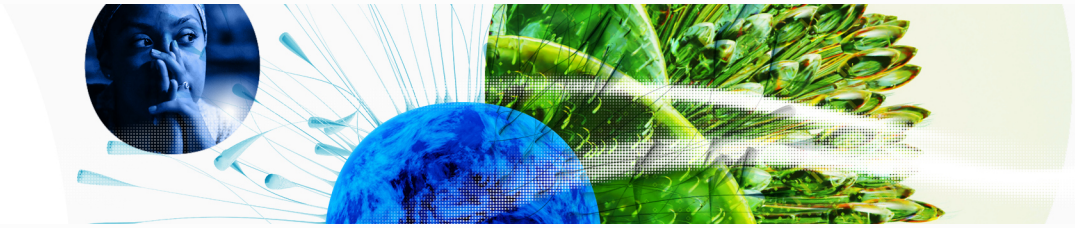
Nigeria ranks highest in Human capital and research (80th), Business sophistication (82nd) and Creative outputs (84th).

> Lowest rankings

Nigeria ranks lowest in Market sophistication (127th), Knowledge and technology outputs (124th) and Infrastructure (123rd).

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

Global Innovation Index 2023



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

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

> Lower-Middle-Income economies

Nigeria performs below the lower-middle-income group average in Knowledge and technology outputs, Market sophistication, Infrastructure, Institutions.

> Sub-Saharan Africa

Nigeria performs below the regional average in Knowledge and technology outputs, Market sophistication, Infrastructure, Institutions.

Knowledge and technology outputs

- Top 10 | Score: 58.96
- Lower middle income | Score: 17.21
- Sub-Saharan Africa | Score: 12.16
- Nigeria | Score: 9.93

Creative outputs

- Top 10 | 56.09
- Nigeria | 17.29
- Lower middle income | 16.35
- Sub-Saharan Africa | 10.36

Business sophistication

- Top 10 | 64.39
- Nigeria | 24.50
- Lower middle income | 22.71
- Sub-Saharan Africa | 19.85

Market sophistication

- Top 10 | 61.93
- Lower middle income | 28.01
- Sub-Saharan Africa | 20.00
- Nigeria | 12.39

Human capital and research

- Top 10 | 60.28
- Nigeria | 27.80
- Lower middle income | 21.73
- Sub-Saharan Africa | 17.80

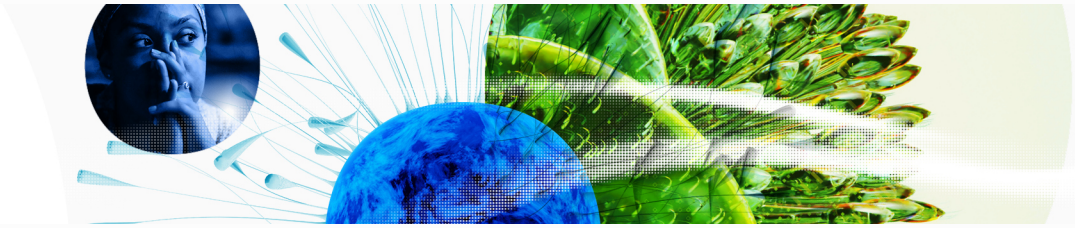
Infrastructure

- Top 10 | 62.83
- Lower middle income | 27.83
- Sub-Saharan Africa | 23.36
- Nigeria | 18.73

Institutions

- Top 10 | 79.85
- Sub-Saharan Africa | 43.27
- Lower middle income | 39.43
- Nigeria | 32.89

Global Innovation Index 2023



→ Innovation strengths and weaknesses in Nigeria

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

> Nigeria's main innovation strengths are **Cost of redundancy dismissal** (rank 1), **Domestic market scale, bn PPP$** (rank 26) and **Knowledge-intensive employment, %** (rank 35).

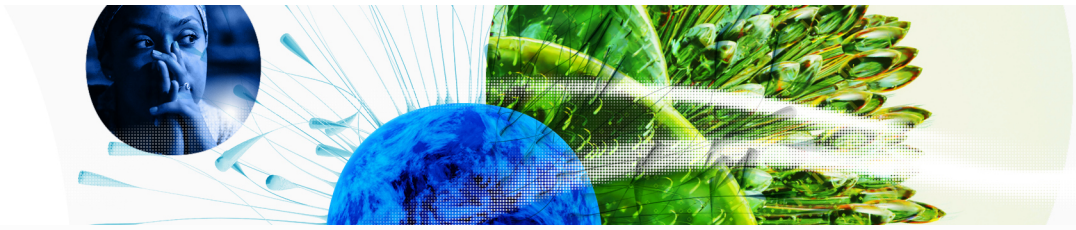
Strengths

Rank	Code	Indicator name
1	1.2.3	Cost of redundancy dismissal
26	4.3.3	Domestic market scale, bn PPP$
35	5.1.1	Knowledge-intensive employment, %
38	4.2.3	VC recipients, deals/bn PPP$ GDP
43	6.2.2	Unicorn valuation, % GDP
46	4.2.4	VC received, value, % GDP
55	5.1.2	Firms offering formal training, %
60	6.1.5	Citable documents H-index
65	7.1.3	Global brand value, top 5,000
70	7.1.4	Industrial designs by origin/bn PPP$ GDP

Weaknesses

Rank	Code	Indicator name
131	4.3.1	Applied tariff rate, weighted avg., %
128	1.1.1	Operational stability for businesses
127	3.3.3	ISO 14001 environment/bn PPP$ GDP
126	4.1.2	Domestic credit to private sector, % GDP
125	1.1.2	Government effectiveness
124	6.3.5	ISO 9001 quality/bn PPP$ GDP
118	6.3.2	Production and export complexity
114	6.3.1	Intellectual property receipts, % total trade
71	2.3.4	QS university ranking, top 3
40	2.3.3	Global corporate R&D investors, top 3, mn US$

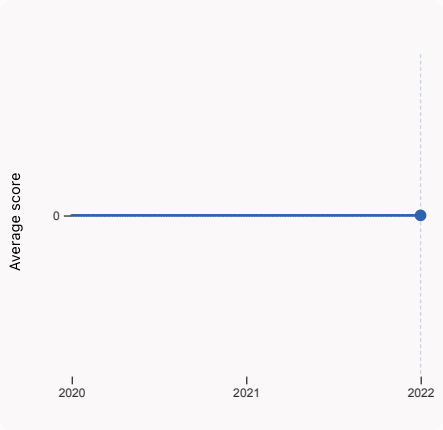
Global Innovation Index 2023



→ Nigeria's innovation system

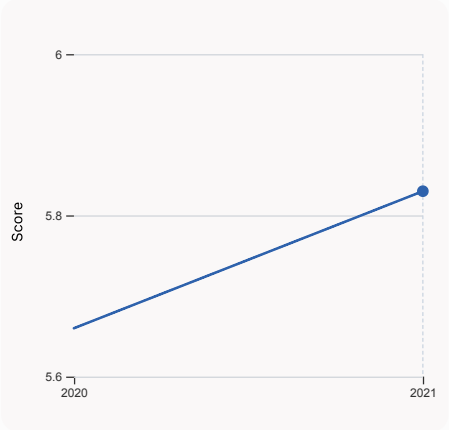
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Nigeria



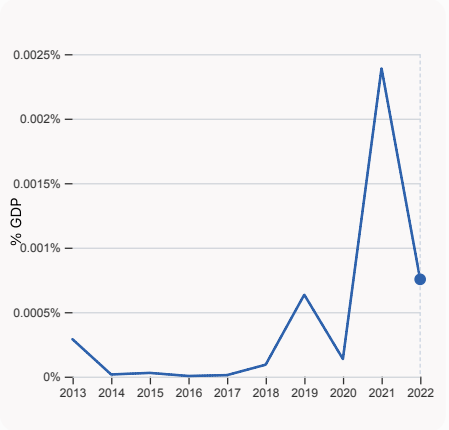
2.3.4 QS university ranking, top 3

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



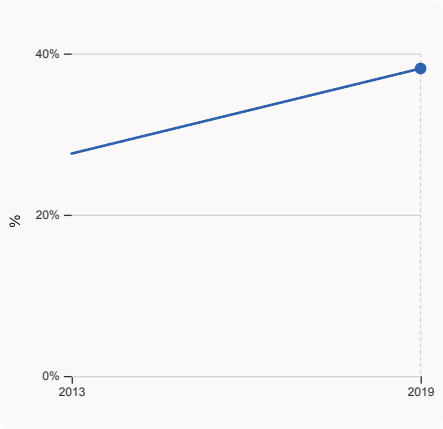
3.1.1 ICT access

was equal to a score of 5.83 in 2021, up by 3.0035% from the year prior – and equivalent to an indicator rank of 119.



4.2.4 VC received, value, % GDP

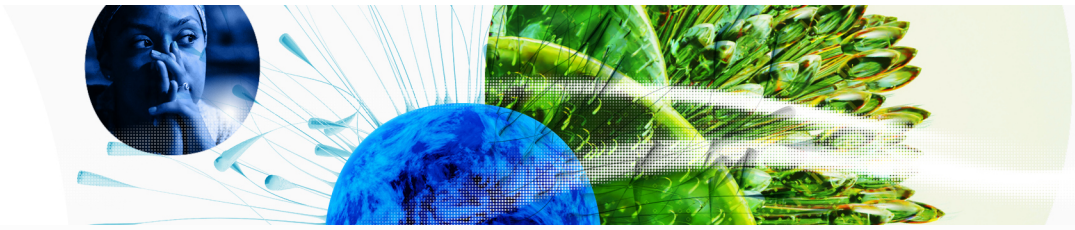
was equal to 0.00075% GDP in 2022, down by 0.0016 percentage points from the year prior – and equivalent to an indicator rank of 46.



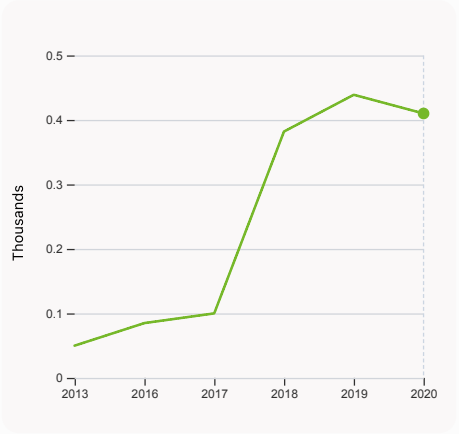
5.1.1 Knowledge-intensive employment, %

was equal to 38.14% in 2019, up by 10.55 percentage points from the year prior – and equivalent to an indicator rank of 35.

Global Innovation Index 2023

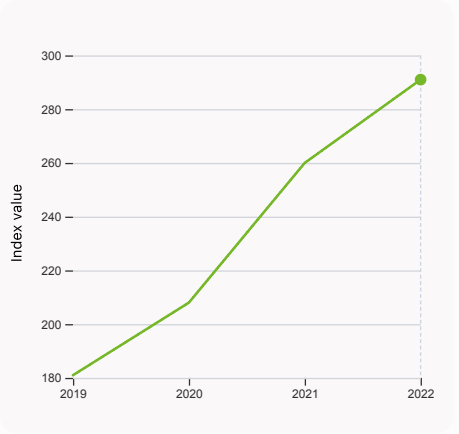


> Innovation outputs in Nigeria



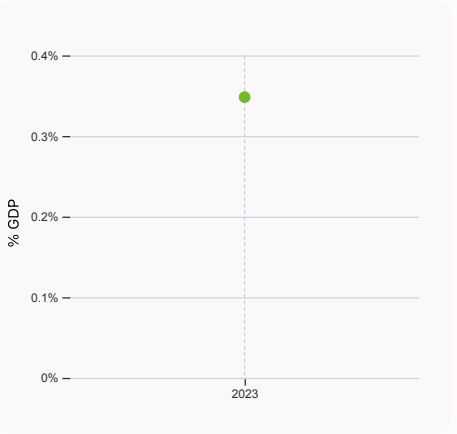
6.1.1 Patents by origin

was equal to 0.41 Thousands in 2020, down by 6.61% from the year prior – and equivalent to an indicator rank of 86.



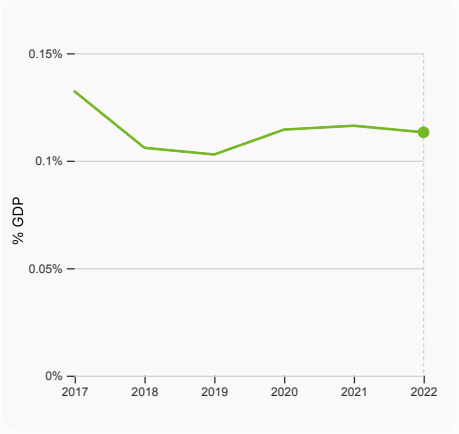
6.1.5 Citable documents H-index

was equal to an index value of 291 in 2022, up by 11.92% from the year prior – and equivalent to an indicator rank of 60.



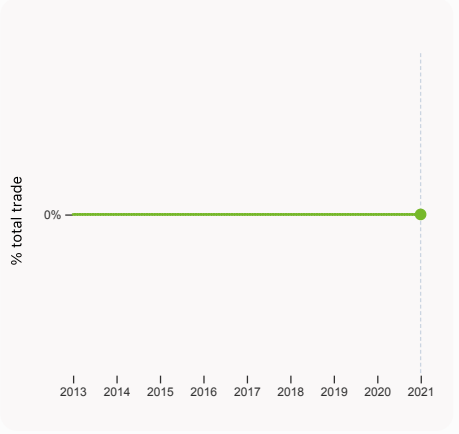
6.2.2 Unicorn valuation, % GDP

was equal to 0.348 % GDP in 2023 – and equivalent to an indicator rank of 43.



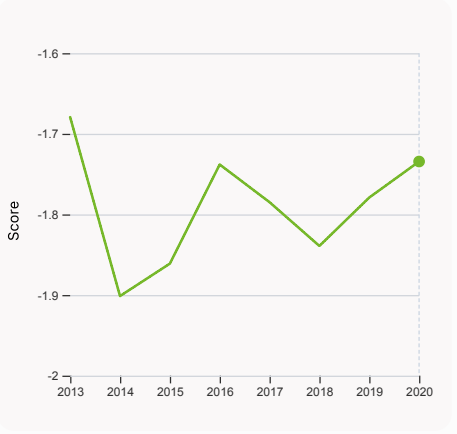
6.2.3 Software spending, % GDP

was equal to 0.113% GDP in 2022, down by 0.0031 percentage points from the year prior – and equivalent to an indicator rank of 88.



6.3.1 Intellectual property receipts, % total trade

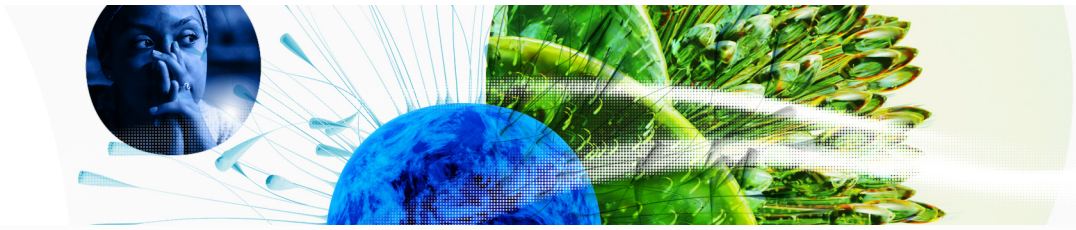
was equal to 0% total trade in 2021 – and equivalent to an indicator rank of 114.

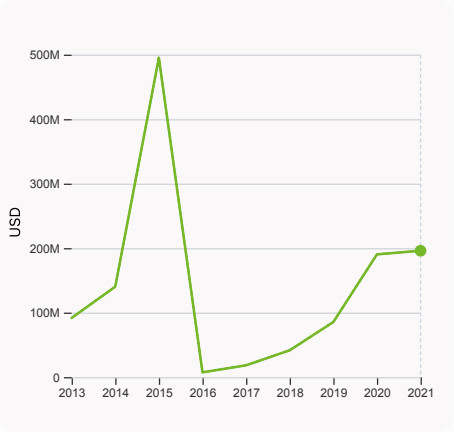


6.3.2 Production and export complexity

was equal to a score of -1.734 in 2020, up by 2.51% from the year prior – and equivalent to an indicator rank of 118.

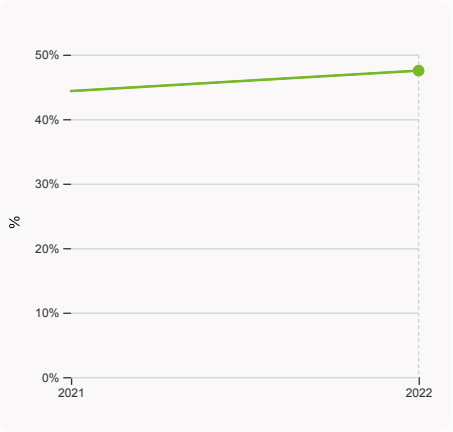
Global Innovation Index 2023





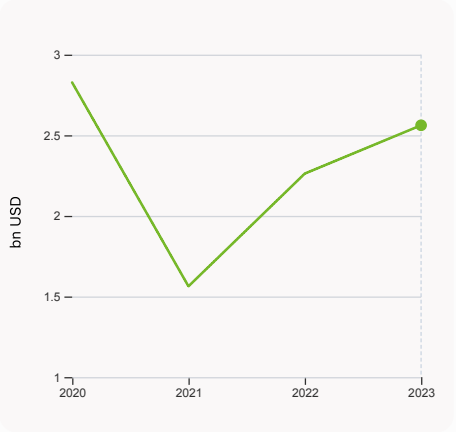
6.3.3 High-tech exports

was equal to 195,947,199 USD in 2021, up by 2.95% from the year prior – and equivalent to an indicator rank of 96.



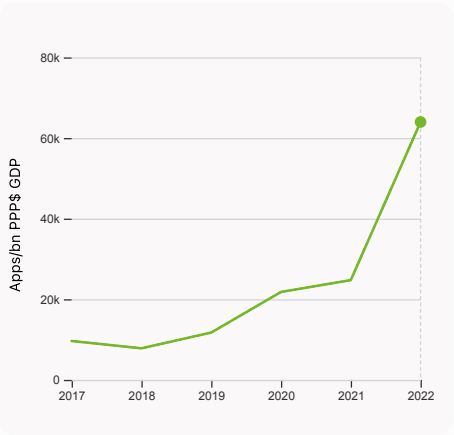
7.1.1 Intangible asset intensity, top 15, %

was equal to 47.52% in 2022, up by 3.16 percentage points from the year prior – and equivalent to an indicator rank of 52.



7.1.3 Global brand value, top 5,000

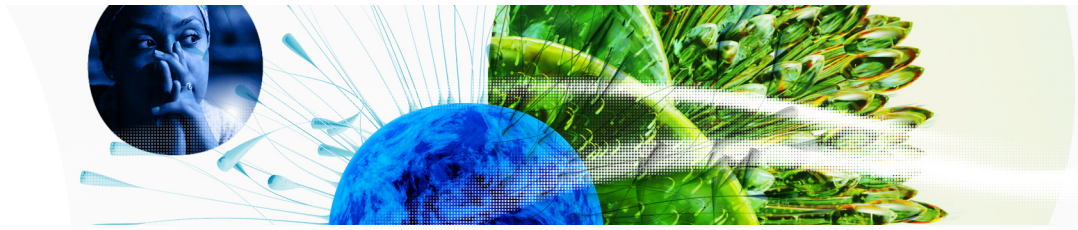
was equal to 2.56 bn USD in 2023, up by 13.24% from the year prior – and equivalent to an indicator rank of 65.



7.3.4 Mobile app creation/bn PPP$ GDP

was equal to 63,980.13 Apps/bn PPP$ GDP in 2022, up by 158.47% from the year prior – and equivalent to an indicator rank of 86.

Global Innovation Index 2023



→ Nigeria's innovation top performers

Data not available.

> 6.2.2 Top Unicorn Companies in Nigeria

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	OPAY	Fintech	Lagos	2

Source: CBInsights, Tracker – The Complete List of Unicorn Companies: https://www.cbinsights.com/research-unicorn-companies

> 7.1.1 Top 15 intangible-asset intensive companies in Nigeria

Rank	Firm	Intensity, %
1	MTN NIGERIA COMMUNICATIONS PLC	75.59
2	DANGOTE CEMENT PLC	64.41
3	BUA CEMENT PLC	82.48

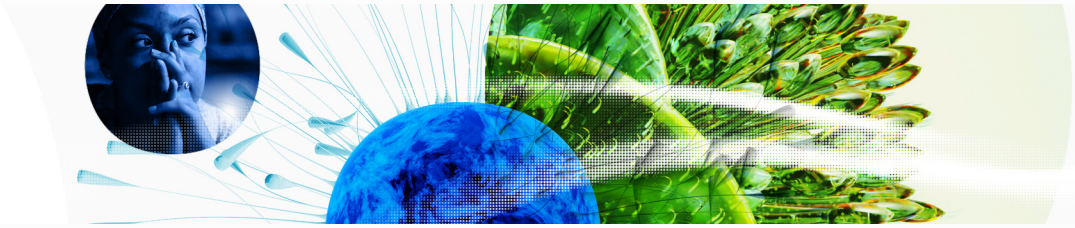
Source: Brand Finance (https://brandirectory.com/reports/gift-2022).
Note: Brand Finance only provides within economy ranks.

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

Rank	Brand	Industry	Brand Value, mn USD
1	ACCESS BANK	Banking	462.5
2	ZENITH BANK	Banking	453.4
3	DANGOTE CEMENT	Engineering & Construction	420.6

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

Global Innovation Index 2023



Nigeria

GII 2023 rank **109**

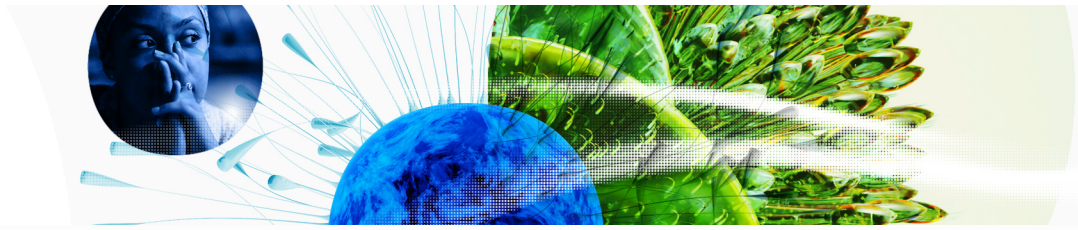
Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
98	116	Lower middle	SSA	218.5	1,275.3	5,883.8

	Score / Value	Rank	
Institutions	**32.9**	**115**	
1.1 Institutional environment	**13.0**	**129**	◇
1.1.1 Operational stability for businesses*	16.7	128	○ ◇
1.1.2 Government effectiveness*	9.3	125	○ ◇
1.2 Regulatory environment	**58.1**	**79**	
1.2.1 Regulatory quality*	17.9	124	
1.2.2 Rule of law*	14.7	112	
1.2.3 Cost of redundancy dismissal	8.0	1	●
1.3 Business environment	**27.6**	**106**	
1.3.1 Policies for doing business†	27.6	110	
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	
Human capital and research	**27.8**	**80**	
2.1 Education	**78.1**	**1**	
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	14.7	75	
2.2 Tertiary education	**5.3**	**120**	
2.2.1 Tertiary enrolment, % gross	12.1	110	
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**	**119**	
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 US$	0.0	40	○ ◇
2.3.4 QS university ranking, top 3*	0.0	71	○ ◇
Infrastructure	**18.7**	**123**	◇
3.1 Information and communication technologies (ICTs)	**35.7**	**115**	
3.1.1 ICT access*	37.0	119	◇
3.1.2 ICT use*	29.4	117	◇
3.1.3 Government's online service*	47.5	95	
3.1.4 E-participation*	29.1	105	
3.2 General infrastructure	**11.1**	**120**	
3.2.1 Electricity output, GWh/mn pop.	157.3	118	
3.2.2 Logistics performance*	22.7	82	
3.2.3 Gross capital formation, % GDP	17.9	113	◇
3.3 Ecological sustainability	**9.4**	**129**	◇
3.3.1 GDP/unit of energy use	6.3	105	
3.3.2 Environmental performance*	15.9	120	
3.3.3 ISO 14001 environment/bn PPP$ GDP	0.1	127	○
Market sophistication	**12.4**	**127**	◇
4.1 Credit	**4.5**	**125**	◇
4.1.1 Finance for startups and scaleups†	n/a	n/a	
4.1.2 Domestic credit to private sector, % GDP	12.1	126	○ ◇
4.1.3 Loans from microfinance institutions, % GDP	0.5	36	
4.2 Investment	**9.0**	**57**	
4.2.1 Market capitalization, % GDP	10.1	72	
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.0	56	
4.2.3 VC recipients, deals/bn PPP$ GDP	0.1	38	●
4.2.4 VC received, value, % GDP	0.0	46	●
4.3 Trade, diversification, and market scale	**23.7**	**122**	◇
4.3.1 Applied tariff rate, weighted avg., %	12.4	131	○ ◇
4.3.2 Domestic industry diversification	n/a	n/a	
4.3.3 Domestic market scale, bn PPP$	1,275.3	26	●

	Score / Value	Rank	
Business sophistication	**24.5**	**82**	
5.1 Knowledge workers	**37.0**	**55**	
5.1.1 Knowledge-intensive employment, %	38.1	35	●
5.1.2 Firms offering formal training, %	30.7	55	●
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, %	5.8	91	
5.2 Innovation linkages	**11.5**	**111**	
5.2.1 University-industry R&D collaboration†	12.9	122	◇
5.2.2 State of cluster development†	29.2	96	
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	86	
5.2.5 Patent families/bn PPP$ GDP	0.0	94	
5.3 Knowledge absorption	**24.9**	**104**	
5.3.1 Intellectual property payments, % total trade	0.4	77	
5.3.2 High-tech imports, % total trade	6.5	97	
5.3.3 ICT services imports, % total trade	0.6	100	
5.3.4 FDI net inflows, % GDP	0.6	111	
5.3.5 Research talent, % in businesses	n/a	n/a	
Knowledge and technology outputs	**9.9**	**124**	
6.1 Knowledge creation	**7.4**	**97**	
6.1.1 Patents by origin/bn PPP$ GDP	0.4	86	
6.1.2 PCT patents by origin/bn PPP$ GDP	0.0	98	
6.1.3 Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific and technical articles/bn PPP$ GDP	n/a	n/a	
6.1.5 Citable documents H-index	13.8	60	●
6.2 Knowledge impact	**17.1**	**115**	
6.2.1 Labor productivity growth, %	-1.1	118	
6.2.2 Unicorn valuation, % GDP	0.3	43	●
6.2.3 Software spending, % GDP	0.1	88	
6.2.4 High-tech manufacturing, %	n/a	n/a	
6.3 Knowledge diffusion	**5.3**	**125**	◇
6.3.1 Intellectual property receipts, % total trade	0.0	114	○ ◇
6.3.2 Production and export complexity	16.2	118	○ ◇
6.3.3 High-tech exports, % total trade	0.4	96	
6.3.4 ICT services exports, % total trade	0.2	116	
6.3.5 ISO 9001 quality/bn PPP$ GDP	0.4	124	○
Creative outputs	**17.3**	**84**	
7.1 Intangible assets	**26.0**	**78**	
7.1.1 Intangible asset intensity, top 15, %	47.5	52	
7.1.2 Trademarks by origin/bn PPP$ GDP	10.5	111	
7.1.3 Global brand value, top 5,000	0.4	65	●
7.1.4 Industrial designs by origin/bn PPP$ GDP	1.0	70	●
7.2 Creative goods and services	**1.2**	**115**	
7.2.1 Cultural and creative services exports, % total trade	n/a	n/a	
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	1.6	53	
7.2.4 Creative goods exports, % total trade	0.1	103	
7.3 Online creativity	**15.9**	**91**	
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.5	111	
7.3.2 Country-code TLDs/th pop. 15-69	0.4	100	
7.3.3 GitHub commits/mn pop. 15-69	3.9	79	
7.3.4 Mobile app creation/bn PPP$ GDP	58.9	86	

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

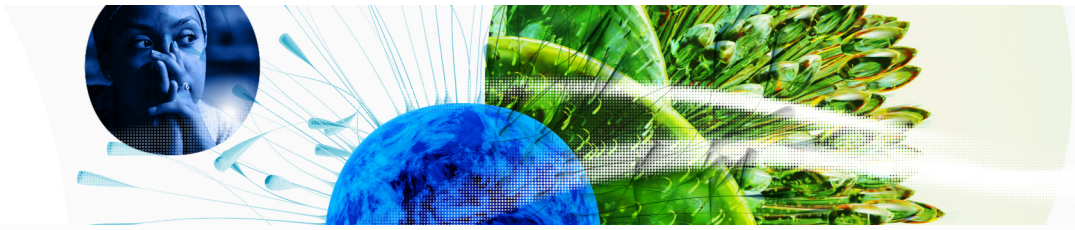
The following tables list indicators that are either missing or outdated for Nigeria.

> Nigeria has missing data for nineteen indicators and outdated data for nine indicators.

> Missing data for Nigeria

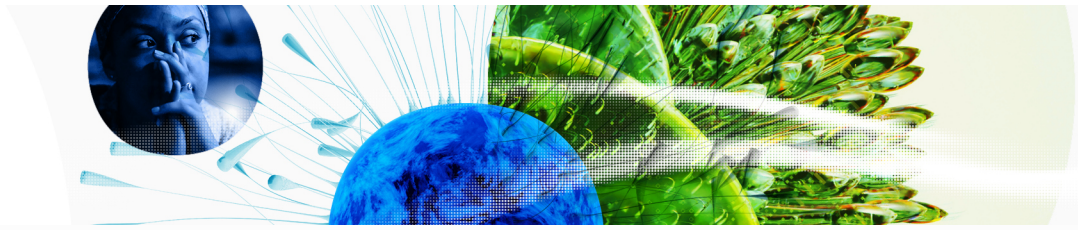
Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture	n/a	2022	Global Entrepreneurship Monitor
2.1.1	Expenditure on education, % GDP	n/a	2021	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2019	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	n/a	2020	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; Eurostat; OECD
2.2.3	Tertiary inbound mobility, %	n/a	2020	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	n/a	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
2.3.2	Gross expenditure on R&D, % GDP	n/a	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
4.1.1	Finance for startups and scaleups	n/a	2022	Global Entrepreneurship Monitor
4.3.2	Domestic industry diversification	n/a	2020	United Nations Industrial Development Organization
5.1.3	GERD performed by business, % GDP	n/a	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.4	GERD financed by business, %	n/a	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.2.3	GERD financed by abroad, % GDP	n/a	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.3.5	Research talent, % in businesses	n/a	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2021	World Intellectual Property Organization; International Monetary Fund

Global Innovation Index 2023



Code	Indicator name	Economy Year	Model Year	Source
6.2.4	High-tech manufacturing, %	n/a	2020	United Nations Industrial Development Organization
7.2.1	Cultural and creative services exports, % total trade	n/a	2021	World Trade Organization and United Nations Conference on Trade and Development
7.2.2	National feature films/mn pop. 15-69	n/a	2021	OMDIA; United Nations, World Population Prospects

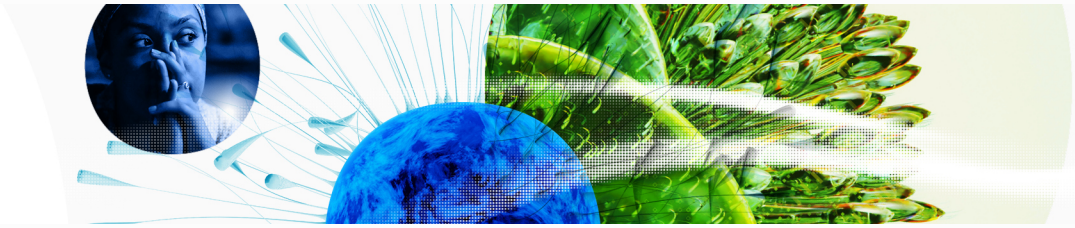
Global Innovation Index 2023



> Outdated data for Nigeria

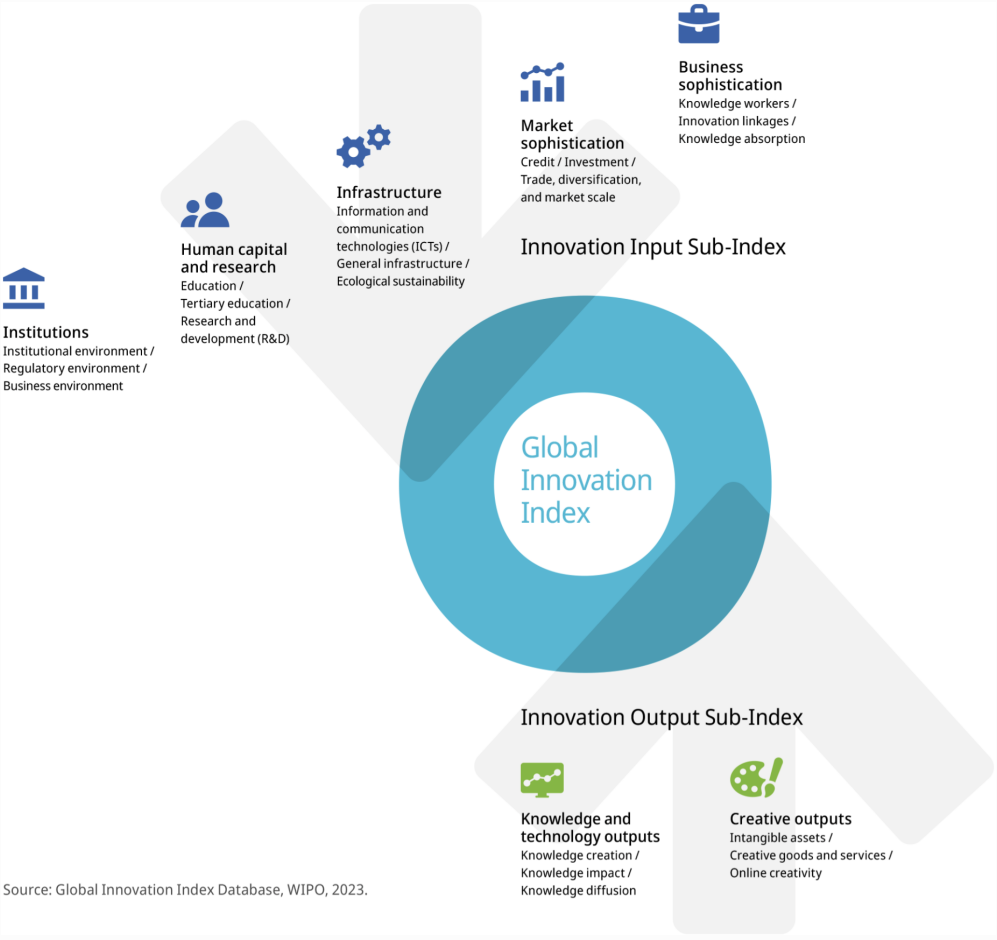
Code	Indicator name	Economy Year	Model Year	Source
2.1.5	Pupil-teacher ratio, secondary	2018	2020	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2018	2020	UNESCO Institute for Statistics
3.2.1	Electricity output, GWh/mn pop.	2020	2021	International Energy Agency
5.1.1	Knowledge-intensive employment, %	2019	2022	International Labour Organization
5.1.2	Firms offering formal training, %	2014	2019	World Bank Enterprise Surveys
5.1.5	Females employed w/advanced degrees, %	2019	2022	International Labour Organization
6.1.1	Patents by origin/bn PPP$ GDP	2020	2021	World Intellectual Property Organization; International Monetary Fund
7.1.2	Trademarks by origin/bn PPP$ GDP	2019	2021	World Intellectual Property Organization; International Monetary Fund
7.1.4	Industrial designs 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.



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.