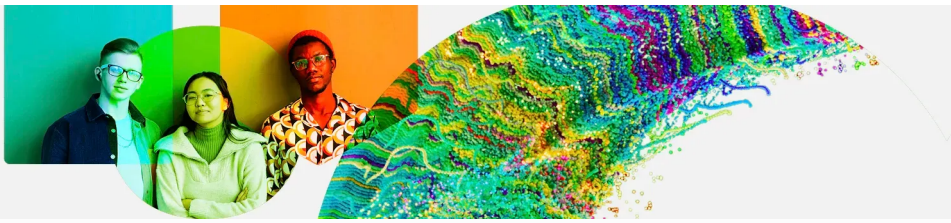
Global Innovation Index 2024



Ghana ranking in the Global Innovation Index 2024

Ghana ranks 101st among the 133 economies featured in the GII 2024.

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.

Ghana ranks 20th among the 38 lower-middle-income group economies.

Ghana ranks 7th among the 27 economies in Sub-Saharan Africa.

Ghana GII Ranking (2020-2024)

The table shows the rankings of Ghana 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 Ghana in the GII 2024 is between ranks 96 and 115.

Year	GII Position	Innovation Inputs	Innovation Outputs
2020	108th	113rd	93rd
2021	112nd	114th	103rd
2022	95th	105th	88th
2023	99th	107th	85th
2024	101st	108th	94th

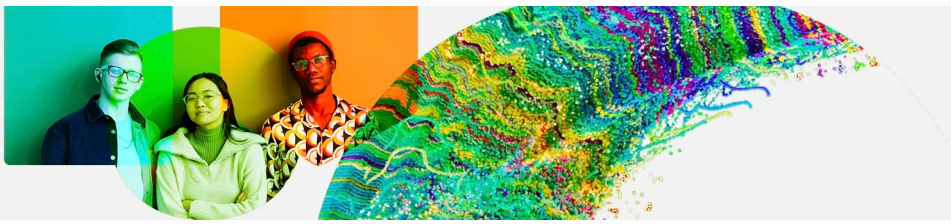
Ghana performs better in innovation outputs than innovation inputs in 2024.

This year **Ghana ranks 108th in innovation inputs.** This position is lower than last year.

Ghana ranks 94th in innovation outputs. This position is lower than last year.

Ghana has no clusters in the top 100 S&T clusters of the Global Innovation Index.

Global Innovation Index 2024



> Global Innovation Tracker

The Global Innovation Tracker 2024 shows what is the current state of innovation in Ghana, how rapidly is technology being embraced and what are the resulting societal impacts.

For Ghana, 3 indicators have improved in the short-term and 5 indicators have worsened.

Science and innovation investment

Scientific publications	R&D investments	Venture capital		International patent filings
		Deal numbers	Deal values	
▼ -12.3% 2022 - 2023	n/a	▼ -13.3% 2022 - 2023	▼ -67.6% 2022 - 2023	n/a
▲ 15.7% 2013 - 2023	n/a	▲ 15.8% 2013 - 2023	▲ 33.3% 2013 - 2023	0% 2013 - 2023

Technology adoption

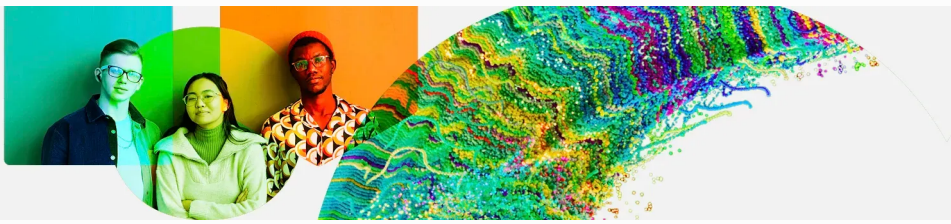
Safe sanitation	Connectivity		Robots	Electric vehicles
	Fixed broadband	5G		
▲ 3.7% 2021 - 2022	▲ 77.4% 2021 - 2022	n/a	n/a	n/a
▲ 4.7% 2012 - 2022	▲ 9.3% 2012 - 2022		n/a	n/a
15.8 per 100 inhabitants in 2022	0.6 per 100 inhabitants in 2022	n/a		n/a

Socioeconomic impact

Labor productivity	Life expectancy	Temperature change
▼ -1.1% 2022 - 2023	▲ 0.2% 2021 - 2022	▲ 1.5°C 2023
▲ 2.1% 2013 - 2023	▲ 0.3% 2012 - 2022	n/a
15,412 USD in 2023	63.9 years in 2022	

Notes: Not all indicators of the Global Innovation Tracker are used to calculate the Global Innovation Index. Long-term annual growth refers to the compound annual growth rate (CAGR) over the indicated period. For each variable, a one-year growth rate is set for the short run, and ten-year CAGR is set for the long run; time windows might differ when gaps exist in data availability. The end period corresponds to the most recent available observation, which may differ among countries. Temperature change is an exception: it indicates the change in degrees Celsius with respect to the average temperature in the country from 1951–1980. Figures are rounded.

Global Innovation Index 2024



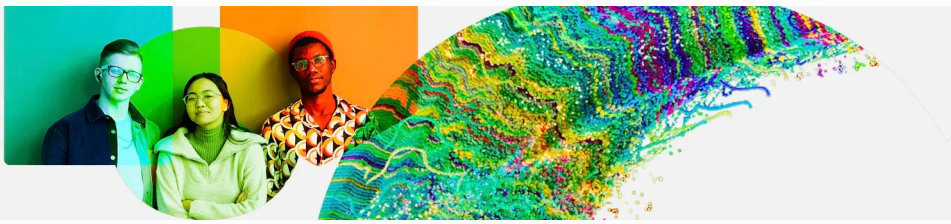
Expected vs. observed innovation performance

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, Ghana's performance is at expectations for its level of development.

> Innovation overperformers relative to their economic development

Global Innovation Index 2024



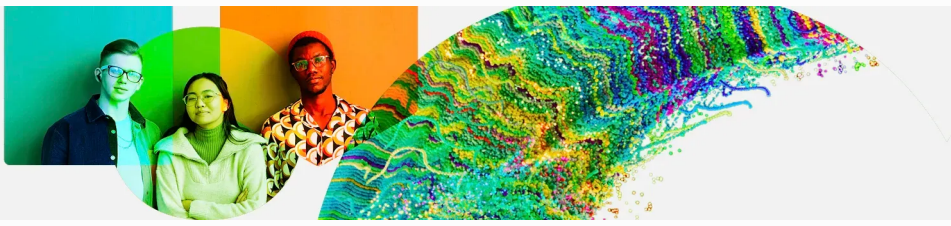
Effectively translating innovation investments into innovation outputs

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.

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

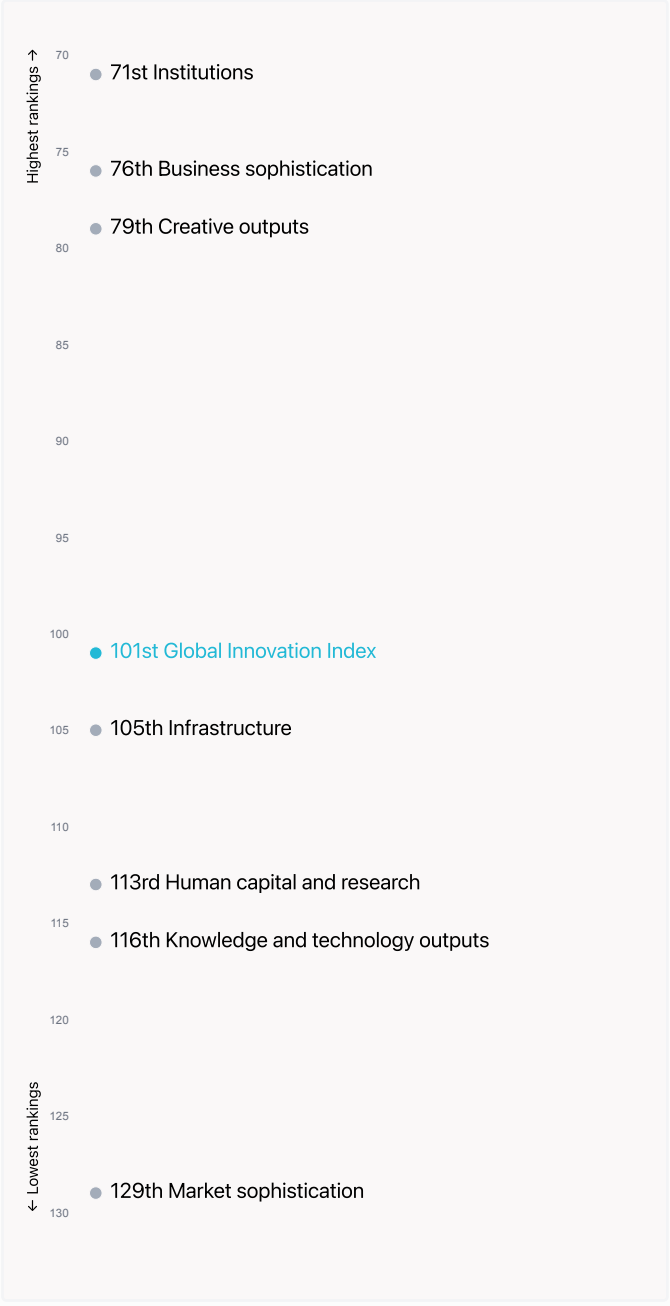
> Relationship between innovation inputs and outputs

Global Innovation Index 2024



Overview of Ghana's rankings in the seven areas of the GII in 2024

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



Highest rankings

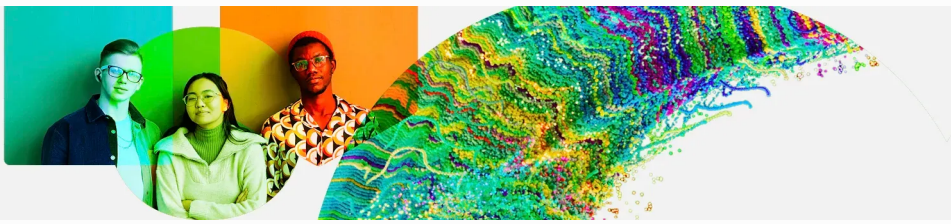
Ghana ranks highest in Institutions (71st), Business sophistication (76th) and Creative outputs (79th).

Lowest rankings

Ghana ranks lowest in Market sophistication (129th), Knowledge and technology outputs (116th) and Human capital and research (113rd).

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

Global Innovation Index 2024



Benchmark of Ghana against other economy groupings for each of the seven areas of the GII Index

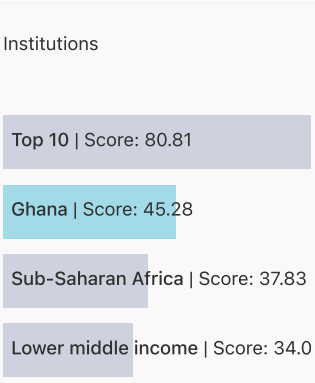
The charts shows the relative position of Ghana (blue bar) against other economy groupings (grey bars), for each of the seven areas of the GII Index.

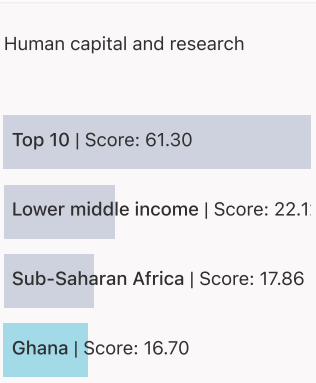
Lower-Middle-Income economies

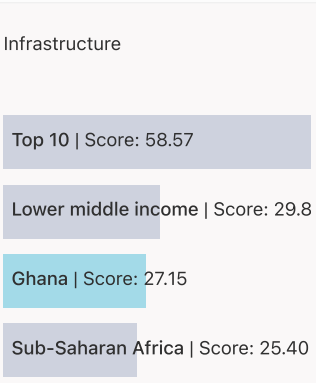
Ghana performs above the lower-middle-income group average in Institutions, Business sophistication, Creative outputs.

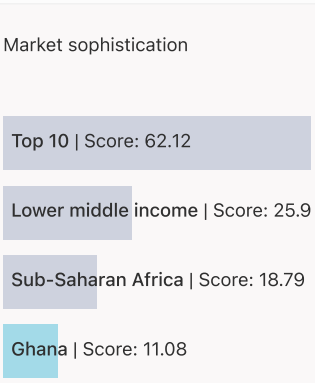
Sub-Saharan Africa

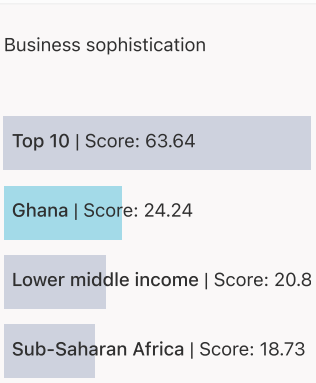
Ghana performs above the regional average in Institutions, Infrastructure, Business sophistication, Creative outputs.

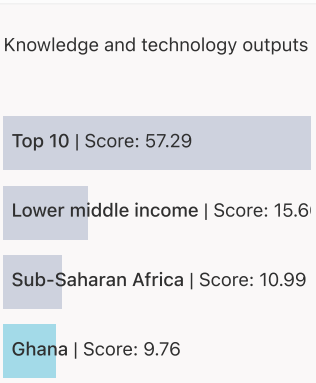


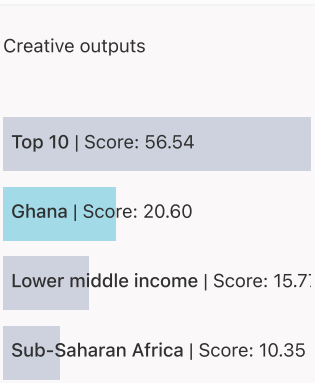




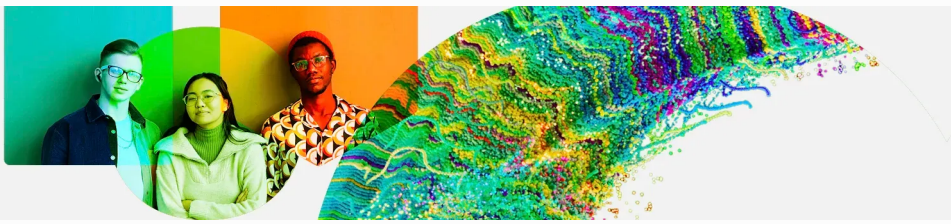








Global Innovation Index 2024



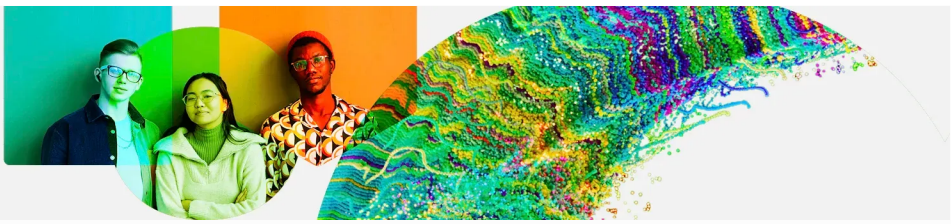
Innovation strengths and weaknesses in Ghana

The table below gives an overview of the indicator strengths and weaknesses of Ghana in the GII 2024.

Ghana's main innovation strengths are **Cultural and creative services exports, % total trade** (rank 10), **Firms offering formal training, %** (rank 20) and **GDP/unit of energy use** (rank 24).

Strengths			Weaknesses		
Rank	**Code**	**Indicator name**	**Rank**	**Code**	**Indicator name**
10	7.2.1	Cultural and creative services exports, % total trade	130	6.2.3	Software spending, % GDP
20	5.1.2	Firms offering formal training, %	127	4.1.2	Domestic credit to private sector, % GDP
24	3.3.1	GDP/unit of energy use	125	7.1.2	Trademarks by origin/bn PPP$ GDP
28	7.1.4	Industrial designs by origin/bn PPP$ GDP	123	6.1.1	Patents by origin/bn PPP$ GDP
41	5.3.1	Intellectual property payments, % total trade	115	6.3.2	Production and export complexity
47	4.2.3	VC recipients, deals/bn PPP$ GDP	102	5.2.5	Patent families/bn PPP$ GDP
52	5.2.3	State of cluster development†	77	7.1.1	Intangible asset intensity, top 15, %
53	6.3.1	Intellectual property receipts, % total trade	75	2.3.4	QS university ranking, top 3*
58	5.3.4	FDI net inflows, % GDP	49	6.2.2	Unicorn valuation, % GDP
58	6.2.1	Labor productivity growth, %	41	2.3.3	Global corporate R&D investors, top 3, mn USD

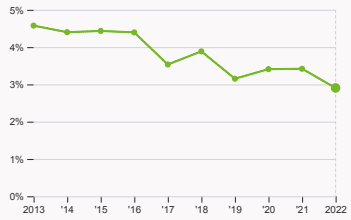
Global Innovation Index 2024



Ghana's innovation system

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

Innovation inputs in Ghana

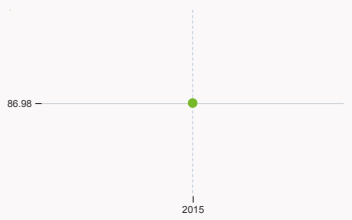


2.1.1 **Expenditure on education**

was equal to 2.9 % GDP in 2022, down by 0.51 percentage points from the year prior – and equivalent to an indicator rank of 104.

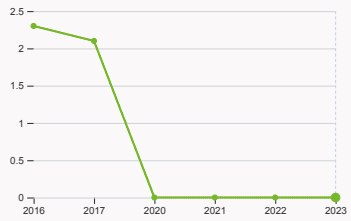
2.2.2 **Graduates in science and engineering**

was equal to 14.28 % of total graduates in 2022, down by 2.45 percentage points from the year prior – and equivalent to an indicator rank of 104.



2.3.1 **Researchers**

was equal to 86.98 FTE per million population in 2015 – and equivalent to an indicator rank of 95.

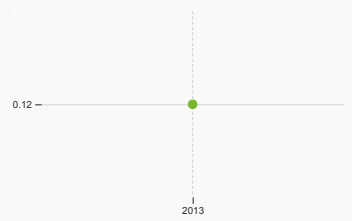


2.3.4 **QS university ranking**

was equal to an average score of 0 for the top three universities in 2023 with no change from the year prior – and equivalent to an indicator rank of 75.

4.2.4 **VC received, value**

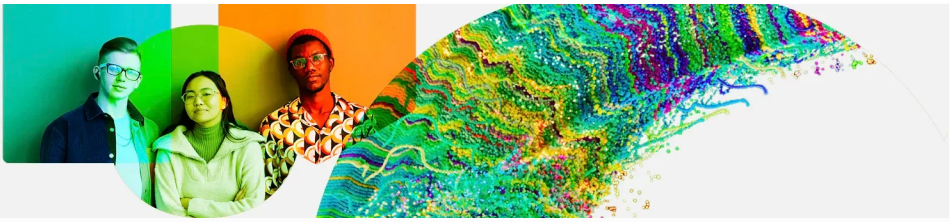
was equal to 35.93 thousand USD in 2023, down by 67.59% from the year prior – and equivalent to an indicator rank of 57.

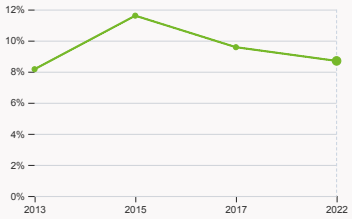


4.3.2 **Domestic industry diversification**

was equal to an index score of 0.12 in 2013 – and equivalent to an indicator rank of NA.

Global Innovation Index 2024

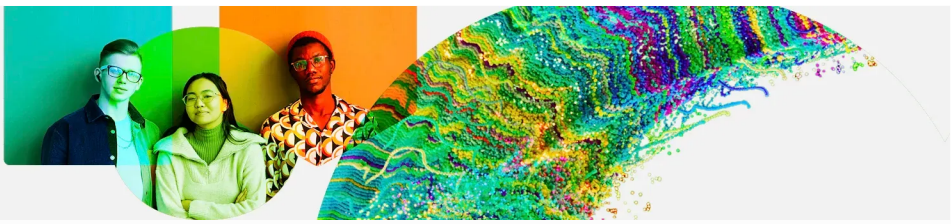




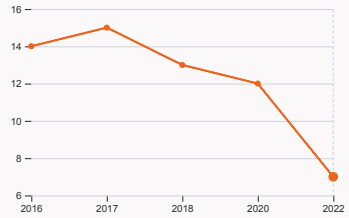
5.1.1 **Knowledge-intensive employment**

was equal to 8.69 % in 2022, down by 0.88 percentage points from the year prior – and equivalent to an indicator rank of 112.

Global Innovation Index 2024

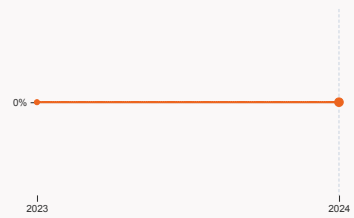


Innovation outputs in Ghana



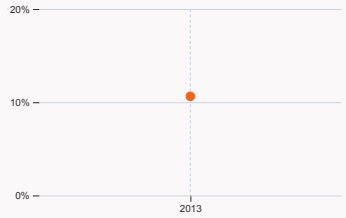
6.1.1 Patents by origin

was equal to 7 patents in 2022, down by 41.67% from the year prior – and equivalent to an indicator rank of 123.



6.2.2 Unicorn valuation

was equal to 0 % GDP in 2024 with no change from the year prior – and equivalent to an indicator rank of 49.



6.2.4 High-tech manufacturing

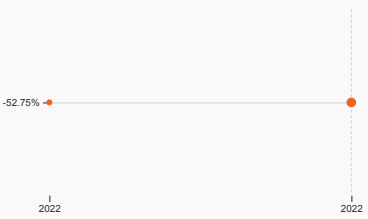
was equal to 10.63 % of total manufacturing output in 2013 – and equivalent to an indicator rank of NA.

6.3.2 Production and export complexity

was equal to a score of -1.18 in 2021, down by 31.11% from the year prior – and equivalent to an indicator rank of 115.

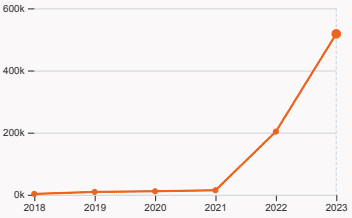
6.3.3 High-tech exports

was equal to 29.85 million USD in 2022, up by 18.26% from the year prior – and equivalent to an indicator rank of 117.



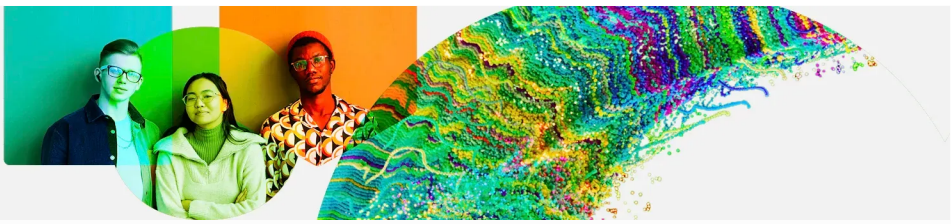
7.1.1 Intangible asset intensity

was equal to -52.75 % for the top 15 companies in 2022 with no change from the year prior – and equivalent to an indicator rank of 77.



7.3.3 Mobile app creation

was equal to 517.95 thousand global downloads of mobile apps in 2023, up by 154.77% from the year prior – and equivalent to an indicator rank of 118.



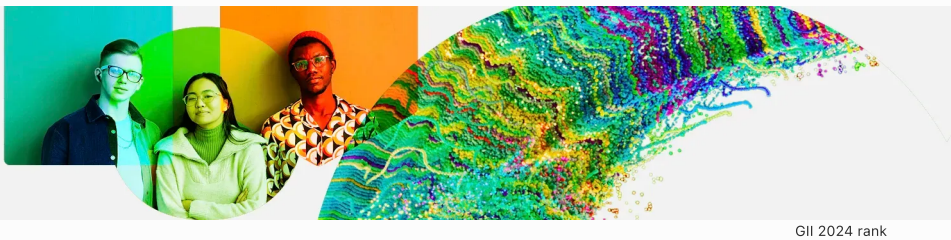
Ghana's innovation top performers

7.1.1 Top 15 intangible-asset intensive companies in Ghana

Rank	Firm	Intensity, %
1	DIGICUT PRODUCTION & ADVERTISING PLC	64.25
2	HORDS PLC	63.29
3	SAMBA FOODS LIMITED	12.91

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

Global Innovation Index 2024



Ghana

GII 2024 rank **101**

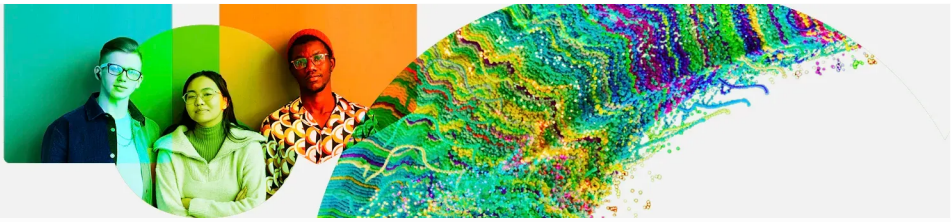
Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
94	108	Lower middle	SSA	33.8	227.2	6,905

	Score / Value	Rank	
Institutions	**45.3**	**71**	
1.1 Institutional environment	**44.8**	**87**	
1.1.1 Operational stability for businesses*	47.3	98	
1.1.2 Government effectiveness*	42.3	74	◆
1.2 Regulatory environment	**39.4**	**73**	◆
1.2.1 Regulatory quality*	37.1	83	◆
1.2.2 Rule of law*	41.6	65	◆
1.3 Business environment	**51.6**	**[54]**	
1.3.1 Policy stability for doing business†	51.6	58	
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	
Human capital and research	**16.7**	**113**	
2.1 Education	**39.8**	**97**	
2.1.1 Expenditure on education, % GDP	2.9	104	
2.1.2 Government funding/pupil, secondary, % GDP/cap	19.5	54	
2.1.3 School life expectancy, years	11.4	98	
2.1.4 PISA scales in reading, maths and science	n/a	n/a	
2.1.5 Pupil–teacher ratio, secondary	16.1	84	
2.2 Tertiary education	**10.1**	**112**	
2.2.1 Tertiary enrolment, % gross	20.4	102	
2.2.2 Graduates in science and engineering, %	14.3	104	◇
2.2.3 Tertiary inbound mobility, %	0.9	91	
2.3 Research and development (R&D)	**0.2**	**114**	
2.3.1 Researchers, FTE/mn pop.	87	95	
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	41	○ ◇
2.3.4 QS university ranking, top 3*	0	75	○ ◇
Infrastructure	**27.2**	**105**	
3.1 Information and communication technologies (ICTs)	**51.4**	**100**	
3.1.1 ICT access*	53.7	106	
3.1.2 ICT use*	59.1	99	
3.1.3 Government's online service*	48.7	94	
3.1.4 E-participation*	44.2	83	
3.2 General infrastructure	**9.6**	**125**	○
3.2.1 Electricity output, GWh/mn pop.	671.6	104	
3.2.2 Logistics performance*	18.2	89	
3.2.3 Gross capital formation, % GDP	16.6	118	◇
3.3 Ecological sustainability	**20.4**	**66**	
3.3.1 GDP/unit of energy use	15.8	24	● ◆
3.3.2 Low-carbon energy use, %	18.7	60	
3.3.3 ISO 14001 environment/bn PPP$ GDP	0.6	90	
Market sophistication	**11.1**	**129**	○ ◇
4.1 Credit	**1.5**	**133**	○ ◇
4.1.1 Finance for startups and scaleups†	n/a	n/a	
4.1.2 Domestic credit to private sector, % GDP	12.3	127	○
4.1.3 Loans from microfinance institutions, % GDP	0.1	54	
4.2 Investment	**8.3**	**67**	
4.2.1 Market capitalization, % GDP	11.7	72	
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.05	65	
4.2.3 VC recipients, deals/bn PPP$ GDP	0.06	47	● ◆
4.2.4 VC received, value, % GDP	0.0008	57	
4.3 Trade, diversification and market scale	**23.5**	**121**	◇
4.3.1 Applied tariff rate, weighted avg., %	7.3	114	
4.3.2 Domestic industry diversification	n/a	n/a	
4.3.3 Domestic market scale, bn PPP$	227.2	69	

	Score / Value	Rank	
Business sophistication	**24.2**	**76**	
5.1 Knowledge workers	**28.6**	**[76]**	
5.1.1 Knowledge-intensive employment, %	8.7	112	
5.1.2 Firms offering formal training, %	49.8	20	● ◆
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, %	3.3	101	
5.2 Innovation linkages	**24**	**62**	
5.2.1 Public Research-Industry co-publications, %	1.3	73	
5.2.2 University-industry R&D collaboration†	47.2	59	
5.2.3 State of cluster development†	54.3	52	● ◆
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.01	79	
5.2.5 Patent families/bn PPP$ GDP	0	102	○ ◇
5.3 Knowledge absorption	**20.1**	**95**	
5.3.1 Intellectual property payments, % total trade	0.9	41	● ◆
5.3.2 High-tech imports, % total trade	4	123	
5.3.3 ICT services imports, % total trade	0.7	102	
5.3.4 FDI net inflows, % GDP	2.7	58	● ◆
5.3.5 Research talent, % in businesses	n/a	n/a	
Knowledge and technology outputs	**9.8**	**116**	
6.1 Knowledge creation	**6.7**	**102**	
6.1.1 Patents by origin/bn PPP$ GDP	0.03	123	○
6.1.2 PCT patents by origin/bn PPP$ GDP	0.009	93	
6.1.3 Utility models by origin/bn PPP$ GDP	0.01	70	
6.1.4 Scientific and technical articles/bn PPP$ GDP	11.3	64	
6.1.5 Citable documents H-index	9.3	83	
6.2 Knowledge impact	**17.3**	**115**	
6.2.1 Labor productivity growth, %	0.9	58	● ◆
6.2.2 Unicorn valuation, % GDP	0	49	○ ◇
6.2.3 Software spending, % GDP	0.01	130	○ ◇
6.2.4 High-tech manufacturing, %	n/a	n/a	
6.3 Knowledge diffusion	**5.2**	**118**	
6.3.1 Intellectual property receipts, % total trade	0.1	53	● ◆
6.3.2 Production and export complexity	13.4	115	○ ◇
6.3.3 High-tech exports, % total trade	0.1	117	
6.3.4 ICT services exports, % total trade	0.8	88	
6.3.5 ISO 9001 quality/bn PPP$ GDP	0.9	115	
Creative outputs	**20.6**	**79**	
7.1 Intangible assets	**17.4**	**83**	
7.1.1 Intangible asset intensity, top 15, %	-52.8	77	○ ◇
7.1.2 Trademarks by origin/bn PPP$ GDP	3.1	125	○
7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a	
7.1.4 Industrial designs by origin/bn PPP$ GDP	3	28	● ◆
7.2 Creative goods and services	**32.5**	**[26]**	
7.2.1 Cultural and creative services exports, % total trade	2.3	10	● ◆
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 Creative goods exports, % total trade	0.03	116	
7.3 Online creativity	**15.1**	**116**	
7.3.1 Top-level domains (TLDs)/th pop. 15–69	0.2	118	
7.3.2 GitHub commits/mn pop. 15–69	4.7	78	
7.3.3 Mobile app creation/bn PPP$ GDP	40.3	118	◇

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question, 🕒 that the economy's data is outdated. Square brackets [ ] indicate the the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level; n/a represents missing values; a dash - indicates an indicator which is not relevant to this economy and thus not considered for DMC thresholds.

Global Innovation Index 2024



Data availability

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

Ghana has missing data for twelve indicators and outdated data for seven indicators.

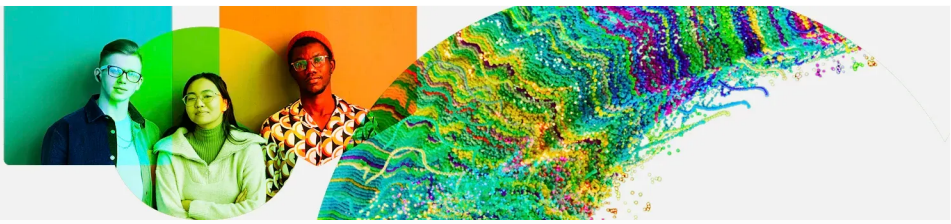
Missing data for Ghana

Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture†	n/a	2023	Global Entrepreneurship Monitor
2.1.4	PISA scales in reading, maths and science	n/a	2022	OECD, PISA
2.3.2	Gross expenditure on R&D, % GDP	n/a	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
4.1.1	Finance for startups and scaleups†	n/a	2023	Global Entrepreneurship Monitor
4.3.2	Domestic industry diversification	n/a	2021	United Nations Industrial Development Organization (UNIDO), Industrial Statistics Database (INDSTAT) Rev.3 and 4
5.1.3	GERD performed by business, % GDP	n/a	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.4	GERD financed by business, %	n/a	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.3.5	Research talent, % in businesses	n/a	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
6.2.4	High-tech manufacturing, %	n/a	2021	United Nations Industrial Development Organization
7.1.3	Global brand value, top 5,000, % GDP	n/a	2024	Brand Finance; International Monetary Fund
7.2.2	National feature films/mn pop. 15–69	n/a	2022	OMDIA; United Nations, World Population Prospects
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2023	PwC, GEMO; United Nations, World Population Prospects; International Monetary Fund

Outdated data for Ghana

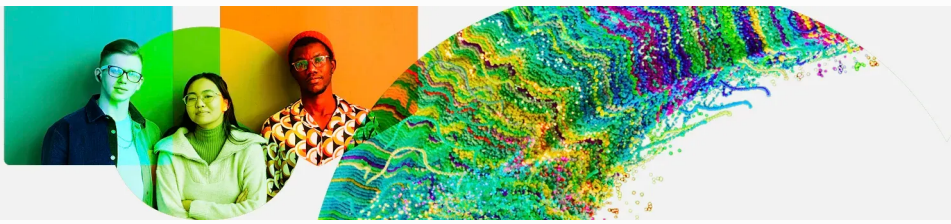
Code	Indicator name	Economy Year	Model Year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	2014	2020	UNESCO Institute for Statistics
2.1.5	Pupil–teacher ratio, secondary	2021	2022	UNESCO Institute for Statistics

Global Innovation Index 2024



Code	Indicator name	Economy Year	Model Year	Source
2.3.1	Researchers, FTE/mn pop.	2015	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
3.2.1	Electricity output, GWh/mn pop.	2021	2022	International Energy Agency
5.1.5	Females employed w/advanced degrees, %	2022	2023	International Labour Organization
6.1.3	Utility models by origin/bn PPP$ GDP	2018	2022	World Intellectual Property Organization; International Monetary Fund
7.1.1	Intangible asset intensity, top 15, %	2022	2023	Brand Finance

Global Innovation Index 2024



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, 2024.

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.