

Global Innovation Index 2023

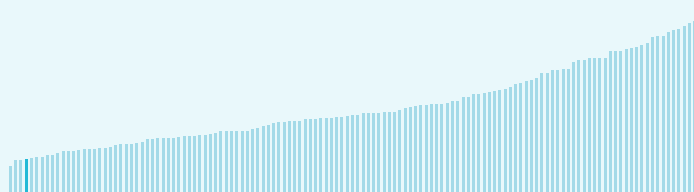


The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities.**

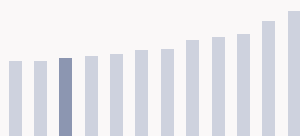
Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation.**

Mali ranking in the Global Innovation Index 2023

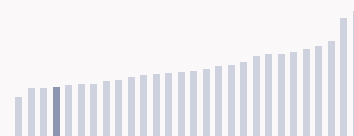
> Mali ranks **129th** among the 132 economies featured in the GII 2023.



> Mali ranks **10th** among the 12 low-income group economies.



> Mali ranks **25th** among the 28 economies in Sub-Saharan Africa.



> Mali GII Ranking (2020-2023)

The table shows the rankings of Mali 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 Mali in the GII 2023 is between ranks 125 and 129.

	GII Position	Innovation Inputs	Innovation Outputs
2020	123rd	126th	116th
2021	124th	126th	114th
2022	126th	128th	121st
2023	129th	129th	126th

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

This year Mali ranks **129th** in innovation inputs. This position is lower than last year.

Mali ranks **126th** in innovation outputs. This position is lower than last year.

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→ Expected vs. observed innovation performance

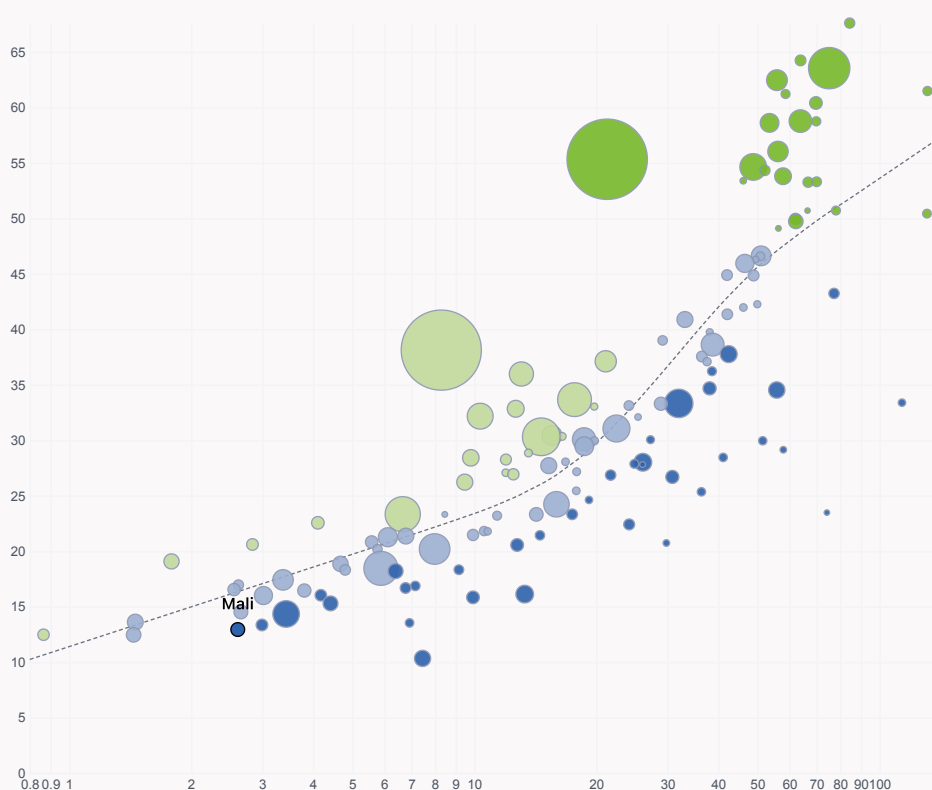
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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



> Relative to GDP, Mali'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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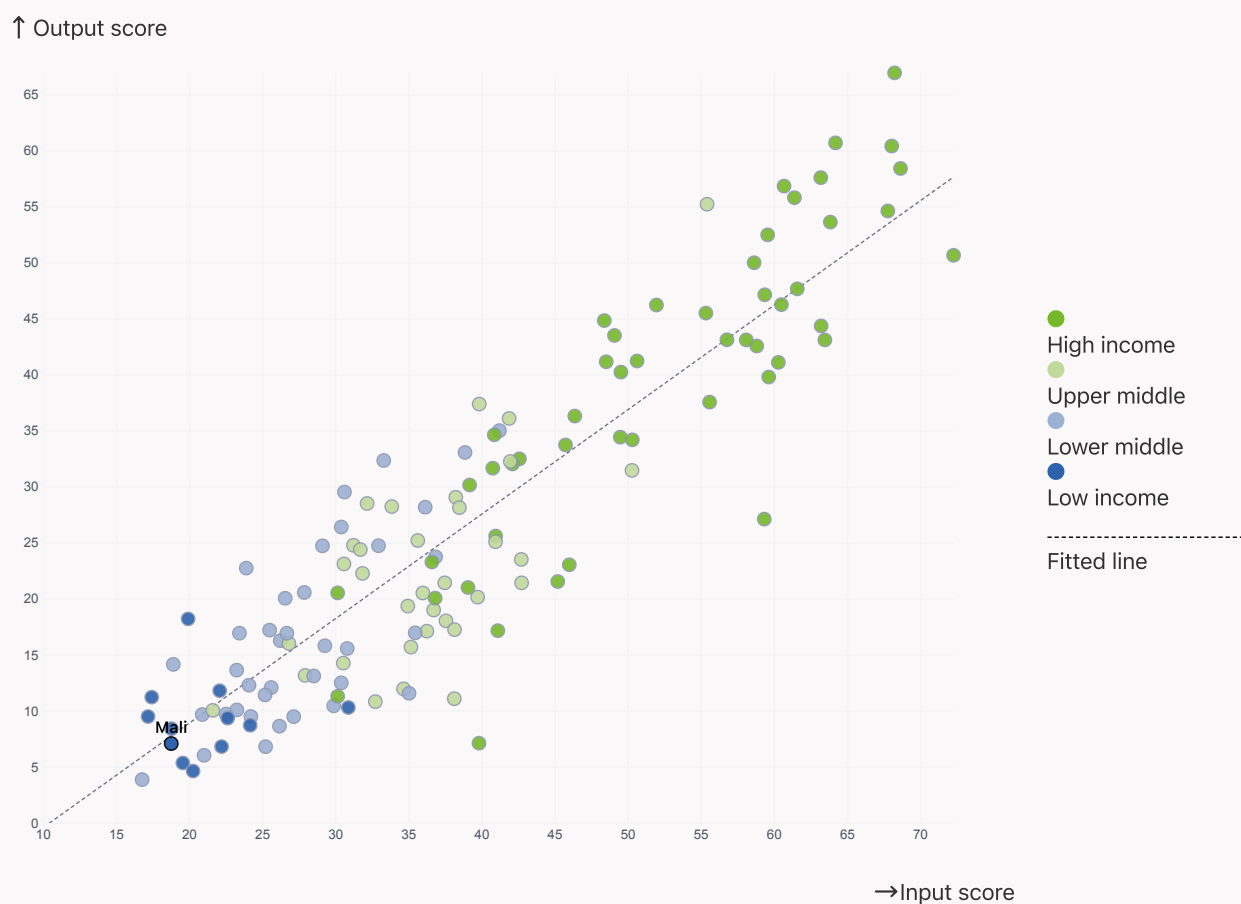
→ Effectively translating innovation investments into innovation outputs

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.



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

> Relationship between innovation inputs and outputs



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

Highest rankings →

- 115th Business sophistication
- 117th Institutions
- 120th Knowledge and technology outputs
- 121st Human capital and research

- 126th Market sophistication

← Lowest rankings

- 128th 2 pillars *
- 129th Global Innovation Index

* Infrastructure, Creative outputs

> Highest rankings



Mali ranks highest in Business sophistication (115th), Institutions (117th), Knowledge and technology outputs (120th), Human capital and research (121st), Market sophistication (126th) and Infrastructure, Creative outputs (128th).

> Lowest rankings



Mali ranks lowest in Infrastructure, Creative outputs (128th), Market sophistication (126th) and Human capital and research (121st).



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

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

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

> Low-Income economies

Mali performs below the low-income group average in Knowledge and technology outputs, Creative outputs, Market sophistication, Human capital and research, Infrastructure, Institutions.



> Sub-Saharan Africa

Mali performs below the regional average in all the pillars.



Knowledge and technology outputs

Top 10 | Score: 58.96

Sub-Saharan Africa | Score: 12.16

Low income | Score: 11.03

Mali | Score: 10.83

Creative outputs

Top 10 | 56.09

Sub-Saharan Africa | 10.36

Low income | 7.48

Mali | 3.29

Business sophistication

Top 10 | 64.39

Sub-Saharan Africa | 19.85

Mali | 18.21

Low income | 16.81

Market sophistication

Top 10 | 61.93

Sub-Saharan Africa | 20.00

Low income | 15.67

Mali | 12.74

Human capital and research

Top 10 | 60.28

Sub-Saharan Africa | 17.80

Low income | 15.55

Mali | 13.69

Infrastructure

Top 10 | 62.83

Sub-Saharan Africa | 23.36

Low income | 19.43

Mali | 16.79

Institutions

Top 10 | 79.85

Sub-Saharan Africa | 43.27

Low income | 38.42

Mali | 32.51

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→ Innovation strengths and weaknesses in Mali

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



> Mali's main innovation strengths are **Government funding/pupil, secondary, % GDP/cap** (rank 15), **Loans from microfinance institutions, % GDP** (rank 20) and **GERD financed by abroad, % GDP** (rank 29).

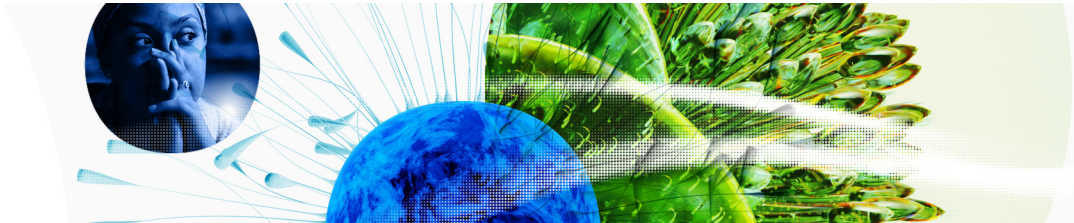
Strengths

Rank	Code	Indicator name
15	2.1.2	Government funding/pupil, secondary, % GDP/cap
20	4.1.3	Loans from microfinance institutions, % GDP
29	5.2.3	GERD financed by abroad, % GDP
34	5.3.4	FDI net inflows, % GDP
42	6.3.4	ICT services exports, % total trade
49	5.3.3	ICT services imports, % total trade
50	1.2.3	Cost of redundancy dismissal
54	7.3.2	Country-code TLDs/th pop. 15-69
58	2.1.1	Expenditure on education, % GDP
59	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP

Weaknesses

Rank	Code	Indicator name
131	1.1.1	Operational stability for businesses
126	2.2.1	Tertiary enrolment, % gross
118	5.3.1	Intellectual property payments, % total trade
114	6.3.1	Intellectual property receipts, % total trade
101	6.1.2	PCT patents by origin/bn PPP\$ GDP
95	5.2.5	Patent families/bn PPP\$ GDP
74	7.1.3	Global brand value, top 5,000
71	2.3.4	QS university ranking, top 3
48	6.2.2	Unicorn valuation, % GDP
40	2.3.3	Global corporate R&D investors, top 3, mn US\$

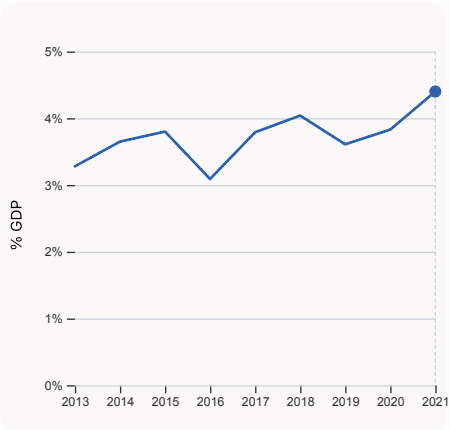
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→ Mali's innovation system

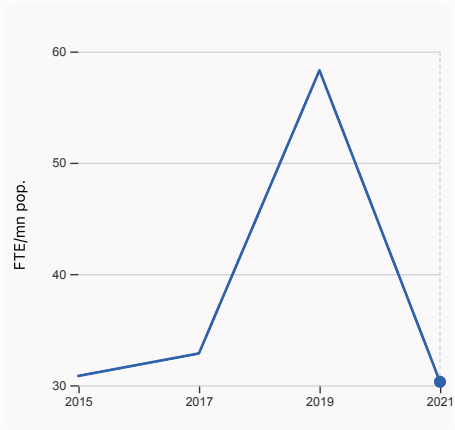
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Mali



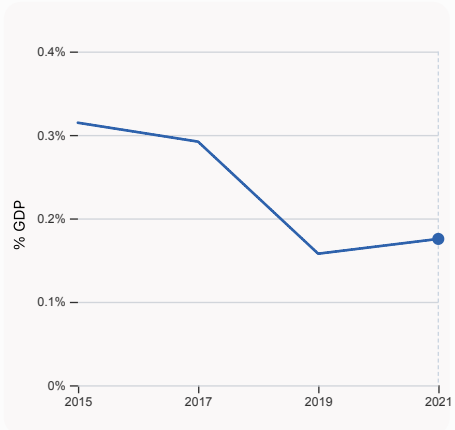
2.1.1 Expenditure on education, % GDP

was equal to 4.4% GDP in 2021, up by 0.57 percentage points from the year prior – and equivalent to an indicator rank of 58.



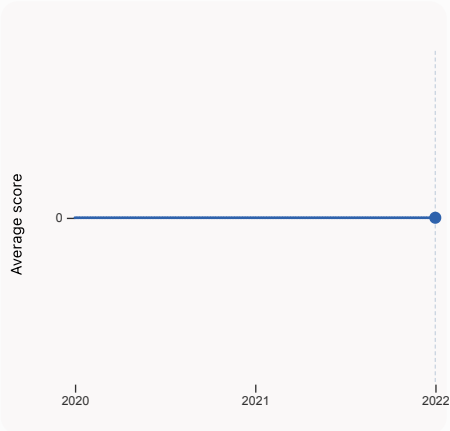
2.3.1 Researchers, FTE/mn pop.

was equal to 30.31 FTE/mn pop. in 2021, down by 48.019% from the year prior – and equivalent to an indicator rank of 100.



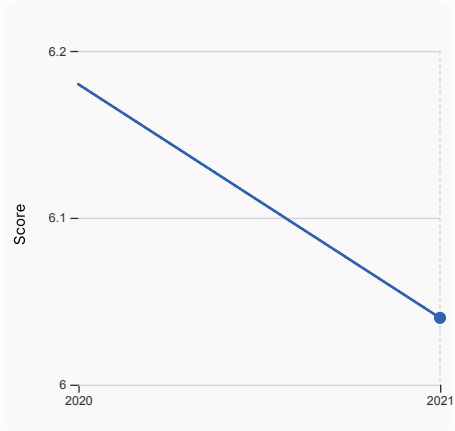
2.3.2 Gross expenditure on R&D, % GDP

was equal to 0.175% GDP in 2021, up by 0.018 percentage points from the year prior – and equivalent to an indicator rank of 91.



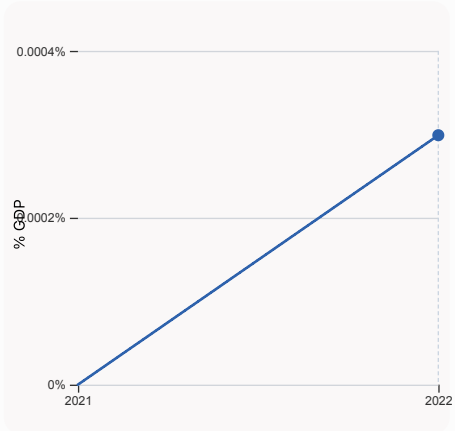
2.3.4 QS university ranking, top 3

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

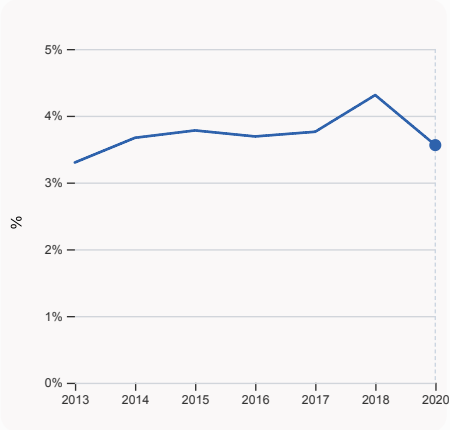
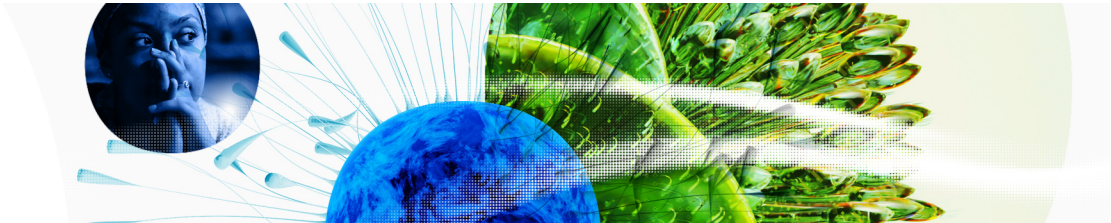
was equal to a score of 6.04 in 2021, down by 2.27% from the year prior – and equivalent to an indicator rank of 118.



4.2.4 VC received, value, % GDP

was equal to 0.0003 % GDP in 2022, equivalent to an indicator rank of 76.

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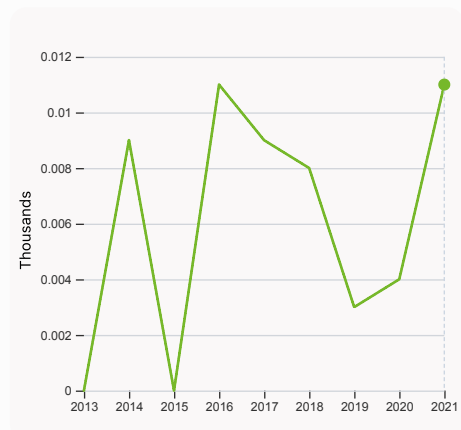
5.1.1 Knowledge-intensive employment, %

was equal to 3.56% in 2020, down by 0.75 percentage points from the year prior – and equivalent to an indicator rank of 124.

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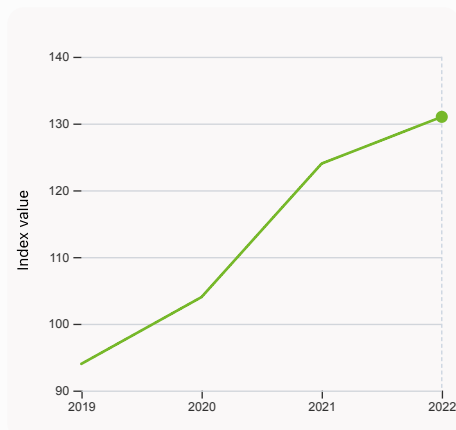


> Innovation outputs in Mali



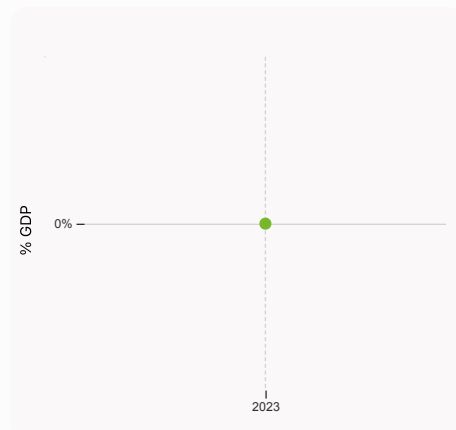
6.1.1 Patents by origin

was equal to 0.011 Thousands in 2021, up by 175% from the year prior – and equivalent to an indicator rank of 97.



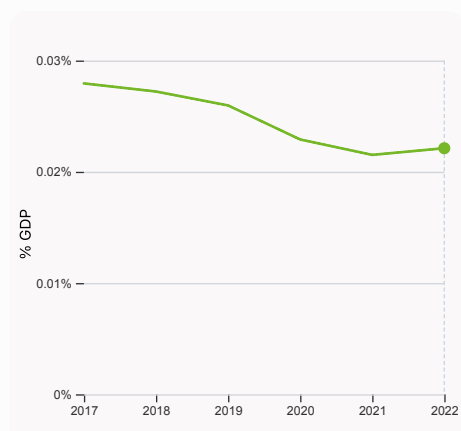
6.1.5 Citable documents H-index

was equal to an index value of 131 in 2022, up by 5.65% from the year prior – and equivalent to an indicator rank of 104.



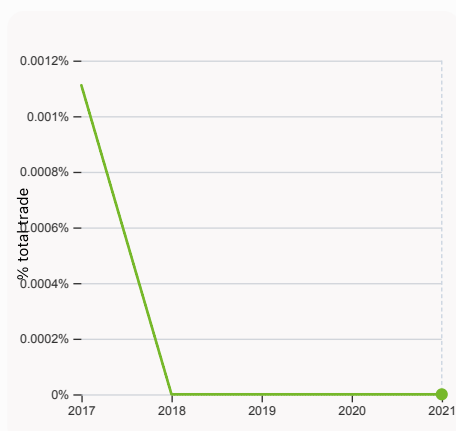
6.2.2 Unicorn valuation, % GDP

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



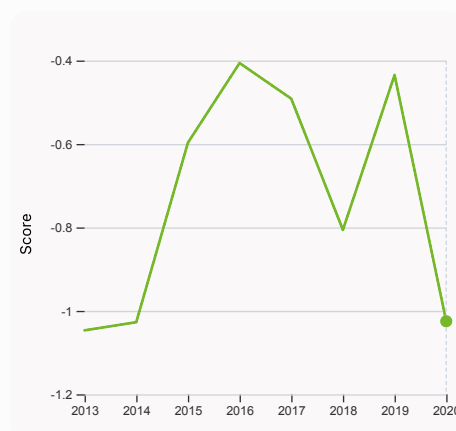
6.2.3 Software spending, % GDP

was equal to 0.022% GDP in 2022, up by 0.0006 percentage points from the year prior – and equivalent to an indicator rank of 120.



6.3.1 Intellectual property receipts, % total trade

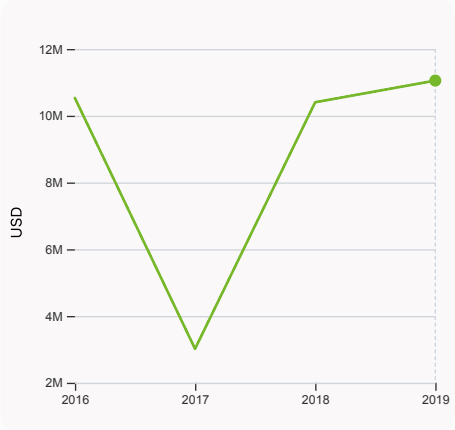
was equal to 0% total trade in 2021 – and equivalent to an indicator rank of 114.



6.3.2 Production and export complexity

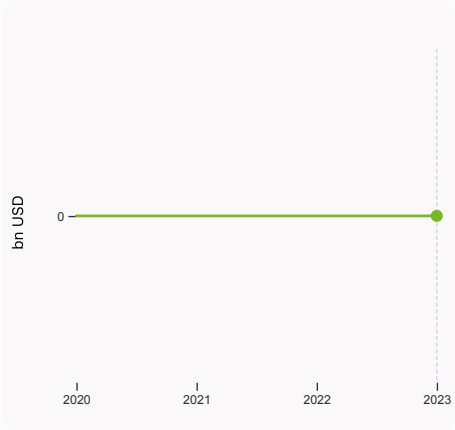
was equal to a score of -1.025 in 2020, down by 135.77% from the year prior – and equivalent to an indicator rank of 112.

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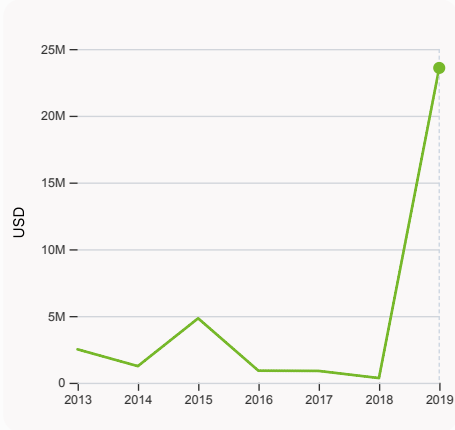
6.3.3 High-tech exports

was equal to 11,053,667 USD in 2019, up by 6.24% from the year prior – and equivalent to an indicator rank of 106.



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 23,583,000 USD in 2019, up by 6599.72% from the year prior – and equivalent to an indicator rank of 56.

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GII 2023 rank

Mali

129

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
126	129	Low	SSA	22.6	56.1	2,608.8
Score / Value Rank				Score / Value Rank		
Institutions				Business sophistication		
32.5 117				18.2 115		
1.1 Institutional environment				5.1 Knowledge workers		
4.3 131 ◇				4.6 131 ◇		
1.1.1 Operational stability for businesses*				5.1.1 Knowledge-intensive employment, %		
5.6 131 ○ ◇				3.6 124		
1.1.2 Government effectiveness*				5.1.2 Firms offering formal training, %		
3.0 129 ◇				17.7 86 ◇		
1.2 Regulatory environment				5.1.3 GERD performed by business, % GDP		
54.2 89				n/a n/a		
1.2.1 Regulatory quality*				5.1.4 GERD financed by business, %		
26.0 107				0.8 93		
1.2.2 Rule of law*				5.1.5 Females employed w/advanced degrees, %		
13.3 117				0.5 125		
1.2.3 Cost of redundancy dismissal				5.2 Innovation linkages		
13.7 50 ●				18.8 85		
1.3 Business environment				5.2.1 University-industry R&D collaboration†		
39.0 90				32.3 92		
1.3.1 Policies for doing business†				5.2.2 State of cluster development†		
39.0 88				30.2 93		
1.3.2 Entrepreneurship policies and culture†				5.2.3 GERD financed by abroad, % GDP		
n/a n/a				0.1 29 ●		
Human capital and research				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		
13.7 121				0.0 59 ●		
2.1 Education				5.2.5 Patent families/bn PPP\$ GDP		
39.1 102				0.0 95 ○ ◇		
2.1.1 Expenditure on education, % GDP				5.3 Knowledge absorption		
4.4 58 ●				31.2 74		
2.1.2 Government funding/pupil, secondary, % GDP/cap				5.3.1 Intellectual property payments, % total trade		
26.5 15 ●				0.0 118 ○ ◇		
2.1.3 School life expectancy, years				5.3.2 High-tech imports, % total trade		
7.5 112 ◇				7.2 85		
2.1.4 PISA scales in reading, maths and science				5.3.3 ICT services imports, % total trade		
n/a n/a				1.7 49 ●		
2.1.5 Pupil-teacher ratio, secondary				5.3.4 FDI net inflows, % GDP		
18.5 94				3.8 34 ●		
2.2 Tertiary education				5.3.5 Research talent, % in businesses		
1.2 128				31.4 41		
2.2.1 Tertiary enrolment, % gross				Knowledge and technology outputs		
4.9 126 ○				10.8 120		
2.2.2 Graduates in science and engineering, %				6.1 Knowledge creation		
n/a n/a				4.3 117		
2.2.3 Tertiary inbound mobility, %				6.1.1 Patents by origin/bn PPP\$ GDP		
0.9 93 ◇				0.2 97		
2.3 Research and development (R&D)				6.1.2 PCT patents by origin/bn PPP\$ GDP		
0.8 103				0.0 101 ○ ◇		
2.3.1 Researchers, FTE/mn pop.				6.1.3 Utility models by origin/bn PPP\$ GDP		
30.3 100				n/a n/a		
2.3.2 Gross expenditure on R&D, % GDP				6.1.4 Scientific and technical articles/bn PPP\$ GDP		
0.2 91				n/a n/a		
2.3.3 Global corporate R&D investors, top 3, mn US\$				6.1.5 Citable documents H-index		
0.0 40 ○ ◇				4.9 104		
2.3.4 QS university ranking, top 3*				6.2 Knowledge impact		
0.0 71 ○ ◇				16.1 120		
Infrastructure				6.2.1 Labor productivity growth, %		
16.8 128				0.2 90		
3.1 Information and communication technologies (ICTs)				6.2.2 Unicorn valuation, % GDP		
28.1 122				0.0 48 ○ ◇		
3.1.1 ICT access*				6.2.3 Software spending, % GDP		
40.2 118				0.0 120		
3.1.2 ICT use*				6.2.4 High-tech manufacturing, %		
16.8 128				n/a n/a		
3.1.3 Government's online service*				6.3 Knowledge diffusion		
29.8 124				12.0 98		
3.1.4 E-participation*				6.3.1 Intellectual property receipts, % total trade		
25.6 111				0.0 114 ○ ◇		
3.2 General infrastructure				6.3.2 Production and export complexity		
13.6 111				31.0 112		
3.2.1 Electricity output, GWh/mn pop.				6.3.3 High-tech exports, % total trade		
n/a n/a				0.2 106		
3.2.2 Logistics performance*				6.3.4 ICT services exports, % total trade		
22.7 82				3.0 42 ●		
3.2.3 Gross capital formation, % GDP				6.3.5 ISO 9001 quality/bn PPP\$ GDP		
14.6 121				0.5 123		
3.3 Ecological sustainability				Creative outputs		
8.7 130 ◇				3.3 128		
3.3.1 GDP/unit of energy use				7.1 Intangible assets		
n/a n/a				3.1 123		
3.3.2 Environmental performance*				7.1.1 Intangible asset intensity, top 15, %		
16.3 117 ◇				n/a n/a		
3.3.3 ISO 14001 environment/bn PPP\$ GDP				7.1.2 Trademarks by origin/bn PPP\$ GDP		
0.2 113				6.6 117		
Market sophistication				7.1.3 Global brand value, top 5,000		
12.7 126				0.0 74 ○ ◇		
4.1 Credit				7.1.4 Industrial designs by origin/bn PPP\$ GDP		
13.2 105				0.2 103		
4.1.1 Finance for startups and scaleups†				7.2 Creative goods and services		
n/a n/a				4.8 87		
4.1.2 Domestic credit to private sector, % GDP				7.2.1 Cultural and creative services exports, % total trade		
26.0 107				0.5 56		
4.1.3 Loans from microfinance institutions, % GDP				7.2.2 National feature films/mn pop. 15-69		
1.6 20 ●				n/a n/a		
4.2 Investment				7.2.3 Entertainment and media market/th pop. 15-69		
4.4 82				n/a n/a		
4.2.1 Market capitalization, % GDP				7.2.4 Creative goods exports, % total trade		
n/a n/a				0.0 118		
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP				7.3 Online creativity		
n/a n/a				2.1 125		
4.2.3 VC recipients, deals/bn PPP\$ GDP				7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		
0.0 68				0.1 122		
4.2.4 VC received, value, % GDP				7.3.2 Country-code TLDs/th pop. 15-69		
0.0 76				5.9 54 ●		
4.3 Trade, diversification, and market scale				7.3.3 GitHub commits/mn pop. 15-69		
20.7 126				0.1 129		
4.3.1 Applied tariff rate, weighted avg., %				7.3.4 Mobile app creation/bn PPP\$ GDP		
9.2 114				n/a n/a		
4.3.2 Domestic industry diversification						
n/a n/a						
4.3.3 Domestic market scale, bn PPP\$						
56.1 103						

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 Mali.



> Mali has missing data for sixteen indicators and outdated data for fifteen indicators.

> Missing data for Mali

Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture	n/a	2022	Global Entrepreneurship Monitor
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
3.2.1	Electricity output, GWh/mn pop.	n/a	2021	International Energy Agency
3.3.1	GDP/unit of energy use	n/a	2020	International Energy Agency
4.1.1	Finance for startups and scaleups	n/a	2022	Global Entrepreneurship Monitor
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
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
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2021	World Intellectual Property Organization; International Monetary Fund
6.2.4	High-tech manufacturing, %	n/a	2020	United Nations Industrial Development Organization
7.1.1	Intangible asset intensity, top 15, %	n/a	2022	Brand Finance
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
7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	2022	data.ia; International Monetary Fund

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> Outdated data for Mali

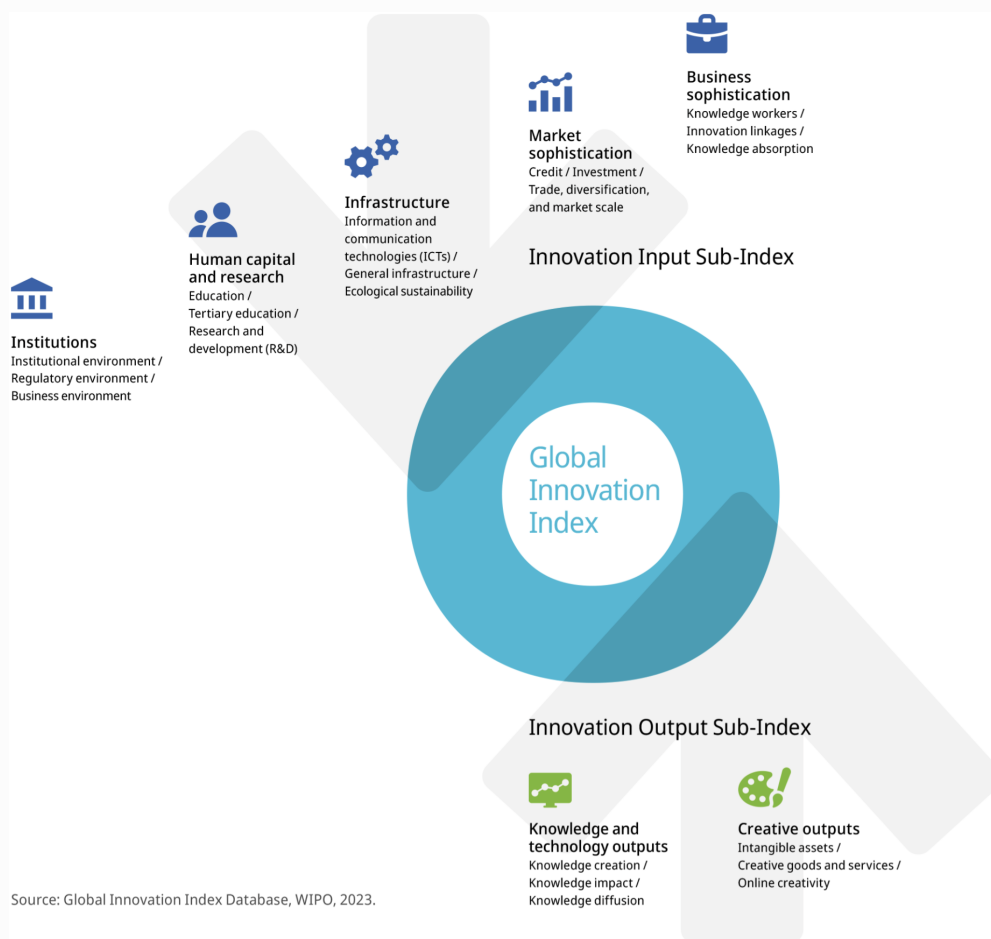
Code	Indicator name	Economy Year	Model Year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	2017	2019	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	2017	2020	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2019	2020	UNESCO Institute for Statistics
2.2.3	Tertiary inbound mobility, %	2015	2020	UNESCO Institute for Statistics
5.1.1	Knowledge-intensive employment, %	2020	2022	International Labour Organization
5.1.2	Firms offering formal training, %	2016	2019	World Bank Enterprise Surveys
5.1.4	GERD financed by business, %	2017	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.5	Females employed w/advanced degrees, %	2020	2022	International Labour Organization
5.2.3	GERD financed by abroad, % GDP	2017	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	2020	2022	Refinitiv; International Monetary Fund
5.3.2	High-tech imports, % total trade	2019	2021	United Nations Comtrade Database; World Trade Organization and United Nations Conference on Trade and Development
5.3.5	Research talent, % in businesses	2017	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
6.3.3	High-tech exports, % total trade	2019	2021	United Nations Comtrade Database; World Trade Organization and United Nations Conference on Trade and Development; Trade Data Monitor.
7.2.1	Cultural and creative services exports, % total trade	2019	2021	World Trade Organization and United Nations Conference on Trade and Development
7.2.4	Creative goods exports, % total trade	2019	2021	United Nations Comtrade Database; World Trade Organization and United Nations Conference on Trade and Development

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.