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.

<table>
<thead>
<tr>
<th>Year</th>
<th>GII Position</th>
<th>Innovation Inputs</th>
<th>Innovation Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>123rd</td>
<td>126th</td>
<td>116th</td>
</tr>
<tr>
<td>2021</td>
<td>124th</td>
<td>126th</td>
<td>114th</td>
</tr>
<tr>
<td>2022</td>
<td>126th</td>
<td>128th</td>
<td>121st</td>
</tr>
<tr>
<td>2023</td>
<td>129th</td>
<td>129th</td>
<td>126th</td>
</tr>
</tbody>
</table>

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.
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

→GDP per capita, PPP logarithmic scale (thousand(s) of $)
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
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**
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).

*Infrastructure, Creative outputs*
→ 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.

### 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
## 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).

<table>
<thead>
<tr>
<th>Rank</th>
<th>Code</th>
<th>Indicator name</th>
<th>Rank</th>
<th>Code</th>
<th>Indicator name</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>2.1.2</td>
<td>Government funding/pupil, secondary, % GDP/cap</td>
<td>131</td>
<td>1.1.1</td>
<td>Operational stability for businesses</td>
</tr>
<tr>
<td>20</td>
<td>4.1.3</td>
<td>Loans from microfinance institutions, % GDP</td>
<td>126</td>
<td>2.2.1</td>
<td>Tertiary enrolment, % gross</td>
</tr>
<tr>
<td>29</td>
<td>5.2.3</td>
<td>GERD financed by abroad, % GDP</td>
<td>118</td>
<td>5.3.1</td>
<td>Intellectual property payments, % total trade</td>
</tr>
<tr>
<td>34</td>
<td>5.3.4</td>
<td>FDI net inflows, % GDP</td>
<td>114</td>
<td>6.3.1</td>
<td>Intellectual property receipts, % total trade</td>
</tr>
<tr>
<td>42</td>
<td>6.3.4</td>
<td>ICT services exports, % total trade</td>
<td>101</td>
<td>6.1.2</td>
<td>PCT patents by origin/bn PPP$ GDP</td>
</tr>
<tr>
<td>49</td>
<td>5.3.3</td>
<td>ICT services imports, % total trade</td>
<td>95</td>
<td>5.2.5</td>
<td>Patent families/bn PPP$ GDP</td>
</tr>
<tr>
<td>50</td>
<td>1.2.3</td>
<td>Cost of redundancy dismissal</td>
<td>74</td>
<td>7.1.3</td>
<td>Global brand value, top 5,000</td>
</tr>
<tr>
<td>54</td>
<td>7.3.2</td>
<td>Country-code TLDs/th pop. 15-69</td>
<td>71</td>
<td>2.3.4</td>
<td>QS university ranking, top 3</td>
</tr>
<tr>
<td>58</td>
<td>2.1.1</td>
<td>Expenditure on education, % GDP</td>
<td>48</td>
<td>6.2.2</td>
<td>Unicorn valuation, % GDP</td>
</tr>
<tr>
<td>59</td>
<td>5.2.4</td>
<td>Joint venture/strategic alliance deals/bn PPP$ GDP</td>
<td>40</td>
<td>2.3.3</td>
<td>Global corporate R&amp;D investors, top 3, mn US$</td>
</tr>
</tbody>
</table>
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.

2.1.2 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.

2.1.3 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.
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.
> 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.
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.
## Global Innovation Index 2023

**Mali**

### Output rank

<table>
<thead>
<tr>
<th>Rank</th>
<th>Input rank</th>
<th>Income Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>126</td>
<td>129</td>
<td>SSA Low</td>
</tr>
</tbody>
</table>

### Population (mn)

<table>
<thead>
<tr>
<th>Rank</th>
<th>GDP, PPP$ (bn)</th>
<th>GDP per capita, PPP$</th>
</tr>
</thead>
<tbody>
<tr>
<td>226</td>
<td>56.1</td>
<td>2,608.8</td>
</tr>
</tbody>
</table>

### Business sophistication

<table>
<thead>
<tr>
<th>Rank</th>
<th>Score / Value Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.2</td>
<td>115</td>
</tr>
</tbody>
</table>

#### Key indicators

- **Knowledge workers:** 4.6 (131)
- **Knowledge-intensive employment:** 3.6 (124)
- **Firms offering formal training:** 1.7 (86)
- **GERD performed by business, % GDP:** 0.8 (93)
- **GERD financed by business, %:** 0.5 (125)
- **State of cluster development:** 18.8 (85)
- **University-industry R&D collaboration:** 32.3 (92)
- **Joint venture/strategic alliance deals/bn PPP$ GDP:** 0.0 (99)
- **Patent families/bn PPP$ GDP:** 0.0 (99)
- **Knowledge absorption:** 31.2 (74)
- **Intellectual property payments, % total trade:** 0.0 (118)
- **High-tech imports, % total trade:** 7.2 (85)
- **ICT services imports, % total trade:** 1.7 (49)
- **FDI net inflows, % GDP:** 3.8 (34)
- **Research talent, % in businesses:** 31.4 (41)

### Technology and knowledge outputs

<table>
<thead>
<tr>
<th>Score / Value Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.8</td>
</tr>
</tbody>
</table>

- **Knowledge creation:** 4.3 (117)
- **Patents by origin/bn PPP$ GDP:** 0.2 (97)
- **PCT patents by origin/bn PPP$ GDP:** 0.0 (121)
- **Utility models by origin/bn PPP$ GDP:** 0.0 (99)
- **Scientific and technical articles/bn PPP$ GDP:** 0.0 (99)
- **Citable documents H-index:** 4.9 (104)
- **Knowledge impact:** 16.1 (120)
- **Labor productivity growth, %:** 0.2 (90)
- **Unicorn valuation, % GDP:** 0.0 (48)
- **Software spending, % GDP:** 0.0 (120)
- **High-tech manufacturing, %:** 0.0 (99)
- **Knowledge diffusion:** 12.0 (98)
- **Intellectual property receipts, % total trade:** 0.0 (114)
- **Production and export complexity:** 31.0 (112)
- **High-tech exports, % total trade:** 0.2 (106)
- **ICT services exports, % total trade:** 3.0 (42)
- **ISD 90/01 quality/bn PPP$ GDP:** 0.5 (123)

### Creative outputs

- **Intangible assets:** 3.1 (123)
- **Intangible asset intensity, top 15, %:** 6.6 (117)
- **Global brand value, top 5,000:** 0.0 (74)
- **Industrial designs by origin/bn PPP$ GDP:** 0.2 (103)
- **Creative goods and services:** 4.8 (87)
- **Cultural and creative services exports, % total trade:** 0.5 (56)
- **National feature films/mn pop. 15-69:** 0.0 (118)
- **Entertainment and media market share pop. 15-69:** 0.0 (118)
- **Creative goods exports, % total trade:** 0.0 (128)
- **Online creativity:** 2.1 (73)
- **GDP (PPP$) share quality:** 0.1 (122)
- **Country-code TLDs pop. 15-69:** 5.9 (44)
- **GitHub commits/mn pop. 15-69:** 0.1 (129)
- **Mobile app creation/bn PPP$ GDP:** 0.0 (99)

### 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.wipa.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

<table>
<thead>
<tr>
<th>Code</th>
<th>Indicator name</th>
<th>Economy Year</th>
<th>Model Year</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3.2</td>
<td>Entrepreneurship policies and culture</td>
<td>n/a</td>
<td>2022</td>
<td>Global Entrepreneurship Monitor</td>
</tr>
<tr>
<td>2.1.4</td>
<td>PISA scales in reading, maths and science</td>
<td>n/a</td>
<td>2018</td>
<td>OECD, PISA</td>
</tr>
<tr>
<td>2.2.2</td>
<td>Graduates in science and engineering, %</td>
<td>n/a</td>
<td>2020</td>
<td>UNESCO Institute for Statistics; Eurostat; OECD</td>
</tr>
<tr>
<td>3.2.1</td>
<td>Electricity output, GWh/mn pop.</td>
<td>n/a</td>
<td>2021</td>
<td>International Energy Agency</td>
</tr>
<tr>
<td>3.3.1</td>
<td>GDP/unit of energy use</td>
<td>n/a</td>
<td>2020</td>
<td>International Energy Agency</td>
</tr>
<tr>
<td>4.1.1</td>
<td>Finance for startups and scaleups</td>
<td>n/a</td>
<td>2022</td>
<td>Global Entrepreneurship Monitor</td>
</tr>
<tr>
<td>4.2.1</td>
<td>Market capitalization, % GDP</td>
<td>n/a</td>
<td>2020</td>
<td>World Federation of Exchanges; World Bank</td>
</tr>
<tr>
<td>4.2.2</td>
<td>Venture capital (VC) investors, deals/bn PPP$ GDP</td>
<td>n/a</td>
<td>2022</td>
<td>Refinitiv; International Monetary Fund</td>
</tr>
<tr>
<td>4.3.2</td>
<td>Domestic industry diversification</td>
<td>n/a</td>
<td>2020</td>
<td>United Nations Industrial Development Organization</td>
</tr>
<tr>
<td>5.1.3</td>
<td>GERD performed by business, % GDP</td>
<td>n/a</td>
<td>2021</td>
<td>UNESCO Institute for Statistics; Eurostat; OECD; RICYT</td>
</tr>
<tr>
<td>6.1.3</td>
<td>Utility models by origin/bn PPP$ GDP</td>
<td>n/a</td>
<td>2021</td>
<td>World Intellectual Property Organization; International Monetary Fund</td>
</tr>
<tr>
<td>6.2.4</td>
<td>High-tech manufacturing, %</td>
<td>n/a</td>
<td>2020</td>
<td>United Nations Industrial Development Organization</td>
</tr>
<tr>
<td>7.1.1</td>
<td>Intangible asset intensity, top 15, %</td>
<td>n/a</td>
<td>2022</td>
<td>Brand Finance</td>
</tr>
<tr>
<td>7.2.2</td>
<td>National feature films/mn pop. 15-69</td>
<td>n/a</td>
<td>2021</td>
<td>OMDIA; United Nations, World Population Prospects</td>
</tr>
<tr>
<td>7.2.3</td>
<td>Entertainment and media market/th pop. 15-69</td>
<td>n/a</td>
<td>2022</td>
<td>PwC, GEMO; United Nations, World Population Prospects; International Monetary Fund</td>
</tr>
<tr>
<td>7.3.4</td>
<td>Mobile app creation/bn PPP$ GDP</td>
<td>n/a</td>
<td>2022</td>
<td>data.ai; International Monetary Fund</td>
</tr>
</tbody>
</table>
### Outdated data for Mali

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