ETHIOPIA

117th Ethiopia ranks 117th among the 132 economies featured in the GII 2022.

The Global Innovation Index (GII) ranks world economies according to their innovation capabilities. Consisting of roughly 80 indicators, grouped into innovation inputs and outputs, the GII aims to capture the multi-dimensional facets of innovation.

The following table shows the rankings of Ethiopia over the past three years, noting that data availability and changes to the GII model framework influence year-on-year comparisons of the GII rankings. The statistical confidence interval for the ranking of Ethiopia in the GII 2022 is between ranks 112 and 124.

Rankings for Ethiopia (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	127	130	110
2021	126	129	107
2022	117	126	100

- Ethiopia performs better in innovation outputs than innovation inputs in 2022.
- This year Ethiopia ranks 126th in innovation inputs, higher than both 2021 and 2020.
- As for innovation outputs, Ethiopia ranks 100th. This position is higher than both 2021 and 2020.

3rd Ethiopia ranks 3rd among the 12 low-income group economies.

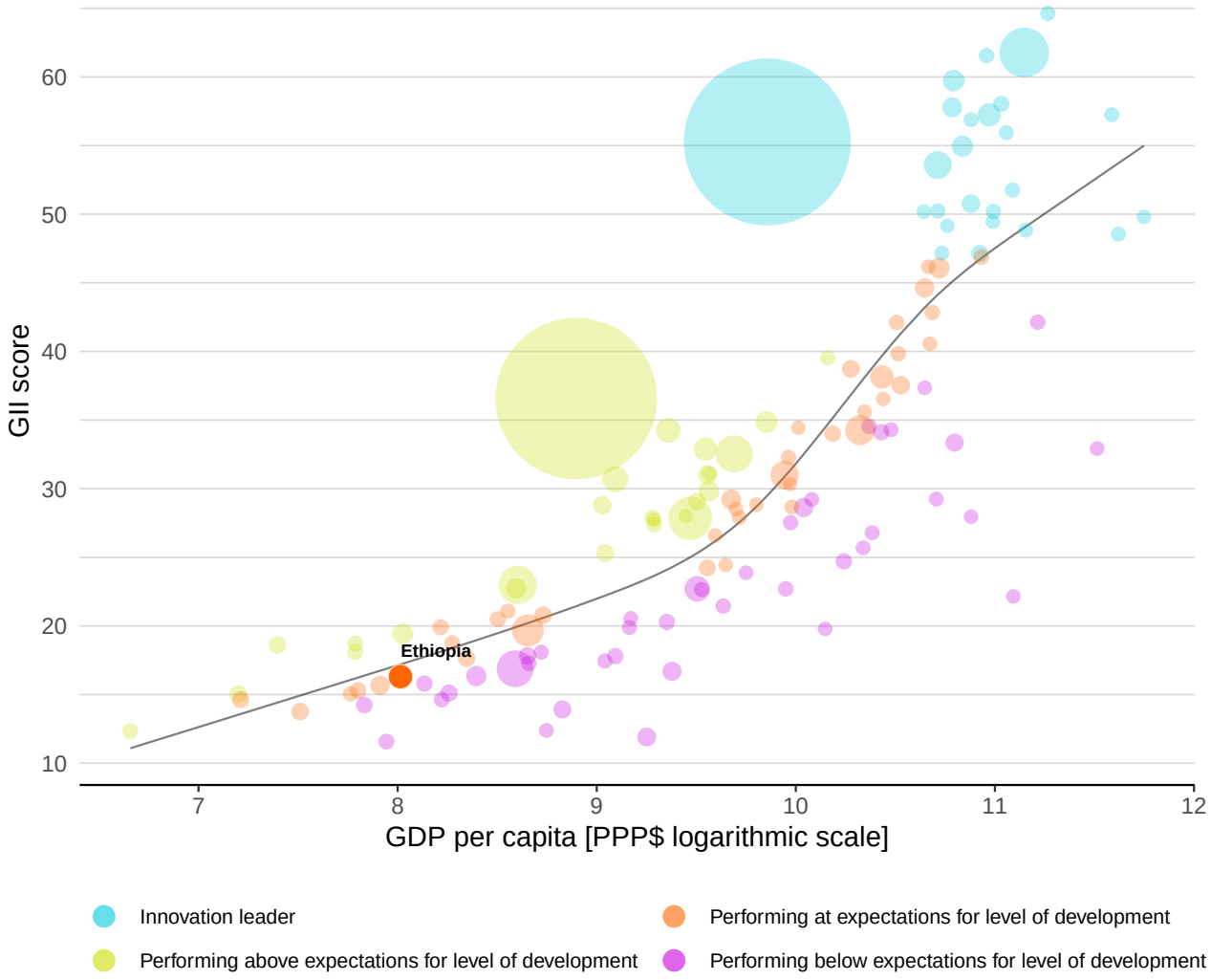
14th Ethiopia ranks 14th among the 27 economies in Sub-Saharan Africa.

EXPECTED VS. OBSERVED INNOVATION PERFORMANCE

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

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

The positive relationship between innovation and development

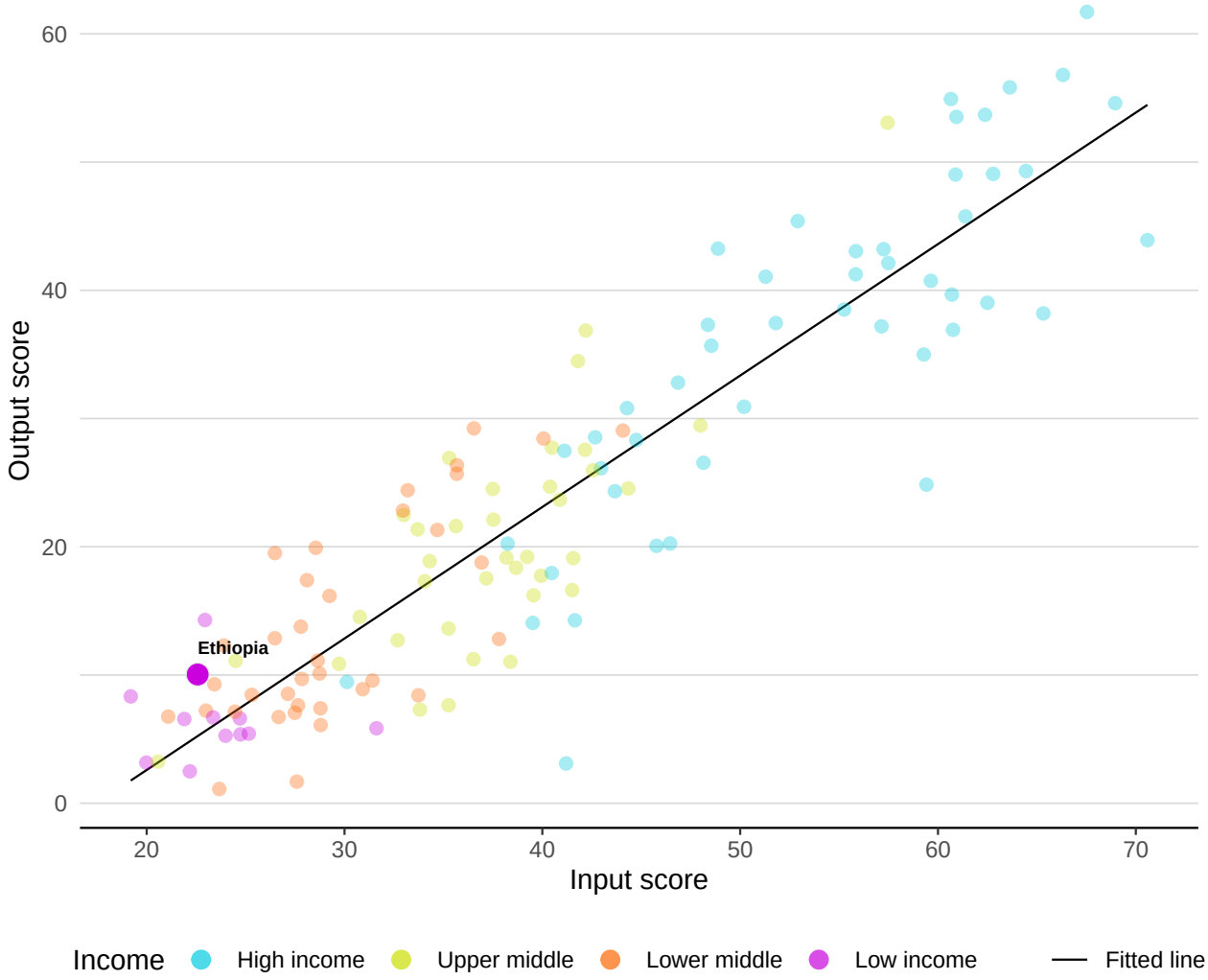


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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

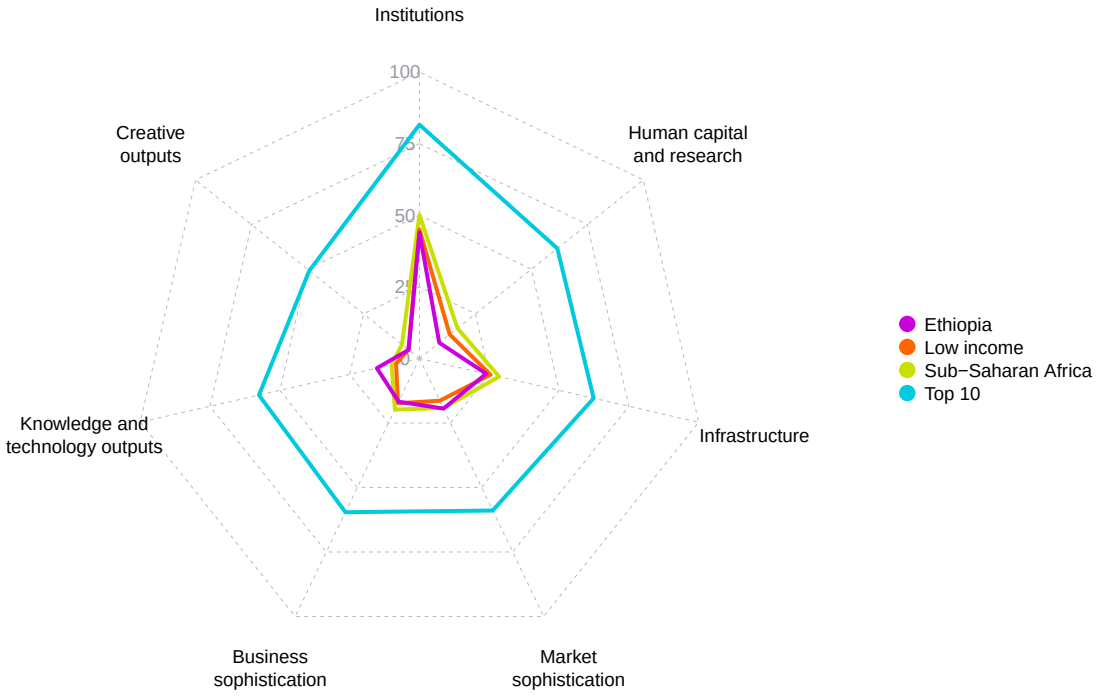
Ethiopia produces more innovation outputs relative to its level of innovation investments.

Innovation input to output performance



BENCHMARKING AGAINST OTHER LOW-INCOME GROUP ECONOMIES AND SUB-SAHARAN AFRICA

The seven GII pillar scores for Ethiopia



Low-income group economies

Ethiopia performs above the low-income group average in two pillars, namely: Market sophistication; and, Knowledge and technology outputs.

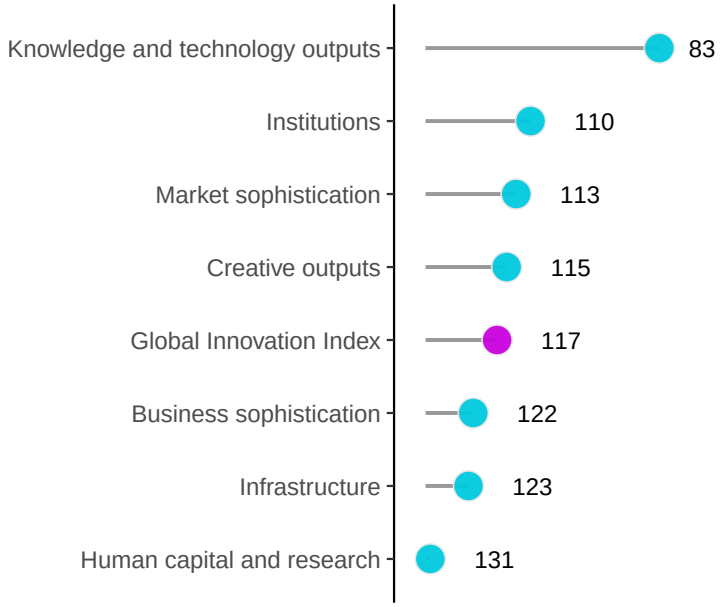
Sub-Saharan Africa

Ethiopia performs above the regional average in two pillars, namely: Market sophistication; and, Knowledge and technology outputs.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Ethiopia performs best in Knowledge and technology outputs and its weakest performance is in Human capital and research.

The seven GII pillar ranks for Ethiopia



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

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

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

INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths and weaknesses for Ethiopia

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
2.1.1	Expenditure on education, % GDP	38	2.1.5	Pupil-teacher ratio, secondary	123
3.2.3	Gross capital formation, % GDP	20	2.3.3	Global corporate R&D investors, top 3, mn USD	38
4.3.3	Domestic market scale, bn PPP$	57	2.3.4	QS university ranking, top 3	72
5.2.3	GERD financed by abroad, % GDP	45	3.1.1	ICT access	130
5.3.2	High-tech imports, % total trade	37	3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	132
5.3.3	ICT services imports, % total trade	22	5.2.5	Patent families/bn PPP$ GDP	101
5.3.4	FDI net inflows, % GDP	44	6.2.3	Software spending, % GDP	124
6.1.3	Utility models by origin/bn PPP$ GDP	19	6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	131
6.2.1	Labor productivity growth, %	6	7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	131
7.2.4	Printing and other media, % manufacturing	18	7.3.2	Country-code TLDs/th pop. 15–69	132

GII 2022 rank

Ethiopia

117

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
100	126	Low	SSA	117.9	298.6	3,024

		Score/ Value	Rank
Institutions		**44.0**	**110**
1.1	**Political environment**	43.5	120
1.1.1	Political and operational stability*	49.1	123
1.1.2	Government effectiveness*	37.8	103
1.2	**Regulatory environment**	53.2	98
1.2.1	Regulatory quality*	21.0	124
1.2.2	Rule of law*	35.8	86
1.2.3	Cost of redundancy dismissal	19.1	82
1.3	**Business environment**	35.3	[94]
1.3.1	Policies for doing business† ◴	35.3	104
1.3.2	Entrepreneurship policies and culture*	n/a	n/a
Human capital and research		**8.8**	**131** ○ ◇
2.1	**Education**	21.2	127
2.1.1	Expenditure on education, % GDP ◴	5.1	38 ●
2.1.2	Government funding/pupil, secondary, % GDP/cap ◴	16.8	72
2.1.3	School life expectancy, years ◴	8.4	115
2.1.4	PISA scales in reading, maths and science	n/a	n/a
2.1.5	Pupil-teacher ratio, secondary ◴	43.7	123 ○ ◇
2.2	**Tertiary education**	4.4	[122]
2.2.1	Tertiary enrolment, % gross ◴	10.4	111
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)**	1.0	97
2.3.1	Researchers, FTE/mn pop. ◴	90.5	90 ◆
2.3.2	Gross expenditure on R&D, % GDP ◴	0.3	82
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇
2.3.4	QS university ranking, top 3*	0.0	72 ○ ◇
Infrastructure		**23.9**	**123**
3.1	**Information and communication technologies (ICTs)**	34.2	124
3.1.1	ICT access*	36.8	130 ○ ◇
3.1.2	ICT use*	30.0	113 ◆
3.1.3	Government's online service*	36.5	116
3.1.4	E-participation*	33.3	118
3.2	**General infrastructure**	23.5	86
3.2.1	Electricity output, GWh/mn pop. ◴	134.9	122
3.2.2	Logistics performance*	n/a	n/a
3.2.3	Gross capital formation, % GDP	31.4	20 ●
3.3	**Ecological sustainability**	14.0	130
3.3.1	GDP/unit of energy use	5.2	119
3.3.2	Environmental performance*	31.8	100
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.0	132 ○ ◇
Market sophistication		**19.4**	**113**
4.1	**Credit**	n/a	[n/a]
4.1.1	Finance for startups and scaleups*	n/a	n/a
4.1.2	Domestic credit to private sector, % GDP	n/a	n/a
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a
4.2	**Investment**	0.5	111 ◇
4.2.1	Market capitalization, % GDP	n/a	n/a
4.2.2	Venture capital investors, deals/bn PPP$ GDP	0.0	94
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	0.0	95 ◇
4.2.4	Venture capital received, value, % GDP	0.0	98
4.3	**Trade, diversification, and market scale**	38.3	103 ◆
4.3.1	Applied tariff rate, weighted avg., % ◴	12.1	127 ◇
4.3.2	Domestic industry diversification ◴	86.8	55 ◆
4.3.3	Domestic market scale, bn PPP$	298.6	57 ● ◆

		Score/ Value	Rank
Business sophistication		**16.8**	**122**
5.1	**Knowledge workers**	5.3	129 ◇
5.1.1	Knowledge-intensive employment, % ◴	4.5	121
5.1.2	Firms offering formal training, % ◴	20.8	76
5.1.3	GERD performed by business, % GDP ◴	0.0	86
5.1.4	GERD financed by business, % ◴	1.5	93
5.1.5	Females employed w/advanced degrees, % ◴	0.3	124
5.2	**Innovation linkages**	17.9	109
5.2.1	University-industry R&D collaboration† ◴	39.6	81
5.2.2	State of cluster development and depth† ◴	37.7	109
5.2.3	GERD financed by abroad, % GDP ◴	0.1	45 ●
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	107
5.2.5	Patent families/bn PPP$ GDP	0.0	101 ○ ◇
5.3	**Knowledge absorption**	27.1	80
5.3.1	Intellectual property payments, % total trade	0.1	104
5.3.2	High-tech imports, % total trade	10.4	37 ●
5.3.3	ICT services imports, % total trade	2.8	22 ● ◆
5.3.4	FDI net inflows, % GDP	3.0	44 ●
5.3.5	Research talent, % in businesses ◴	2.2	75
Knowledge and technology outputs		**15.3**	**83** ◆
6.1	**Knowledge creation**	15.2	58 ● ◆
6.1.1	Patents by origin/bn PPP$ GDP	0.0	126
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a
6.1.3	Utility models by origin/bn PPP$ GDP	1.3	19 ● ◆
6.1.4	Scientific and technical articles/bn PPP$ GDP	17.1	59 ◆
6.1.5	Citable documents H-index	8.6	82 ◆
6.2	**Knowledge impact**	21.6	84 ◆
6.2.1	Labor productivity growth, %	5.1	6 ● ◆
6.2.2	New businesses/th pop. 15–64 ◴	0.5	96
6.2.3	Software spending, % GDP	0.0	124 ○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.2	131 ○ ◇
6.2.5	High-tech manufacturing, % ◴	13.5	79
6.3	**Knowledge diffusion**	9.0	105
6.3.1	Intellectual property receipts, % total trade	0.0	85
6.3.2	Production and export complexity	20.1	103
6.3.3	High-tech exports, % total trade	0.3	95 ◆
6.3.4	ICT services exports, % total trade	1.1	86
Creative outputs		**4.8**	**[115]**
7.1	**Intangible assets**	1.5	[124]
7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
7.1.2	Trademarks by origin/bn PPP$ GDP	5.5	117
7.1.3	Global brand value, top 5,000, % GDP	3.0	72 ◆
7.1.4	Industrial designs by origin/bn PPP$ GDP	n/a	n/a
7.2	**Creative goods and services**	16.2	[64]
7.2.1	Cultural and creative services exports, % total trade	0.0	107
7.2.2	National feature films/mn pop. 15–69	n/a	n/a
7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a
7.2.4	Printing and other media, % manufacturing ◴	1.8	18 ●
7.2.5	Creative goods exports, % total trade	0.2	77 ◆
7.3	**Online creativity**	0.1	130
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.0	131 ○
7.3.2	Country-code TLDs/th pop. 15–69	0.0	132 ○ ◇
7.3.3	GitHub commit pushes received/mn pop. 15–69	0.2	120
7.3.4	Mobile app creation/bn PPP$ GDP	0.0	106

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ◴ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [ ] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

DATA AVAILABILITY

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

Missing data for Ethiopia

Code	Indicator name	Economy year	Model year	Source
1.3.2	Entrepreneurship policies and culture	n/a	2021	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
2.2.3	Tertiary inbound mobility, %	n/a	2019	UNESCO Institute for Statistics
3.2.2	Logistics performance	n/a	2018	Logistics Performance Index, World Bank
4.1.1	Finance for startups and scaleups	n/a	2021	Global Entrepreneurship Monitor
4.1.2	Domestic credit to private sector, % GDP	n/a	2020	International Monetary Fund
4.1.3	Loans from microfinance institutions, % GDP	n/a	2020	International Monetary Fund, Financial Access Survey (FAS)
4.2.1	Market capitalization, % GDP	n/a	2020	World Federation of Exchanges
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	2021	World Intellectual Property Organization
7.1.1	Intangible asset intensity, top 15, %	n/a	2021	Brand Finance
7.1.4	Industrial designs by origin/bn PPP$ GDP	n/a	2020	World Intellectual Property Organization
7.2.2	National feature films/mn pop. 15–69	n/a	2019	OMDIA
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2021	PwC, GEMO

Outdated data for Ethiopia

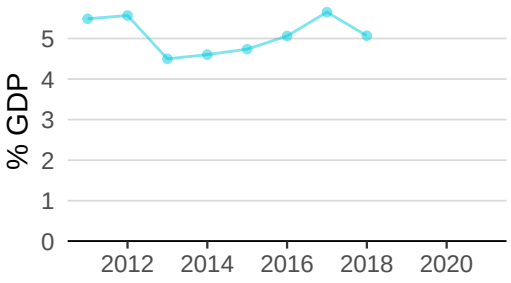
Code	Indicator name	Economy year	Model year	Source
1.3.1	Policies for doing business	2019	2021	World Economic Forum, Executive Opinion Survey (EOS)
2.1.1	Expenditure on education, % GDP	2018	2020	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	2015	2018	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	2012	2019	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2015	2019	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2018	2019	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2017	2020	UNESCO Institute for Statistics
2.3.2	Gross expenditure on R&D, % GDP	2017	2020	UNESCO Institute for Statistics

Code	Indicator name	Economy year	Model year	Source
3.2.1	Electricity output, GWh/mn pop.	2019	2020	International Energy Agency
4.3.1	Applied tariff rate, weighted avg., %	2018	2020	World Bank
4.3.2	Domestic industry diversification	2013	2019	United Nations Industrial Development Organization
5.1.1	Knowledge-intensive employment, %	2013	2021	International Labour Organization
5.1.2	Firms offering formal training, %	2015	2019	World Bank Enterprise Surveys
5.1.3	GERD performed by business, % GDP	2017	2020	UNESCO Institute for Statistics
5.1.4	GERD financed by business, %	2017	2019	UNESCO Institute for Statistics
5.1.5	Females employed w/advanced degrees, %	2013	2021	International Labour Organization
5.2.1	University-industry R&D collaboration	2019	2021	World Economic Forum, Executive Opinion Survey (EOS)
5.2.2	State of cluster development and depth	2019	2021	World Economic Forum, Executive Opinion Survey (EOS)
5.2.3	GERD financed by abroad, % GDP	2017	2019	UNESCO Institute for Statistics
5.3.5	Research talent, % in businesses	2017	2020	UNESCO Institute for Statistics
6.2.2	New businesses/th pop. 15–64	2018	2020	World Bank, Enterpreneurship Database
6.2.5	High-tech manufacturing, %	2013	2019	United Nations Industrial Development Organization
7.2.4	Printing and other media, % manufacturing	2013	2019	United Nations Industrial Development Organization

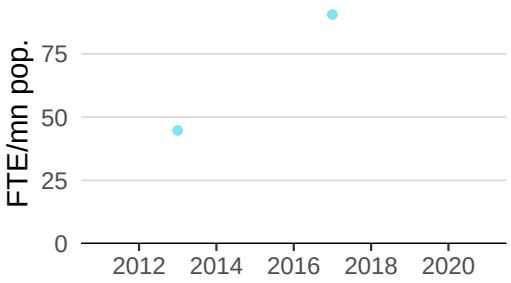
ETHIOPIA'S INNOVATION SYSTEM

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

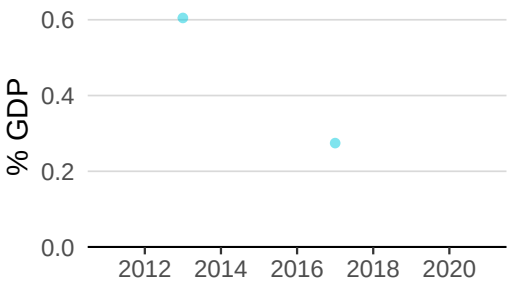
Innovation inputs



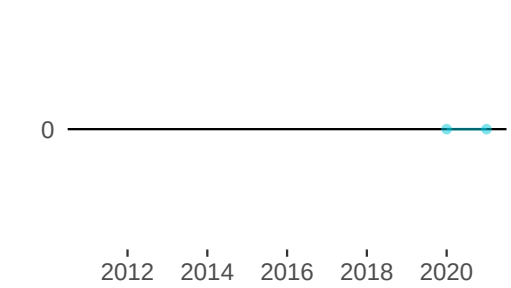
2.1.1 Expenditure on education was equal to 5.1% GDP in 2018–down by 10 percentage points from the year prior–and equivalent to an indicator rank of 38.



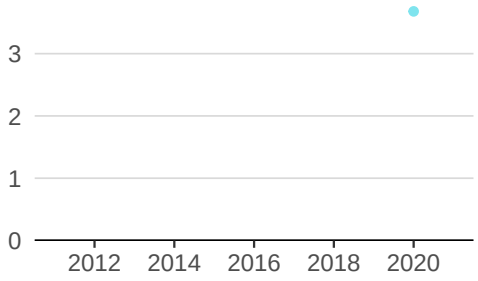
2.3.1 Researchers was equal to 90.5 FTE/mn pop. in 2017 and equivalent to an indicator rank of 90.



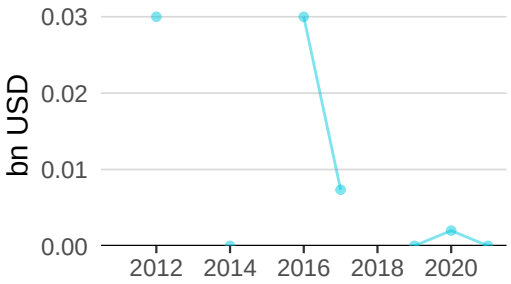
2.3.2 Gross expenditure on R&D was equal to 0.3% GDP in 2017 and equivalent to an indicator rank of 82.



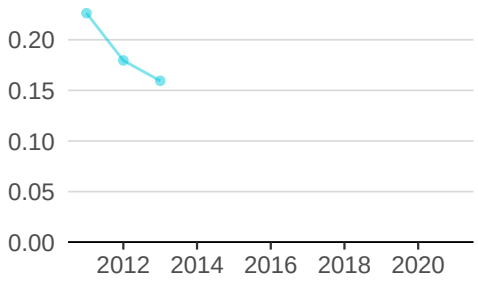
2.3.4 QS university ranking was equal to 0.0 in 2021–effectively unchanged from the year prior–and equivalent to an indicator rank of 72.



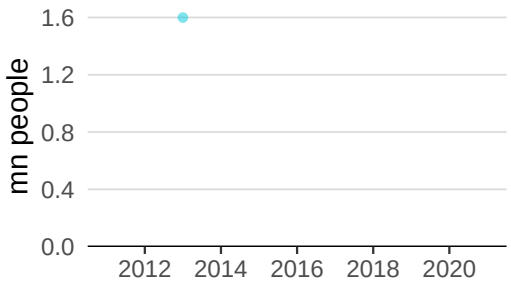
3.1.1 ICT access was equal to 3.7 in 2020 and equivalent to an indicator rank of 130.



4.2.4 Venture capital received was equal to 0.0 bn USD in 2021–down by 100 percentage points from the year prior–and equivalent to an indicator rank of 98.

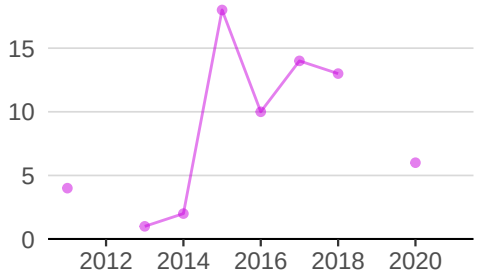


4.3.2 Domestic industry diversification was equal to 0.2 in 2013–down by 11 percentage points from the year prior–and equivalent to an indicator rank of 55.

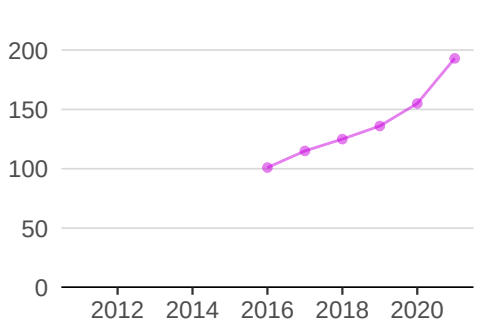


5.1.1 Knowledge-intensive employment was equal to 1.6 mn people in 2013 and equivalent to an indicator rank of 121.

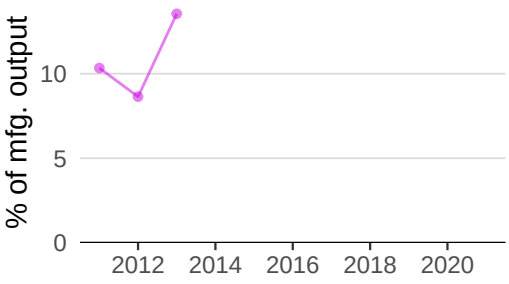
Innovation outputs



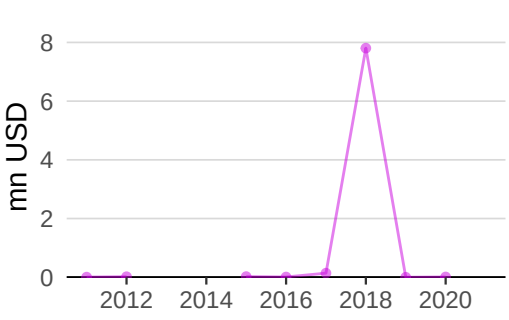
6.1.1 Patents by origin was equal to 6.0 in 2020 and equivalent to an indicator rank of 126.



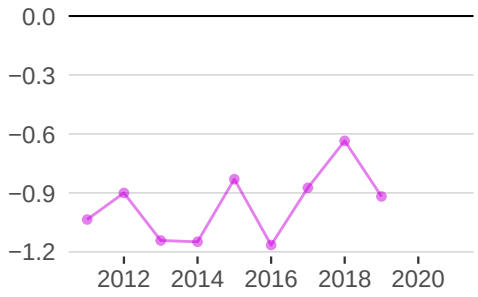
6.1.5 Citable documents H-index was equal to 193.0 in 2021–up by 25 percentage points from the year prior–and equivalent to an indicator rank of 82.



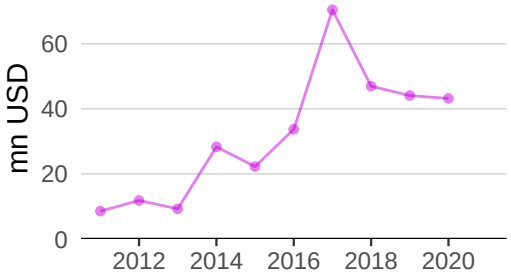
6.2.5 High-tech manufacturing was equal to 13.5% of mfg. output in 2013–up by 57 percentage points from the year prior–and equivalent to an indicator rank of 79.



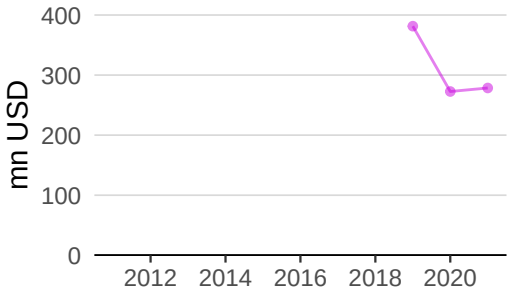
6.3.1 Intellectual property receipts was equal to 0.0 mn USD in 2020–up by Inf percentage points from the year prior–and equivalent to an indicator rank of 85.



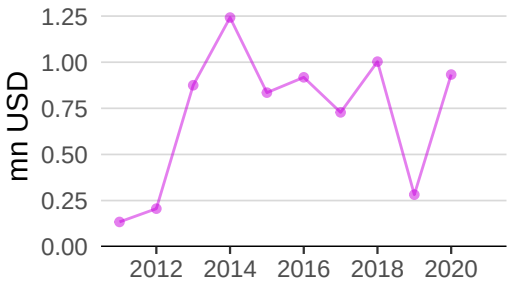
6.3.2 Production and export complexity was equal to -0.9 in 2019–down by 45 percentage points from the year prior–and equivalent to an indicator rank of 103.



6.3.3 High-tech exports was equal to 43.2 mn USD in 2020–down by 2 percentage points from the year prior–and equivalent to an indicator rank of 95.



7.1.3 Global brand value was equal to 278.5 mn USD in 2021–up by 2 percentage points from the year prior–and equivalent to an indicator rank of 72.



7.2.1 Cultural and creative services exports was equal to 0.9 mn USD in 2020–up by 231 percentage points from the year prior–and equivalent to an indicator rank of 107.

ETHIOPIA'S INNOVATION TOP PERFORMERS

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank

No observations

Source: European Commission's Joint Research Centre (https://iri.jrc.ec.europa.eu/scoreboard/2021-eu-industrial-rd-investment-scoreboard).

2.3.4 QS university ranking

University	Score	Rank

No observations

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

7.1.1 Intangible asset intensity, top 15

Firm	Rank

No observations

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

7.1.3 Global brand value, top 5,000

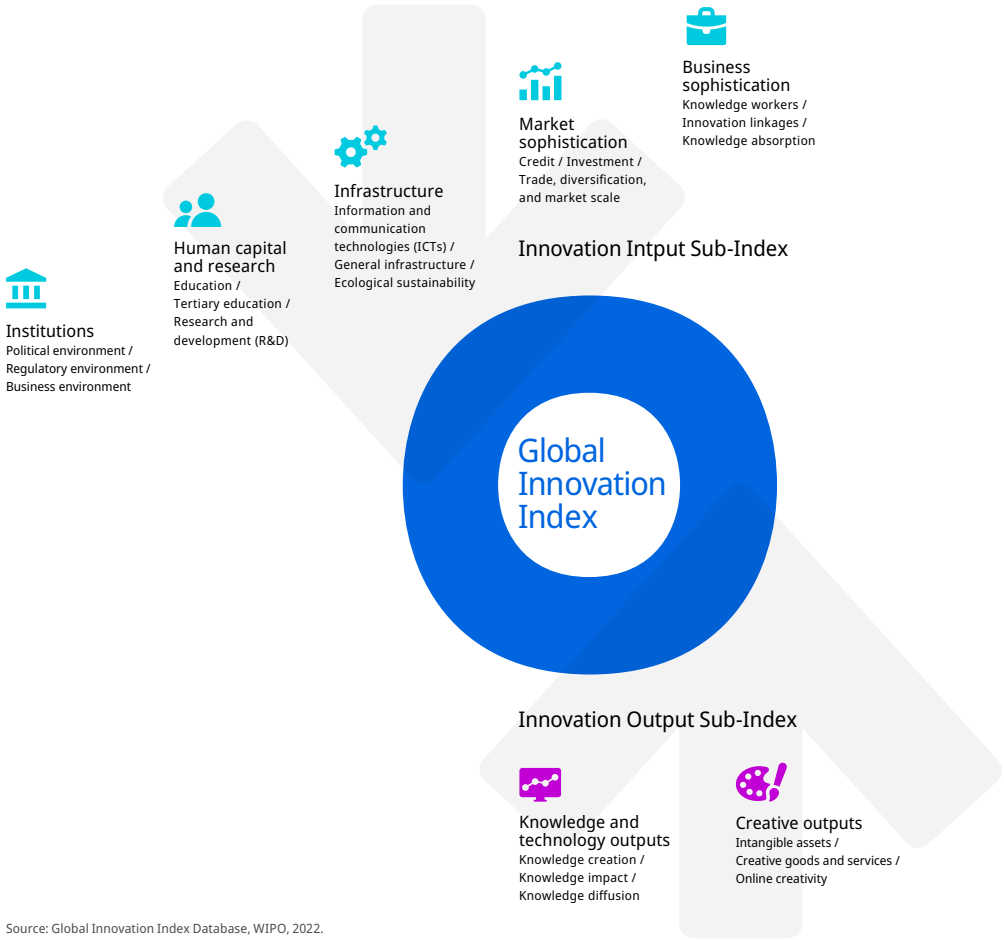
Brand	Industry	Rank
ETHIOPIAN AIRLINES	Airlines	1

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

ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is published by the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations.

Recognizing that innovation is a key driver of economic development, the GII aims to provide an innovation ranking and rich analysis referencing around 130 economies. Over the last decade, the GII has established itself as both a leading reference on innovation and a “tool for action” for economies that incorporate the GII into their innovation agendas.



Source: Global Innovation Index Database, WIPO, 2022.

The Index is a ranking of the innovation capabilities and results of world economies. It measures innovation based on criteria that include institutions, human capital and research, infrastructure, credit, investment, linkages; the creation, absorption and diffusion of knowledge; and creative outputs.

The GII has two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index, and seven pillars, each consisting of three sub-pillars.