

MADAGASCAR

115th Madagascar ranks 115th among the 131 economies featured in the GII 2020.

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.

Madagascar ranks 115th in the GII this year, improving its ranking by six positions since 2019. It moves up five places to 14th in the Sub-Saharan Africa region and to 7th among the low-income group economies. Notable improvements in Madagascar's rankings are in the indicators Expenditure on education, Gross capital formation, and Industrial designs.

The following table shows the rankings of Madagascar 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 Madagascar in the GII 2020 is between ranks 112 and 120.

Rankings of Madagascar (2018–2020)

	GII	Innovation inputs	Innovation outputs
2020	115	125	100
2019	121	122	109
2018	106	119	85

- Madagascar performs better in innovation outputs than innovation inputs in 2020.
- This year Madagascar ranks 125th in innovation inputs, lower than last year and lower compared to 2018.
- As for innovation outputs, Madagascar ranks 100th. This position is higher than last year and lower compared to 2018.

7th Madagascar ranks 7th among the 16 low-income group economies.

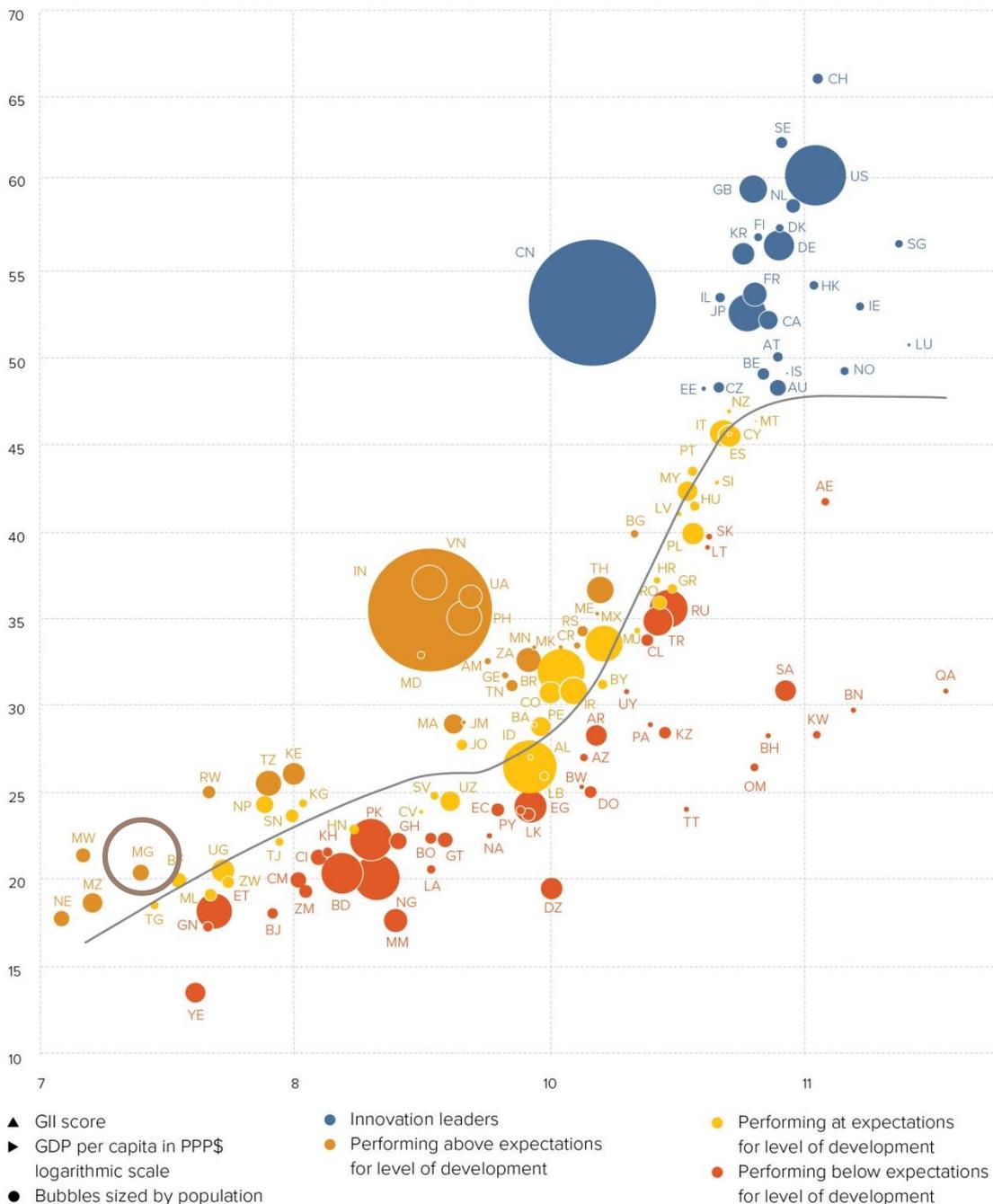
14th Madagascar ranks 14th among the 26 economies in Sub-Saharan Africa.

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, Madagascar's performance is above expectations for its level of development. This is the fourth year in which Madagascar has performed above expectations.

The positive relationship between innovation and development

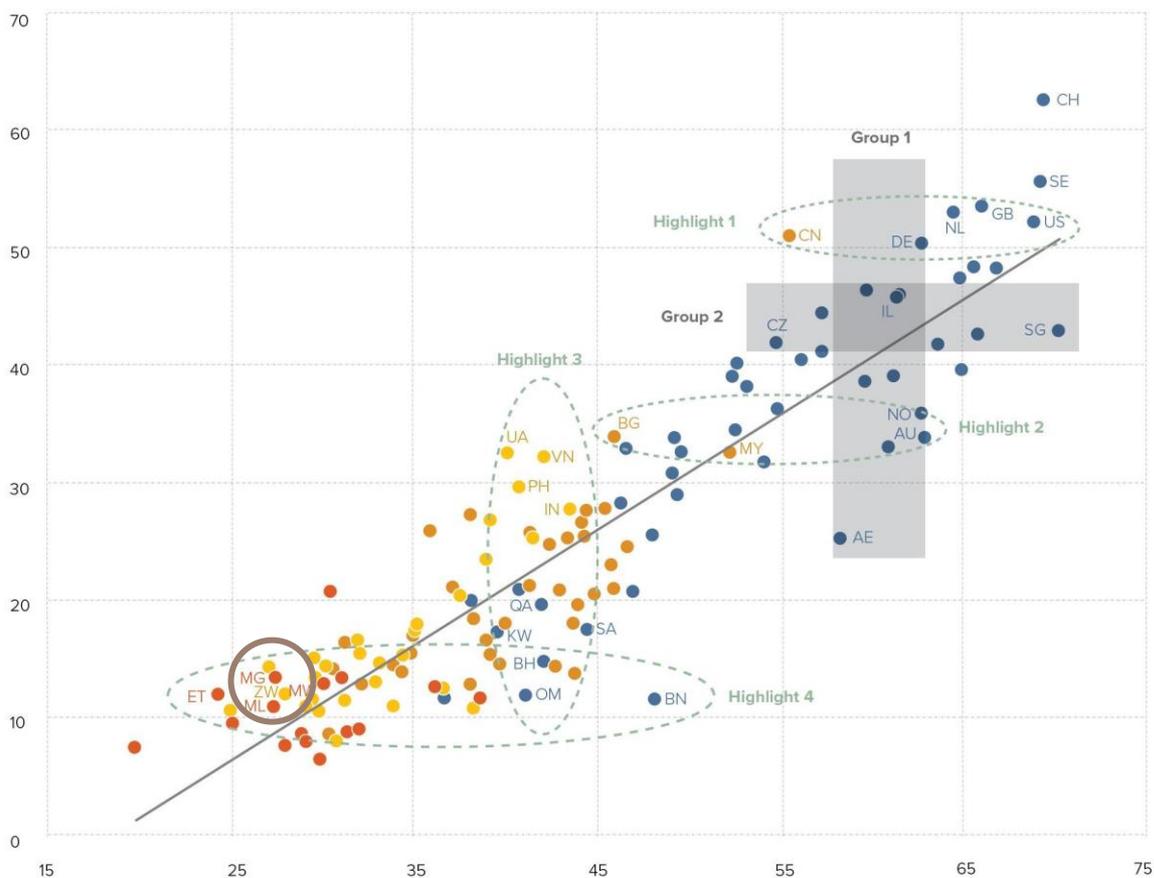


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

Innovation input to output performance, 2020

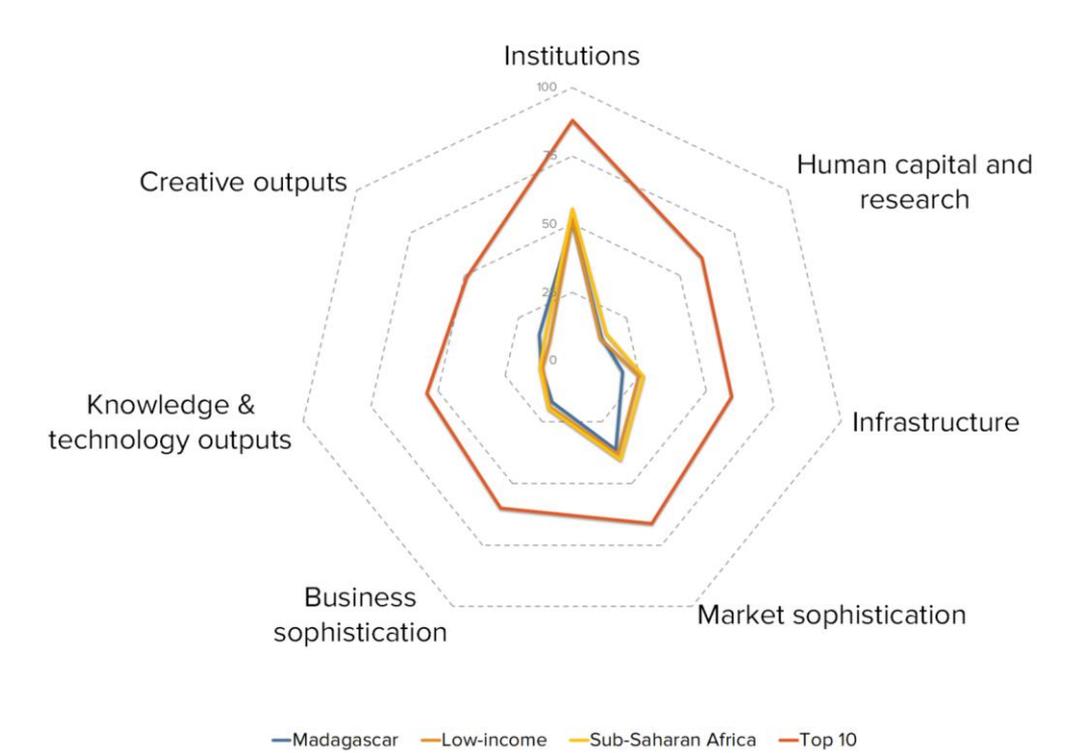


▲ Output score ● High income group ● Lower middle-income group — Fitted values
 ► Input score ● Upper middle-income group ● Low income group

AU	Australia	IN	India	NL	Netherlands	CH	Switzerland
BH	Bahrain	IL	Israel	NO	Norway	UA	Ukraine
BN	Brunei Darussalam	KW	Kuwait	OM	Oman	AE	United Arab Emirates
BG	Bulgaria	MG	Madagascar	PH	Philippines	GB	United Kingdom
CN	China	MW	Malawi	QA	Qatar	US	United States of America
CZ	Czech Republic	ML	Mali	SA	Saudi Arabia	VN	Viet Nam
ET	Ethiopia	MY	Malaysia	SG	Singapore	ZW	Zimbabwe
DE	Germany			SE	Sweden		

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

Madagascar's scores in the seven GII pillars



Low-income group economies

Madagascar has high scores in three out of the seven GII pillars: Human capital & research, Knowledge & technology outputs and Creative outputs, which are above average for the low-income group.

Conversely, Madagascar scores below average for its income group in four pillars: Institutions, Infrastructure, Market sophistication and Business sophistication.

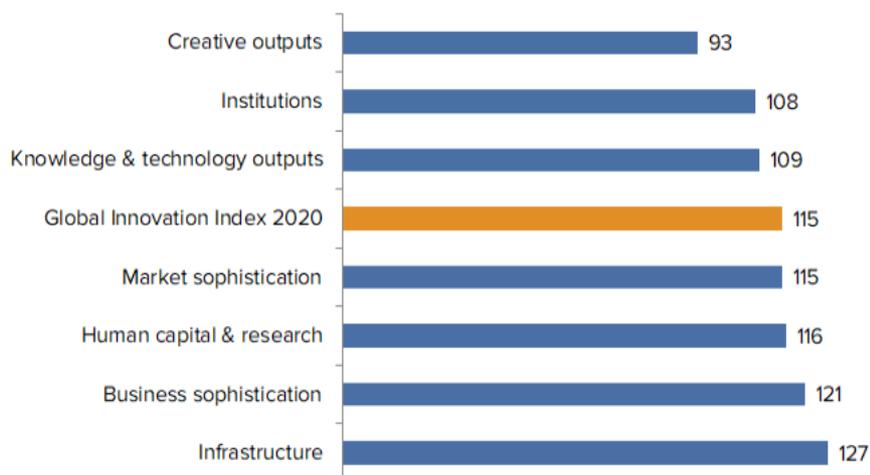
Sub-Saharan Africa

Compared to other economies in Sub-Saharan Africa, Madagascar performs:

- above average in one of the seven GII pillars: Creative outputs; and
- below average in six out of the seven GII pillars: Institutions, Human capital & research, Infrastructure, Market sophistication, Business sophistication and Knowledge & technology outputs.

OVERVIEW OF MADAGASCAR RANKINGS IN THE SEVEN GII AREAS

Madagascar performs best in Creative outputs and its weakest performance is in Infrastructure.



*The highest possible ranking in each pillar is 1.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Madagascar in the GII 2020.

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
1.2.3	Cost of redundancy dismissal, salary weeks	57	1.1.2	Government effectiveness*	129
2.2.2	Graduates in science & engineering, %	43	2.3.2	Gross expenditure on R&D, % GDP	115
4.1.3	Microfinance gross loans, % GDP	20	2.3.3	Global R&D companies, top 3, mn US\$	42
5.3.3	ICT services imports, % total trade	15	2.3.4	QS university ranking, average score top 3*	77
5.3.4	FDI net inflows, % GDP	36	3.1	Information & communication technologies (ICTs)	128
6.2.1	Growth rate of PPP\$ GDP/worker, %	51	3.1.1	ICT access*	129
6.3.1	Intellectual property receipts, % total trade	35	3.1.2	ICT use*	129
6.3.3	ICT services exports, % total trade	49	3.3.2	Environmental performance*	126
7.1.1	Trademarks by origin/bn PPP\$ GDP	40	5.1.1	Knowledge-intensive employment, %	119
7.1.3	Industrial designs by origin/bn PPP\$ GDP	19	5.2.5	Patent families 2+ offices/bn PPP\$ GDP	101
			6.1.2	PCT patents by origin/bn PPP\$ GDP	100

STRENGTHS

GII strengths for Madagascar are found in six of the seven GII pillars.

- Institutions (108): exhibits strength in the indicator Cost of redundancy dismissal (57).
- Human capital & research (116): shows strength in the indicator Graduates in science & engineering (43).
- Market sophistication (115): reveals strength in the indicator Microfinance gross loans (20).
- Business sophistication (121): displays strengths in the indicators ICT services imports (15) and FDI net inflows (36).
- Knowledge & technology outputs (109): reveals strengths in the indicators Productivity growth (51), Intellectual property receipts (35) and ICT services exports (49).
- Creative outputs (93): exhibits strengths in the indicators Trademarks by origin (40) and Industrial designs by origin (19).

WEAKNESSES

GII weaknesses for Madagascar are found in five of the seven GII pillars.

- Institutions (108): exhibits weakness in the indicator Government effectiveness (129).
- Human capital & research (116): shows weaknesses in the indicators Gross expenditure on R&D (115), Global R&D companies (42) and QS university ranking (77).
- Infrastructure (127): displays weaknesses in the sub-pillar Information & communication technologies (ICTs) (128) and in the indicators ICT access (129), ICT use (129) and Environmental performance (126).
- Business sophistication (121): reveals weaknesses in the indicators Knowledge-intensive employment (119) and Patent families (101).
- Knowledge & technology outputs (109): the indicator PCT patents by origin (100) demonstrates a weakness.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2019 rank
100	125	Low	SSF	27.0	46.0	1,483.5	121
				Score/Value	Rank		
INSTITUTIONS				51.4	108		
1.1	Political environment	37.1	125				
1.1.1	Political and operational stability*	62.5	92				
1.1.2	Government effectiveness*	24.4	129 ○				
1.2	Regulatory environment	55.4	91				
1.2.1	Regulatory quality*	22.4	114				
1.2.2	Rule of law*	25.4	113				
1.2.3	Cost of redundancy dismissal, salary weeks	14.7	57 ●				
1.3	Business environment	61.6	100				
1.3.1	Ease of starting a business*	88.5	65				
1.3.2	Ease of resolving insolvency*	34.8	113				
HUMAN CAPITAL & RESEARCH				13.6	116		
2.1	Education	22.5	121				
2.1.1	Expenditure on education, % GDP	3.2	92				
2.1.2	Government funding/pupil, secondary, % GDP/cap	8.4	98 ◇				
2.1.3	School life expectancy, years	10.2	107				
2.1.4	PISA scales in reading, maths, & science	n/a	n/a				
2.1.5	Pupil-teacher ratio, secondary	19.3	96				
2.2	Tertiary education	18.2	100 ◆				
2.2.1	Tertiary enrolment, % gross	5.4	118				
2.2.2	Graduates in science & engineering, %	23.8	43 ● ◆				
2.2.3	Tertiary inbound mobility, %	1.4	83				
2.3	Research & development (R&D)	0.1	120				
2.3.1	Researchers, FTE/mn pop.	34.0	100				
2.3.2	Gross expenditure on R&D, % GDP	0.0	115 ○ ◇				
2.3.3	Global R&D companies, avg. exp. top 3, mn \$US	0.0	42 ○ ◇				
2.3.4	QS university ranking, average score top 3*	0.0	77 ○ ◇				
INFRASTRUCTURE				18.8	127		
3.1	Information & communication technologies (ICTs)	23.5	128 ○				
3.1.1	ICT access*	22.5	129 ○ ◇				
3.1.2	ICT use*	8.5	129 ○				
3.1.3	Government's online service*	30.6	120				
3.1.4	E-participation*	32.6	117				
3.2	General infrastructure	19.0	106				
3.2.1	Electricity output, kWh/mn pop.	n/a	n/a				
3.2.2	Logistics performance*	15.0	115				
3.2.3	Gross capital formation, % GDP	22.4	75				
3.3	Ecological sustainability	14.0	126				
3.3.1	GDP/unit of energy use	n/a	n/a				
3.3.2	Environmental performance*	26.5	126 ○ ◇				
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.2	107				
MARKET SOPHISTICATION				36.2	115		
4.1	Credit	22.7	120				
4.1.1	Ease of getting credit*	40.0	113				
4.1.2	Domestic credit to private sector, % GDP	14.7	118				
4.1.3	Microfinance gross loans, % GDP	1.7	20 ●				
4.2	Investment	36.0	[69]				
4.2.1	Ease of protecting minority investors*	36.0	116				
4.2.2	Market capitalization, % GDP	n/a	n/a				
4.2.3	Venture capital deals/bn PPP\$ GDP	n/a	n/a				
4.3	Trade, competition, and market scale	50.0	117				
4.3.1	Applied tariff rate, weighted avg., %	7.7	101				
4.3.2	Intensity of local competition*	63.7	87				
4.3.3	Domestic market scale, bn PPP\$	46.0	104				
BUSINESS SOPHISTICATION				17.0	[121]		
5.1	Knowledge workers	4.9	[130]				
5.1.1	Knowledge-intensive employment, %	3.7	119 ○				
5.1.2	Firms offering formal training, %	12.7	89 ◇				
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, %	1.9	103				
5.2	Innovation linkages	22.1	[58]				
5.2.1	University/industry research collaboration†	32.3	102				
5.2.2	State of cluster development†	39.1	99				
5.2.3	GERD financed by abroad, % GDP	n/a	n/a				
5.2.4	JV-strategic alliance deals/bn PPP\$ GDP	n/a	n/a				
5.2.5	Patent families 2+ offices/bn PPP\$ GDP	0.0	101 ○ ◇				
5.3	Knowledge absorption	24.0	86				
5.3.1	Intellectual property payments, % total trade	0.4	74				
5.3.2	High-tech imports, % total trade	4.2	119				
5.3.3	ICT services imports, % total trade	2.5	15 ● ◆				
5.3.4	FDI net inflows, % GDP	4.2	36 ● ◆				
5.3.5	Research talent, % in business enterprise	n/a	n/a				
KNOWLEDGE & TECHNOLOGY OUTPUTS				11.4	109		
6.1	Knowledge creation	4.0	114				
6.1.1	Patents by origin/bn PPP\$ GDP	0.2	101				
6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	100 ○ ◇				
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a				
6.1.4	Scientific & technical articles/bn PPP\$ GDP	3.3	103				
6.1.5	Citable documents H-index	4.8	106				
6.2	Knowledge impact	13.8	106				
6.2.1	Growth rate of PPP\$ GDP/worker, %	1.7	51 ●				
6.2.2	New businesses/th pop. 15-64	0.1	116				
6.2.3	Computer software spending, % GDP	0.0	114				
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	1.6	90 ◆				
6.2.5	High- and medium-high-tech manufacturing, %	n/a	n/a				
6.3	Knowledge diffusion	16.4	89				
6.3.1	Intellectual property receipts, % total trade	0.2	35 ● ◆				
6.3.2	High-tech net exports, % total trade	0.1	112				
6.3.3	ICT services exports, % total trade	2.3	49 ●				
6.3.4	FDI net outflows, % GDP	0.8	61				
CREATIVE OUTPUTS				15.4	[93]		
7.1	Intangible assets	28.4	[63]				
7.1.1	Trademarks by origin/bn PPP\$ GDP	57.0	40 ● ◆				
7.1.2	Global brand value, top 5,000, % GDP	n/a	n/a				
7.1.3	Industrial designs by origin/bn PPP\$ GDP	6.8	19 ● ◆				
7.1.4	ICTs & organizational model creation†	n/a	n/a				
7.2	Creative goods and services	2.3	[115]				
7.2.1	Cultural & creative services exports, % total trade	0.1	76				
7.2.2	National feature films/mn pop. 15-69	0.8	92				
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a				
7.2.4	Printing and other media, % manufacturing	n/a	n/a				
7.2.5	Creative goods exports, % total trade	0.1	91				
7.3	Online creativity	2.5	118				
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.1	123				
7.3.2	Country-code TLDs/th pop. 15-69	0.1	118				
7.3.3	Wikipedia edits/mn pop. 15-69	12.1	117				
7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	n/a				

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 Appendix II for details, including the year of the data, at <http://globalinnovationindex.org>. 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 data that are either missing or outdated for Madagascar.

Missing data

Code	Indicator name	Country year	Model year	Source
2.1.4	PISA scales in reading, maths & science	n/a	2018	OECD Programme for International Student Assessment (PISA)
3.2.1	Electricity output, GWh/mn pop	n/a	2017	International Energy Agency
3.3.1	GDP/unit of energy use	n/a	2017	International Energy Agency
4.2.2	Market capitalization, % GDP	n/a	2018	World Federation of Exchanges
4.2.3	Venture capital deals/bn PPP\$ GDP	n/a	2019	Thomson Reuters
5.1.3	GERD performed by business, % GDP	n/a	2018	UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators
5.1.4	GERD financed by business, %	n/a	2017	UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators
5.2.3	GERD financed by abroad, % GDP	n/a	2017	UNESCO Institute for Statistics
5.2.4	JV–strategic alliance deals/bn PPP\$ GDP	n/a	2019	Thomson Reuters
5.3.5	Research talent, % in business enterprise	n/a	2018	UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2018	World Intellectual Property Organization
6.2.5	High- & medium-high-tech manufacturing, %	n/a	2017	United Nations Industrial Development Organization
7.1.2	Global brand value, top 5,000, % GDP	n/a	2019	Brand Finance
7.1.4	ICTs & organizational model creation [†]	n/a	2018	World Economic Forum
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	2018	PwC
7.2.4	Printing & other media, % manufacturing	n/a	2017	United Nations Industrial Development Organization
7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	2019	App Annie

Outdated data

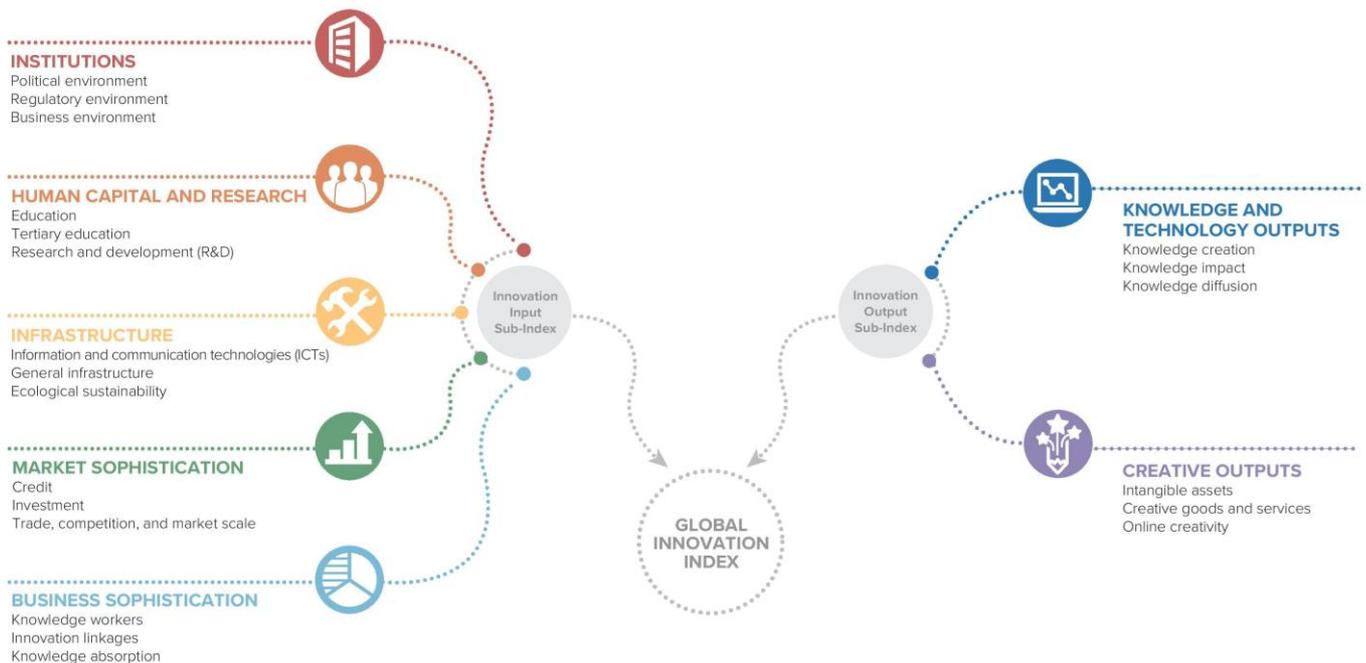
Code	Indicator name	Country year	Model year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	2012	2016	UNESCO Institute for Statistics
2.3.2	Gross expenditure on R&D, % GDP	2017	2018	UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators
4.3.2	Intensity of local competition [†]	2017	2018	World Economic Forum
5.1.1	Knowledge-intensive employment, %	2015	2018	International Labour Organization
5.1.2	Firms offering formal training, %	2012	2018	World Bank
5.1.5	Females employed w/advanced degrees, %	2015	2018	International Labour Organization
5.3.1	Intellectual property payments, % total trade	2017	2018	World Trade Organization
5.3.2	High-tech imports, % total trade	2017	2018	United Nations, COMTRADE
5.3.3	ICT services imports, % total trade	2017	2018	World Trade Organization
6.3.1	Intellectual property receipts, % total trade	2017	2018	World Trade Organization
6.3.2	High-tech net exports, % total trade	2017	2018	United Nations, COMTRADE
6.3.3	ICT services exports, % total trade	2017	2018	World Trade Organization
7.2.1	Cultural & creative services exports, % total trade	2017	2018	World Trade Organization
7.2.5	Creative goods exports, % total trade	2017	2018	United Nations, COMTRADE

ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. In 2020, the GII presents its 13th edition devoted to the theme *Who Will Finance Innovation?*

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.

Framework of the Global Innovation Index 2020



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.

