GLOBAL INNOVATION INDEX 2019

MOZAMBIQUE

119th Mozambique ranks 119th among the 129 economies featured in the GII 2019.

The Global Innovation Index (GII) is a ranking of world economies based on 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 Mozambique over the past three years, noting that data availability and the GII model influence year-on-year comparisons of the GII ranks. The confidence interval for Mozambique's ranking in the GII 2019 is between 111 and 126.

Mozambique's Rankings, 2017 - 2019

	GII	Innovation Inputs	Innovation Outputs
2019	119	118	114
2018	115	112	109
2017	107	114	100

- Mozambique performs better in Innovation Outputs than Inputs.
- This year Mozambique ranks 118th in Innovation Inputs, worse than last year and compared to 2017.
- As for Innovation Outputs, Mozambique ranks 114th. This position is worse than last year and compared to 2017.

11th Mozambique ranks 11th among the 19 low-income economies.

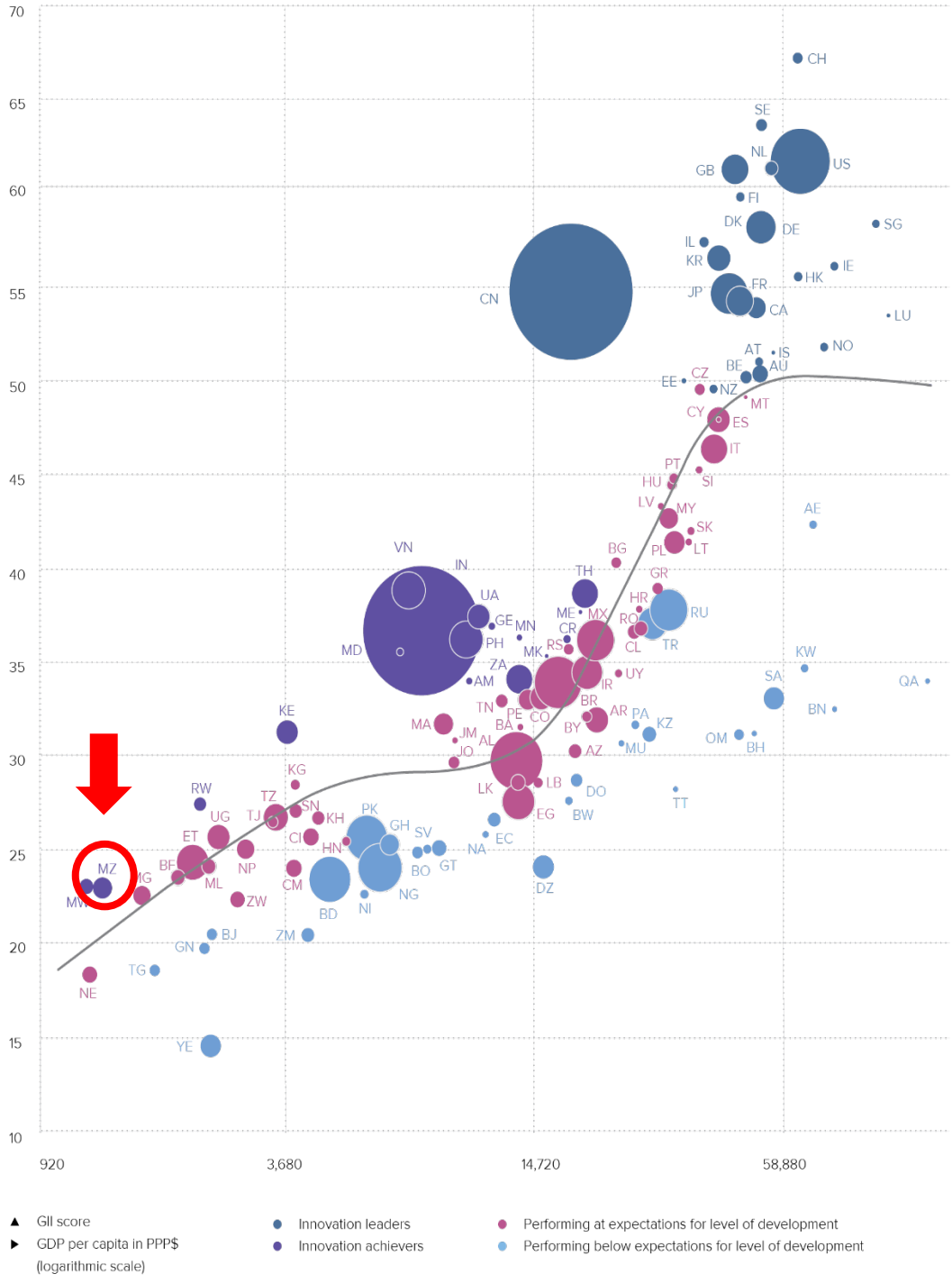
18th Mozambique ranks 18th among the 26 economies in Sub-Saharan Africa.

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 considered Innovation under-performers relative to GDP.

Relative to GDP, Mozambique performs above its expected level of development.

GII scores and GDP per capita in PPP US$
(bubbles sized by population)

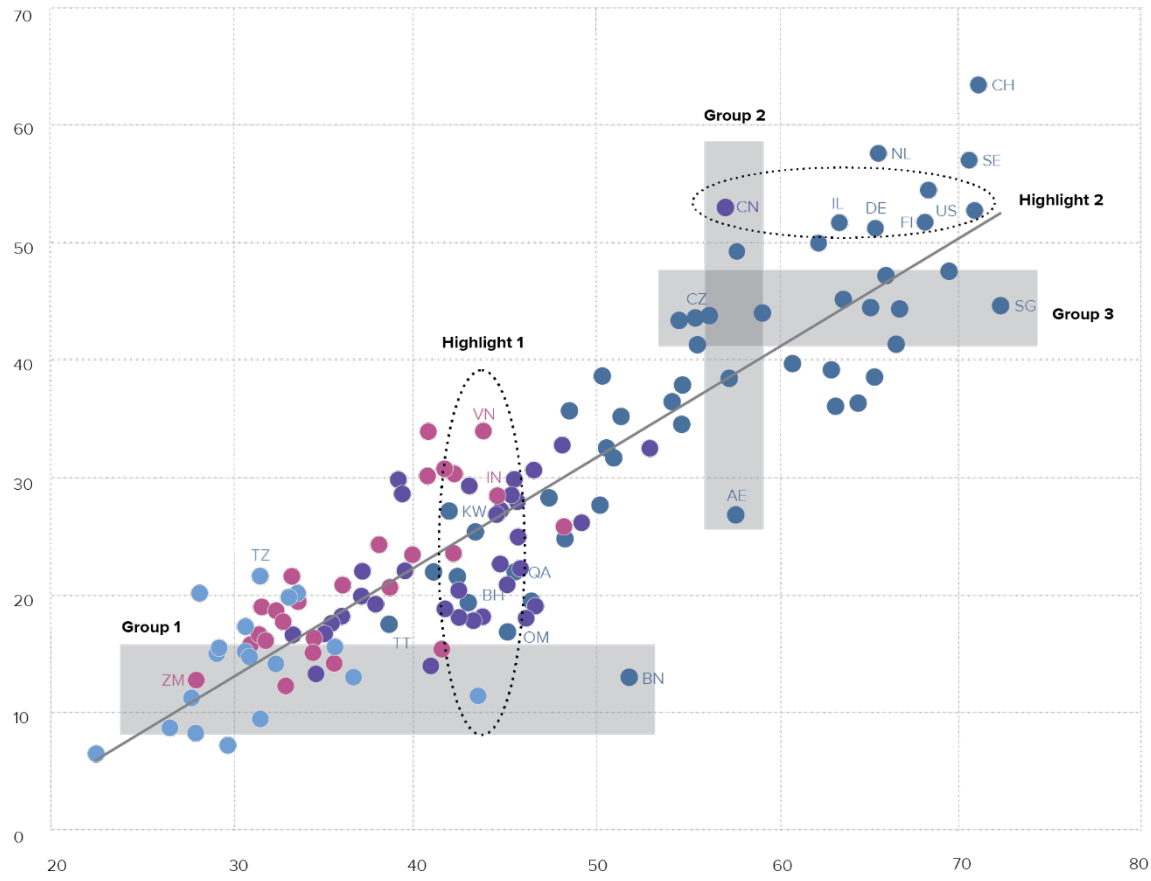


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and innovation outputs, indicating which economies best translate innovation inputs into innovation outputs. Economies appearing above the line are effectively translating their costly innovation investments into more and higher-quality outputs. In contrast, those below the line are not effectively translating innovation inputs into outputs.

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

Innovation input/output performance by income group, 2019



▲ Output score
▶ Input score

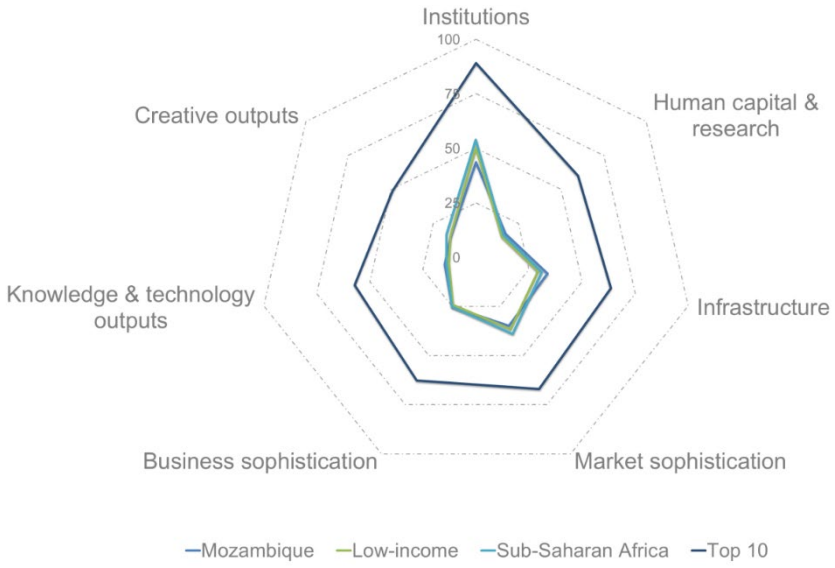
● High income
● Upper-middle income
● Lower-middle income
● Low income

— Fitted values

AE	United Arab Emirates	CZ	Czech Republic	NL	Netherlands	TZ	United Republic of Tanzania
BH	Bahrain	DE	Germany	OM	Oman	US	United States of America
BN	Brunei Darussalam	FI	Finland	QA	Qatar	VN	Viet Nam
CH	Switzerland	IL	Israel	SE	Sweden	ZM	Zambia
CN	China	IN	India	SG	Singapore		
		KW	Kuwait	TT	Trinidad and Tobago		

BENCHMARKING MOZAMBIQUE TO OTHER LOW-INCOME ECONOMIES AND THE SUB-SAHARAN AFRICA REGION

Mozambique's scores in the seven GII pillars



Low-income economies

Mozambique has high scores in 4 out of the 7 GII pillars: Human capital & research, Infrastructure, Business sophistication, and Knowledge & technology outputs, which are above the average of the low-income group.

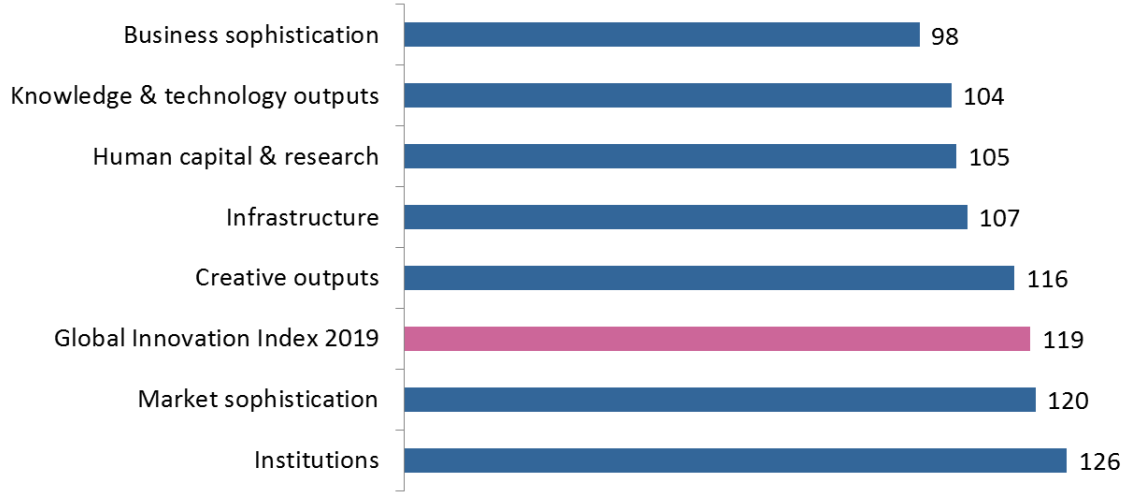
Sub-Saharan Africa Region

Compared to other economies in Sub-Saharan Africa, Mozambique performs above average in 3 out of the 7 GII pillars: Human capital & research, Infrastructure, and Knowledge & technology outputs.

Top ranks are found in sub-pillars Education, General infrastructure, Investment, and Innovation linkages, where the country ranks in the top 65 worldwide.

OVERVIEW OF MOZAMBIQUE' S RANKINGS IN THE 7 GII AREAS

Mozambique performs the best in Business sophistication and its weakest performance is in Institutions.



*The highest possible ranking in each pillar is 1.

MOZAMBIQUE'S INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of Mozambique's strengths and weaknesses in the GII 2019.

Strengths

Code	Indicator name	Rank
1.3.2	Ease of resolving insolvency*	76
2.1	Education	64
2.1.1	Expenditure on education, % GDP	15
2.1.2	Government funding/pupil, secondary, % GDP/cap	2
3.2	General infrastructure	17
3.2.3	Gross capital formation, % GDP	6
4.3.1	Applied tariff rate, weighted mean, %	70
5.2	Innovation linkages	22
5.2.3	GERD financed by abroad, %	8
5.3.3	ICT services imports, % total trade	44
5.3.4	FDI net inflows, % GDP, 3-year average	7
7.1.1	Trademarks by origin/bn PPP$ GDP	68
7.2.2	National feature films/mn pop. 15–69	65

Weaknesses

Code	Indicator name	Rank
2.1.5	Pupil-teacher ratio, secondary	111
2.2	Tertiary education	126
2.2.2	Graduates in science & engineering, %	101
2.3.3	Global R&D companies, top 3, in mn US$	43
2.3.4	QS university ranking, average score top 3*	78
3.1.1	ICT access*	126
3.3.1	GDP/unit of energy use	120
5.1	Knowledge workers	128
5.3.5	Research talent, % in business enterprise	85
6.1.2	PCT patents by origin/bn PPP$ GDP	99
7.2.5	Creative goods exports, % total trade	127
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	128

STRENGTHS

- GII strengths for Mozambique are found in six of the seven GII pillars.
- Several of these strengths are in Business sophistication (98). These are sub-pillar Innovation linkages (22) and three indicators: R&D financed by abroad (8), ICT services imports (44), and FDI inflows (7).
- Human capital & research (105) is the pillar with the second highest number of strengths for this country. Here, Mozambique's strengths are sub-pillar Education (64) and indicators Expenditure on education (15) and Government funding per pupil, where it positions 2nd globally.
- In Institutions (126), the only GII strength for this country is indicator Ease of resolving insolvency (76).
- In Infrastructure (107), sub-pillar General infrastructure (17) and its indicator Gross capital formation (6) are relative strengths for Mozambique.
- In Market sophistication (120), indicator Applied tariff rate (70) is a GII strength of Mozambique.
- In Creative outputs (116), two indicators – Trademarks by origin (68) and National feature films (65) – are Mozambique's strengths.

WEAKNESSES

- Mozambique's weaknesses in the GII are found in five of the seven GII pillars.
- Several of these weaknesses are in Human capital & research (105). Here, GII weaknesses are sub-pillar Tertiary education (126) and four indicators: Pupil-teacher ratio (111), Graduates in science & engineering (101), Global R&D companies (43), and Quality of universities (78).
- In Infrastructure (107), Mozambique present two weaknesses in indicators ICT access (126) and GDP per unit of energy use (120).
- In Business sophistication (98), relative weaknesses are sub-pillar Knowledge workers (128) and indicator Research talent (85).
- In Knowledge & technology outputs (104), one important indicator – PCT patents by origin (99) – is a relative weakness of Mozambique.
- In Creative outputs (116), Mozambique shows weaknesses in two indicators: Creative goods exports (127) and Generic top-level domains (TLDs) (128).

MOZAMBIQUE

GII 2019 rank

119

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
114	**118**	**Low**	**SSF**	**30.5**	**39.3**	**1,291.4**	**n/a**

		Score/Value	Rank	
INSTITUTIONS		**43.7**	**126**	
1.1	**Political environment**	**35.9**	**119**	
1.1.1	Political and operational stability*	57.9	101	
1.1.2	Government effectiveness*	24.9	120	
1.2	**Regulatory environment**	**38.0**	**123**	◇
1.2.1	Regulatory quality*	22.4	112	
1.2.2	Rule of law*	19.8	119	
1.2.3	Cost of redundancy dismissal, salary weeks	37.5	122	◇
1.3	**Business environment**	**57.2**	**110**	
1.3.1	Ease of starting a business*	67.6	124	◇
1.3.2	Ease of resolving insolvency*	46.9	76	● ◆
HUMAN CAPITAL & RESEARCH		**17.4**	**105**	
2.1	**Education**	**48.9**	**64**	● ◆
2.1.1	Expenditure on education, % GDP	6.5	15	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap.	44.0	2	● ◆
2.1.3	School life expectancy, years	9.7	107	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	36.5	111	○ ◇
2.2	**Tertiary education**	**1.5**	**126**	○ ◇
2.2.1	Tertiary enrolment, % gross	6.9	114	
2.2.2	Graduates in science & engineering, %	9.0	101	○ ◇
2.2.3	Tertiary inbound mobility, %	0.3	103	
2.3	**Research & development (R&D)**	**1.9**	**94**	
2.3.1	Researchers, FTE/mn pop.	41.5	93	
2.3.2	Gross expenditure on R&D, % GDP	0.3	74	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	0.0	43	○ ◇
2.3.4	QS university ranking, average score top 3*	0.0	78	○ ◇
INFRASTRUCTURE		**33.6**	**107**	
3.1	**Information & communication technologies(ICTs)**	**30.8**	**119**	
3.1.1	ICT access*	20.8	126	○ ◇
3.1.2	ICT use*	15.6	115	
3.1.3	Government's online service*	42.4	113	
3.1.4	E-participation*	44.4	107	
3.2	**General infrastructure**	**50.4**	**17**	● ◆
3.2.1	Electricity output, kWh/mn pop.	649.7	103	
3.2.2	Logistics performance*	n/a	n/a	
3.2.3	Gross capital formation, % GDP	40.0	6	● ◆
3.3	**Ecological sustainability**	**19.6**	**124**	
3.3.1	GDP/unit of energy use	2.4	120	○
3.3.2	Environmental performance*	46.4	107	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	86	
MARKET SOPHISTICATION		**34.8**	**120**	
4.1	**Credit**	**11.8**	**124**	
4.1.1	Ease of getting credit*	25.0	122	
4.1.2	Domestic credit to private sector, % GDP	25.6	106	
4.1.3	Microfinance gross loans, % GDP	0.0	68	
4.2	**Investment**	**41.7**	**[65]**	
4.2.1	Ease of protecting minority investors*	41.7	108	
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, & market scale**	**50.9**	**104**	
4.3.1	Applied tariff rate, weighted avg., %	3.6	70	● ◆
4.3.2	Intensity of local competition†	54.9	122	
4.3.3	Domestic market scale, bn PPP$	39.3	105	

		Score/Value	Rank	
BUSINESS SOPHISTICATION		**25.1**	**98**	
5.1	**Knowledge workers**	**2.5**	**128**	○ ◇
5.1.1	Knowledge-intensive employment, %	3.9	109	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.0	88	◇
5.1.4	GERD financed by business, %	0.5	93	
5.1.5	Females employed w/advanced degrees, %	0.7	110	
5.2	**Innovation linkages**	**44.4**	**22**	● ◆
5.2.1	University/industry research collaboration†	37.2	87	
5.2.2	State of cluster development†	36.5	102	
5.2.3	GERD financed by abroad, %	39.9	8	●
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	87	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	n/a	n/a	
5.3	**Knowledge absorption**	**28.5**	**90**	
5.3.1	Intellectual property payments, % total trade	0.3	77	
5.3.2	High-tech imports, % total trade	3.7	120	
5.3.3	ICT services imports, % total trade	1.5	44	●
5.3.4	FDI net inflows, % GDP	24.3	7	● ◆
5.3.5	Research talent, % in business enterprise	0.3	85	○
KNOWLEDGE & TECHNOLOGY OUTPUTS		**14.7**	**104**	
6.1	**Knowledge creation**	**3.9**	**108**	
6.1.1	Patents by origin/bn PPP$ GDP	0.4	77	◆
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	99	○ ◇
6.1.3	Utility models by origin/bn PPP$ GDP	0.2	44	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.2	91	
6.1.5	Citable documents H-index	4.1	101	
6.2	**Knowledge impact**	**33.0**	**[82]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.4	79	
6.2.2	New businesses/th pop. 15-64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.0	117	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.6	94	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**7.3**	**118**	
6.3.1	Intellectual property receipts, % total trade	0.0	97	
6.3.2	High-tech net exports, % total trade	0.5	79	◆
6.3.3	ICT services exports, % total trade	0.3	111	
6.3.4	FDI net outflows, % GDP	0.2	90	
CREATIVE OUTPUTS		**14.9**	**116**	
7.1	**Intangible assets**	**28.8**	**109**	
7.1.1	Trademarks by origin/bn PPP$ GDP	36.8	68	● ◆
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.8	73	
7.1.3	ICTs & business model creation†	48.4	113	
7.1.4	ICTs & organizational model creation†	35.8	119	
7.2	**Creative goods & services**	**1.9**	**[117]**	
7.2.1	Cultural & creative services exports, % total trade	0.0	104	
7.2.2	National feature films/mn pop. 15-69	2.0	65	● ◆
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	n/a	n/a	
7.2.5	Creative goods exports, % total trade	0.0	127	○
7.3	**Online creativity**	**0.1**	**124**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.0	128	○
7.3.2	Country-code TLDs/th pop. 15-69	0.1	110	
7.3.3	Wikipedia edits/mn pop. 15-69	0.2	116	
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 missing or are outdated for Mozambique.

Missing data

Code	Indicator name	Country year	Model year	Source
2.1.4	PISA scales in reading, maths & science	n/a	2015	OECD Programme for International Student Assessment (PISA)
3.2.2	Logistics performance*	n/a	2018	World Bank and Turku School of Economics
4.2.2	Market capitalization, % GDP	n/a	2017	World Federation of Exchanges
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	2018	Thomson Reuters
5.1.2	Firms offering formal training, % firms	n/a	2013	World Bank
5.2.5	Patent families 2+ offices/bn PPP$ GDP	n/a	2015	World Intellectual Property Organization
6.2.2	New businesses/th pop. 15–64	n/a	2016	World Bank
6.2.5	High- & medium-high-tech manufactures, %	n/a	2016	United Nations Industrial Development Organization
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	2017	PwC
7.2.4	Printing & other media, % manufacturing	n/a	2016	United Nations Industrial Development Organization
7.3.4	Mobile app creation/bn PPP$ GDP	n/a	2018	App Annie

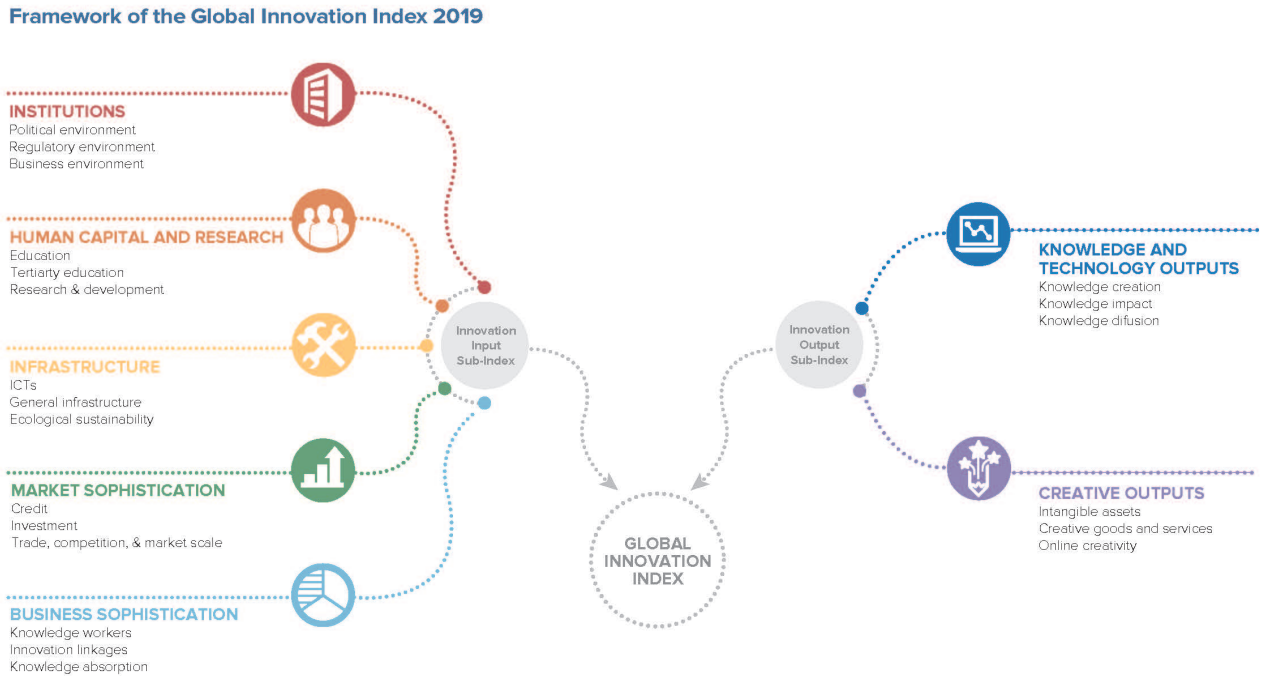
Outdated data

Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	2013	2015	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	2013	2015	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2015	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
2.3.2	Gross expenditure on R&D, % GDP	2015	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
4.3.1	Applied tariff rate, weighted mean, %	2016	2017	World Bank
5.1.1	Knowledge-intensive employment, %	2015	2017	Source: International Labour Organization
5.1.3	GERD performed by business, % GDP	2015	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.4	GERD financed by business, %	2015	2016	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.5	Females employed w/advanced degrees, %	2015	2017	International Labour Organization
5.2.3	GERD financed by abroad, %	2015	2016	UNESCO Institute for Statistics
5.3.5	Research talent, % in business enterprise	2015	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
6.1.1	Patents by origin/bn PPP$ GDP	2016	2017	World Intellectual Property Organization
6.1.3	Utility models by origin/bn PPP$ GDP	2016	2017	World Intellectual Property Organization
6.3.1	Intellectual property receipts, % total trade	2012	2017	World Trade Organization
7.1.1	Trademarks by origin/bn PPP$ GDP	2016	2017	World Intellectual Property Organization
7.1.2	Industrial designs by origin/bn PPP$ GDP	2016	2017	World Intellectual Property Organization
7.3.3	Wikipedia edits/mn pop. 15–69	2014	2017	Wikimedia Foundation

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 2019, the GII presents its 12th edition devoted to the theme **Creating Healthy Lives—The Future of Medical Innovation**.

Recognizing that innovation is a key driver of economic development, the GII aims to provide a rich innovation ranking and 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 countries 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 includes 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 containing three sub-pillars.