

# GLOBAL INNOVATION INDEX 2019

## THE UNITED REPUBLIC OF TANZANIA

**97th** The United Republic of Tanzania ranks 97th among the 129 economies featured in the GII.

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 the United Republic of Tanzania 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 the United Republic of Tanzania's ranking in the GII 2019 is between 96 and 110.

### Rankings of the United Republic of Tanzania, 2017 - 2019

	GII	Innovation Inputs	Innovation Outputs
<b>2019</b>	97	115	73
<b>2018</b>	92	106	71
<b>2017</b>	96	109	76

- The United Republic of Tanzania performs better in Innovation Outputs than Inputs.
- This year the United Republic of Tanzania ranks 115th in Innovation Inputs, worse than last year and compared to 2017.
- As for Innovation Outputs, the United Republic of Tanzania ranks 73rd. This position is worse than last year but better compared to 2017.

**3rd** The United Republic of Tanzania ranks 3rd among the 19 low-income economies.

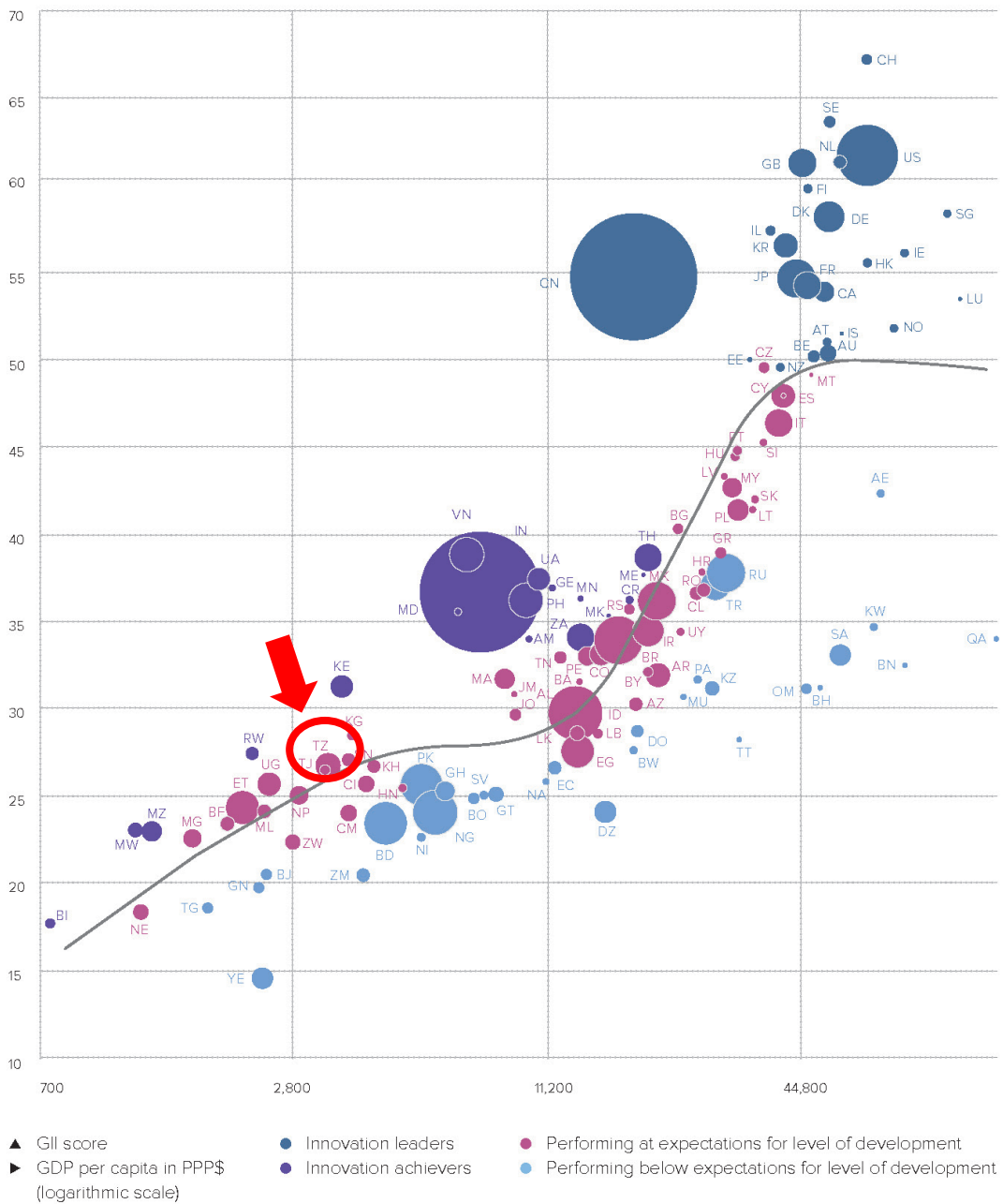
**7th** The United Republic of Tanzania ranks 7th among the 26 economies in Sub-Saharan Africa.

# 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, the United Republic of Tanzania performs at its expected level of development.

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

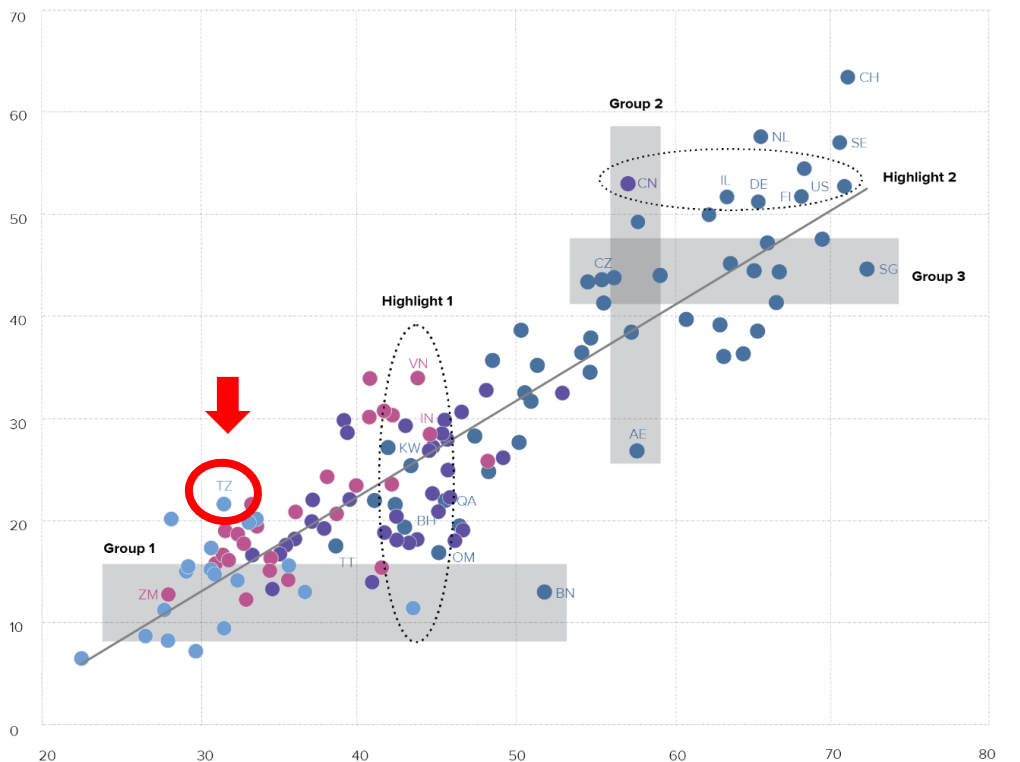


# EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

The United Republic of Tanzania 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

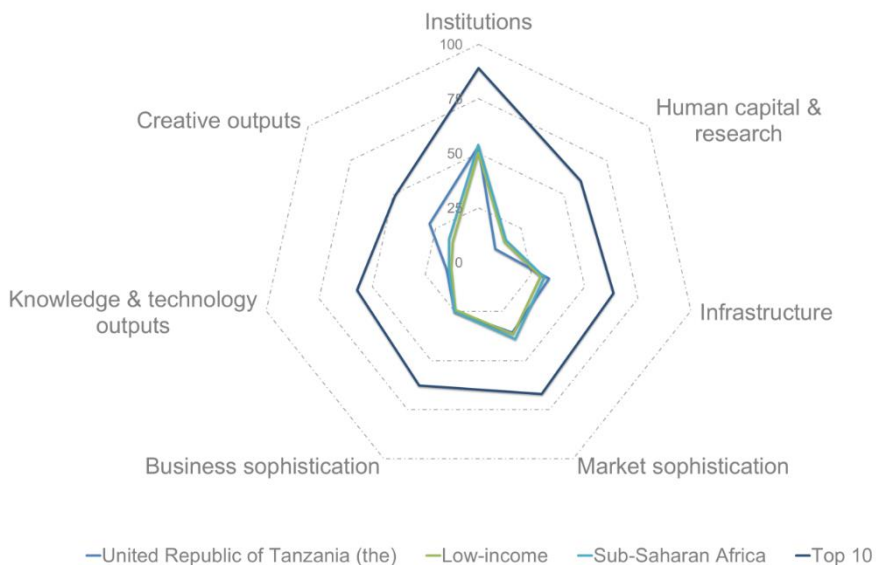
— Fitted values

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	

Source: Global Innovation Index Database, Cornell, INSEAD, and WIPO, 2019.

# BENCHMARKING THE UNITED REPUBLIC OF TANZANIA TO OTHER LOW-INCOME ECONOMIES AND THE SUB-SAHARAN AFRICA REGION

**Scores of the United Republic of Tanzania in the seven GII pillars**



## Low-income economies

The United Republic of Tanzania has high scores in 5 out of the 7 GII pillars: Institutions, Infrastructure, Business sophistication, Knowledge & technology outputs, and Creative outputs, which are above the average of the low-income group.

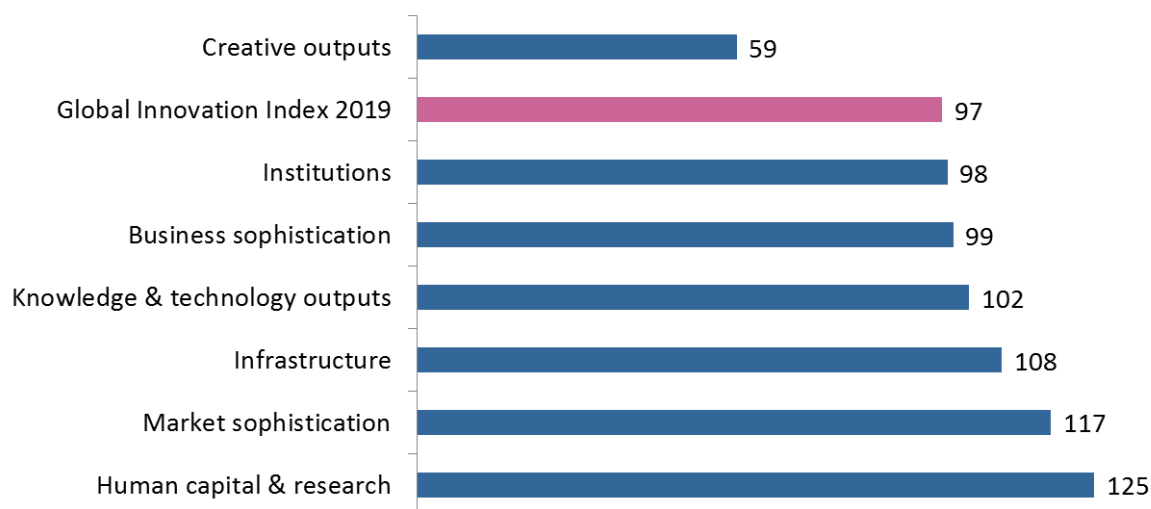
## Sub-Saharan Africa Region

Compared to other economies in Sub-Saharan Africa, the United Republic of Tanzania performs above average in 3 out of the 7 GII pillars: Infrastructure, Knowledge & technology outputs and Creative outputs.

Top ranks are found in sub-pillars Regulatory environment, General infrastructure, Innovation linkages, and Intangible assets where the country ranks in the top 70 worldwide.

## OVERVIEW OF THE RANKINGS OF THE UNITED REPUBLIC OF TANZANIA IN THE 7 GII AREAS

The United Republic of Tanzania performs the best in Creative outputs and its weakest performance is in Human capital & research.



\*The highest possible ranking in each pillar is 1.

## INNOVATION STRENGTHS AND WEAKNESSES OF THE UNITED REPUBLIC OF TANZANIA

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

Strengths		
Code	Indicator name	Rank
1.2.3	Cost of redundancy dismissal, salary weeks	25
2.3.2	Gross expenditure on R&D, % GDP	60
3.2	General infrastructure	61
3.2.3	Gross capital formation, % GDP	21
4.1.1	Ease of getting credit*	54
5.2	Innovation linkages	32
5.2.1	University/industry research collaboration <sup>†</sup>	49
5.2.2	State of cluster development <sup>†</sup>	54
5.2.3	GERD financed by abroad, %	6
5.3.4	FDI net inflows, % GDP, 3-year average	58
6.2.1	Growth rate of PPP\$ GDP/worker, %, 3-year average	24
7.2.4	Printing & other media, % manufacturing	25

Weaknesses		
Code	Indicator name	Rank
2.1.3	School life expectancy, years	116
2.2.1	Tertiary enrolment, % gross	122
2.3.1	Researchers, FTE/mn pop.	104
2.3.3	Global R&D companies, top 3, in mn US\$	43
2.3.4	QS university ranking, average score top 3*	78
5.1.4	GERD financed by business, %	98
5.2.4	JV–strategic alliance deals/bn PPP\$ GDP	108
5.2.5	Patent families 2+ offices/bn PPP\$ GDP	93
6.1.1	Patents by origin/bn PPP\$ GDP	126
6.2.3	Computer software spending, % GDP	126
6.3	Knowledge diffusion	127

## **STRENGTHS**

- GII strengths for the United Republic of Tanzania are found in all the seven GII pillars, and mostly on the innovation input side of the GII.
- Several of these strengths are in Business sophistication (99), where the country's strengths are sub-pillar Innovation linkages (32) and four indicators: University-industry research collaboration (49), State of cluster development (54), FDI inflows (58), and R&D financed by abroad. In the latter, the United Republic of Tanzania ranks 6th worldwide.
- In Institutions (98), the United Republic of Tanzania has one relative strength in indicator Cost of redundancy dismissal (25).
- In Human capital & research (125), indicator Gross expenditure on R&D (60) is a GII strength of the country.
- In Infrastructure (108), the United Republic of Tanzania shows strengths in sub-pillar General infrastructure (61) and one of its indicators - Gross capital formation (21).
- In Market sophistication (117), indicator Ease of getting credit (54) is a GII strength of the United Republic of Tanzania.
- In Knowledge & technology outputs (102), the United Republic of Tanzania presents one relative strength in indicator Labor productivity growth (24).
- In Creative outputs (59) a GII strength is found in indicator Printing & other media (25).

## **WEAKNESSES**

- GII Weaknesses of the United Republic of Tanzania are found in three of the seven GII pillars.
- In Human capital & research (125), GII weaknesses for this country are five indicators: School life expectancy (116), Tertiary enrolment (122), Researchers (104), Global R&D companies (43), and Quality of universities (78).
- In Business sophistication (99), relative weaknesses are three indicators: R&D financed by business (98), Joint Ventures - strategic alliance deals (108), and Patent families in two or more offices (93).
- In Knowledge & technology outputs (102), the United Republic of Tanzania presents three weaknesses: sub-pillar Knowledge diffusion (127) and indicators Patents by origin (126) and Computer software spending (126).

# UNITED REPUBLIC OF TANZANIA

## (THE)

GI I 2019 rank

97

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GI I 2018 rank
73	115	Low	SSF	59.1	175.9	3,443.7	92
				Score/Value	Rank		
<b>INSTITUTIONS</b> .....				53.4	98		
<b>1.1</b>	<b>Political environment</b> .....	<b>40.2</b>	<b>104</b>				
1.1.1	Political and operational stability*.....	57.9	101				
1.1.2	Government effectiveness*.....	31.3	106				
<b>1.2</b>	<b>Regulatory environment</b> .....	<b>64.2</b>	<b>70</b>				
1.2.1	Regulatory quality*.....	26.4	106				
1.2.2	Rule of law*.....	34.6	92				
1.2.3	Cost of redundancy dismissal, salary weeks.....	9.3	25	◆			
<b>1.3</b>	<b>Business environment</b> .....	<b>55.8</b>	<b>115</b>				
1.3.1	Ease of starting a business*.....	72.7	117	◇			
1.3.2	Ease of resolving insolvency*.....	39.0	103				
<b>HUMAN CAPITAL &amp; RESEARCH</b> .....				10.0	125		◇
<b>2.1</b>	<b>Education</b> .....	<b>24.5</b>	<b>117</b>				
2.1.1	Expenditure on education, % GDP.....	3.5	94				
2.1.2	Government funding/pupil, secondary, % GDP/cap.....	12.4	87				
2.1.3	School life expectancy, years.....	7.7	116	◇			
2.1.4	PISA scales in reading, maths, & science.....	n/a	n/a				
2.1.5	Pupil-teacher ratio, secondary.....	17.1	76				
<b>2.2</b>	<b>Tertiary education</b> .....	<b>2.5</b>	<b>[124]</b>				
2.2.1	Tertiary enrolment, % gross.....	3.9	122	○			
2.2.2	Graduates in science & engineering, %.....	n/a	n/a				
2.2.3	Tertiary inbound mobility, %.....	n/a	n/a				
<b>2.3</b>	<b>Research &amp; development (R&amp;D)</b> .....	<b>2.8</b>	<b>88</b>	◆			
2.3.1	Researchers, FTE/mn pop.....	18.3	104	○			
2.3.2	Gross expenditure on R&D, % GDP.....	0.5	60	◆			
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	◇			
<b>INFRASTRUCTURE</b> .....				33.2	108		
<b>3.1</b>	<b>Information &amp; communication technologies (ICTs)</b>	<b>38.3</b>	<b>110</b>				
3.1.1	ICT access*.....	26.0	121				
3.1.2	ICT use*.....	9.0	123	◇			
3.1.3	Government's online service*.....	56.3	95				
3.1.4	E-participation*.....	61.8	88				
<b>3.2</b>	<b>General infrastructure</b> .....	<b>35.9</b>	<b>61</b>	●			
3.2.1	Electricity output, kWh/mn pop.....	125.9	117				
3.2.2	Logistics performance*.....	n/a	n/a				
3.2.3	Gross capital formation, % GDP.....	30.5	21	●			
<b>3.3</b>	<b>Ecological sustainability</b> .....	<b>25.5</b>	<b>114</b>				
3.3.1	GDP/unit of energy use.....	5.2	106				
3.3.2	Environmental performance*.....	50.8	96	◆			
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP.....	0.3	103				
<b>MARKET SOPHISTICATION</b> .....				35.7	117		
<b>4.1</b>	<b>Credit</b> .....	<b>23.6</b>	<b>110</b>				
4.1.1	Ease of getting credit*.....	65.0	54	◆			
4.1.2	Domestic credit to private sector, % GDP.....	14.4	118				
4.1.3	Microfinance gross loans, % GDP.....	0.1	55				
<b>4.2</b>	<b>Investment</b> .....	<b>30.4</b>	<b>121</b>	◇			
4.2.1	Ease of protecting minority investors*.....	45.0	104				
4.2.2	Market capitalization, % GDP.....	n/a	n/a				
4.2.3	Venture capital deals/bn PPP\$ GDP.....	0.0	65	◇			
<b>4.3</b>	<b>Trade, competition, &amp; market scale</b> .....	<b>53.1</b>	<b>96</b>	◆			
4.3.1	Applied tariff rate, weighted avg., %.....	8.6	105				
4.3.2	Intensity of local competition*.....	59.4	109				
4.3.3	Domestic market scale, bn PPP\$.....	175.9	68	◆			
<b>BUSINESS SOPHISTICATION</b> .....				25.1	99		
<b>5.1</b>	<b>Knowledge workers</b> .....	<b>13.5</b>	<b>119</b>				
5.1.1	Knowledge-intensive employment, %.....	3.4	112				
5.1.2	Firms offering formal training, % firms.....	30.7	50				
5.1.3	GERD performed by business, % GDP.....	n/a	n/a				
5.1.4	GERD financed by business, %.....	0.1	98	◇			
5.1.5	Females employed w/advanced degrees, %.....	0.4	113				
<b>5.2</b>	<b>Innovation linkages</b> .....	<b>38.0</b>	<b>32</b>	●			
5.2.1	University/industry research collaboration*.....	45.7	49	●			
5.2.2	State of cluster development*.....	48.7	54	◆			
5.2.3	GERD financed by abroad, %.....	42.0	6				
5.2.4	JV-strategic alliance deals/bn PPP\$ GDP.....	0.0	108	○			
5.2.5	Patent families 2+ offices/bn PPP\$ GDP.....	0.0	93	◇			
<b>5.3</b>	<b>Knowledge absorption</b> .....	<b>23.8</b>	<b>108</b>				
5.3.1	Intellectual property payments, % total trade.....	0.0	113				
5.3.2	High-tech imports, % total trade.....	7.2	68				
5.3.3	ICT services imports, % total trade.....	0.3	115				
5.3.4	FDI net inflows, % GDP.....	2.9	58	●			
5.3.5	Research talent, % in business enterprise.....	n/a	n/a				
<b>KNOWLEDGE &amp; TECHNOLOGY OUTPUTS</b> .....				14.9	102		
<b>6.1</b>	<b>Knowledge creation</b> .....	<b>5.1</b>	<b>98</b>				
6.1.1	Patents by origin/bn PPP\$ GDP.....	0.0	126	◇			
6.1.2	PCT patents by origin/bn PPP\$ GDP.....	0.0	93				
6.1.3	Utility models by origin/bn PPP\$ GDP.....	n/a	n/a				
6.1.4	Scientific & technical articles/bn PPP\$ GDP.....	3.1	104				
6.1.5	Citable documents H-index.....	8.6	76	◆			
<b>6.2</b>	<b>Knowledge impact</b> .....	<b>33.5</b>	<b>78</b>				
6.2.1	Growth rate of PPP\$ GDP/worker, %.....	3.1	24	●			
6.2.2	New businesses/th pop. 15-64.....	n/a	n/a				
6.2.3	Computer software spending, % GDP.....	0.0	126	○			
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP.....	0.9	110				
6.2.5	High- & medium-high-tech manufactures, %.....	0.1	86				
<b>6.3</b>	<b>Knowledge diffusion</b> .....	<b>6.2</b>	<b>127</b>	○			
6.3.1	Intellectual property receipts, % total trade.....	0.0	101				
6.3.2	High-tech net exports, % total trade.....	0.2	101				
6.3.3	ICT services exports, % total trade.....	0.2	117				
6.3.4	FDI net outflows, % GDP.....	0.0	115				
<b>CREATIVE OUTPUTS</b> .....				28.7	[59]		
<b>7.1</b>	<b>Intangible assets</b> .....	<b>50.3</b>	<b>[34]</b>				
7.1.1	Trademarks by origin/bn PPP\$ GDP.....	n/a	n/a				
7.1.2	Industrial designs by origin/bn PPP\$ GDP.....	n/a	n/a				
7.1.3	ICTs & business model creation*.....	53.3	90				
7.1.4	ICTs & organizational model creation*.....	47.2	93				
<b>7.2</b>	<b>Creative goods &amp; services</b> .....	<b>13.9</b>	<b>[72]</b>				
7.2.1	Cultural & creative services exports, % total trade.....	0.0	114				
7.2.2	National feature films/mn pop. 15-69.....	n/a	n/a				
7.2.3	Entertainment & Media market/th pop. 15-69.....	n/a	n/a				
7.2.4	Printing & other media, % manufacturing.....	1.7	25	●			
7.2.5	Creative goods exports, % total trade.....	0.1	96				
<b>7.3</b>	<b>Online creativity</b> .....	<b>0.1</b>	<b>122</b>				
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69.....	0.1	119				
7.3.2	Country-code TLDs/th pop. 15-69.....	0.1	112				
7.3.3	Wikipedia edits/mn pop. 15-69.....	0.2	115				
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 the United Republic of Tanzania.

### 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)
2.2.2	Graduates in science & engineering, %	n/a	2016	UNESCO Institute for Statistics
2.2.3	Tertiary inbound mobility, %	n/a	2016	UNESCO Institute for Statistics
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
5.1.3	GERD performed by business, % GDP	n/a	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.3.5	Research talent, % in business enterprise	n/a	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2017	World Intellectual Property Organization
6.2.2	New businesses/th pop. 15–64	n/a	2016	World Bank
7.1.1	Trademarks by origin/bn PPP\$ GDP	n/a	2017	World Intellectual Property Organization
7.1.2	Industrial designs by origin/bn PPP\$ GDP	n/a	2017	World Intellectual Property Organization
7.2.2	National feature films/mn pop. 15–69	n/a	2017	UNESCO Institute for Statistics
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	2017	PwC
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	2014	2015	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	2010	2015	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2015	2017	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2013	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
2.3.2	Gross expenditure on R&D, % GDP	2013	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
4.1.2	Domestic credit to private sector, % GDP	2016	2017	International Monetary Fund
4.3.1	Applied tariff rate, weighted mean, %	2016	2017	World Bank
5.1.1	Knowledge-intensive employment, %	2014	2017	Source: International Labour Organization
5.1.4	GERD financed by business, %	2010	2016	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.5	Females employed w/advanced degrees, %	2014	2017	International Labour Organization
5.2.3	GERD financed by abroad, %	2010	2016	UNESCO Institute for Statistics
6.1.1	Patents by origin/bn PPP\$ GDP	2015	2017	World Intellectual Property Organization
7.2.1	Cultural & creative services exports, % total trade	2016	2017	World Trade Organization
7.2.5	Creative goods exports, % total trade	2016	2017	United Nations, COMTRADE
7.3.3	Wikipedia edits/mn pop. 15–69	2014	2017	Wikimedia Foundation

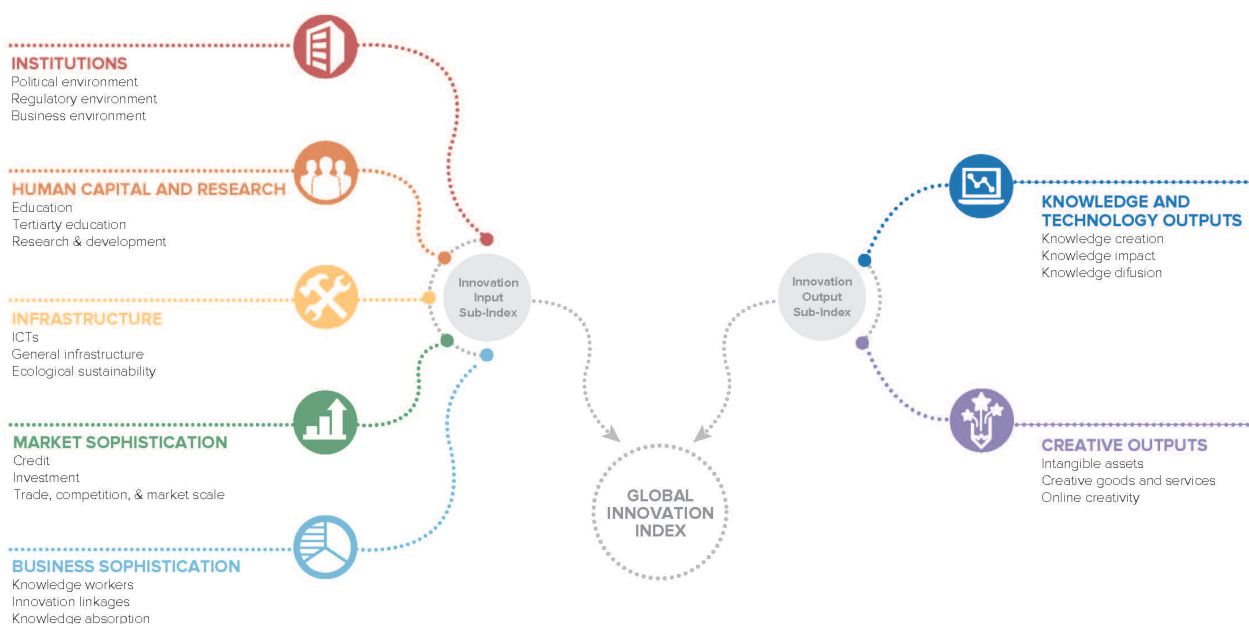


# ABOUT THE GLOBAL INNOVATION INDEX

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 12<sup>th</sup> 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.

## Framework of the Global Innovation Index 2019



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.

