ECONOMY PROFILES & DATA TABLES

Economy profiles

The following tables provide detailed profiles for each of the 129 economies in the Global Innovation Index 2019. They are constructed around three sections.

1 The top section provides the overall Global Innovation Index (GII) rank for each economy.

2 The next section provides eight key metrics to put the economy into context. They present the Innovation Output Sub-Index rank, Innovation Input Sub-Index rank, the income group to which the economy belongs, its geographical region,[1] population in millions,[2] GDP in billion PPP US$, and GDP per capita in PPP US$.[3] The last metric provides the GII 2018 rank for the economy.

Because of economies dropping or entering the GII, and because of adjustments made to the GII framework and other technical factors not directly related to actual performance (missing data, updates of data, etc.), the GII rankings are not directly comparable from one year to the next. Please refer to Appendix IV for details.

All scores at the sub-index, pillar, sub-pillar, and indicator level are normalized in the 0 to 100 range. The Innovation Input Sub-Index score is the average of the scores in the first five pillars, while the Innovation Output Sub-Index is the average of the scores in the last two pillars. Each sub-index rank is computed based on these scores for each economy.

3 Pillars are identified by an icon, sub-pillars by two-digit numbers, and indicators by three-digit numbers. For example, indicator: *1.3.1 Ease of starting a business* appears under sub-pillar: *1.3, Business environment*, which in turn appears under pillar: *1 Institutions.* Throughout the report the pillars are identified by their respective icons or names, and the sub-pillars and indicators by their respective numbers.

The 2019 GII includes 80 indicators and three types of data. Composite (or index) indicators are identified with an asterisk (*), survey questions from the World Economic Forum's Executive Opinion Survey are identified with a dagger (†), and the remaining indicators are all hard data series.

For hard data, the original value is provided (except for indicators in sub-pillar 7.3, for which the raw data were provided under the condition that only the normalized scores be published). Normalized scores in the 0 to 100 range are provided for everything else (index and survey data, sub-pillars, pillars, and indices).

When data are either not available or out of date, 'n/a' is used. (see Appendix IV for more details). The year used for each data point is indicated in the Data Table (Appendix II). To the right of the indicator title, a clock symbol indicates that the economy's data for that indicator are older than the base year. (Appendix II)

For further details, see Appendix III, Sources and Definitions, and Appendix IV, Adjustments to the Global Innovation Index Framework, Year-on-Year Comparability of Results, and Technical Notes.

4 To the far right of each column, strengths of the economy in question are indicated by a solid circle (●), weaknesses by a hollow circle (○). Strengths within the economy's income group are indicated with a solid diamond (◆), weaknesses by a hollow diamond (◇). The only exceptions to the income group strengths and weaknesses are the top 25 high-income economies, where these strengths and weaknesses are computed within the top 25 group.[4]

All ranks of 1, 2, and 3 are highlighted as strengths, except in particular instances at the sub-pillar level where strengths and weaknesses are not signaled when the desired minimum indicator coverage (DMC) is not met for that sub-pillar.[5] For the remaining indicators, strengths and weaknesses of a particular economy are based on the percentage of economies with scores that fall below its score (i.e., percent ranks).

- For a given economy, strengths (●) are those scores with percent ranks greater than the 10th largest percent rank among the 80 indicators in that economy.
- For that economy, weaknesses (○) are those scores with percent ranks lower than the 10th smallest percent rank among the 80 indicators in that economy.
- Similarly, for a given economy, income group strengths (◆) are those scores that are above the income group average plus the standard deviation within the group.
- For an economy, weaknesses (◇) are those scores that are below the income group average minus the standard deviation within the group.

In addition, economies with a sub-pillar that does not meet the DMC will show the score for that sub-pillar within brackets. Those that have more than one sub-pillar that fails to meet the DMC in the same pillar will also show the ranks of the pillar where these are located within brackets. For these pillars and sub-pillars, strengths/weaknesses are not signaled.

Percent ranks embed more information than ranks and allow for comparisons of ranks of series with missing data and ties in ranks. Examples from the Russian Federation and Zambia illustrate this point:

1. Strengths for Russia are all indicators with percent ranks equal to or above 0.83 (10th largest percent rank for Russia); weaknesses are all indicators with percent ranks equal to or below 0.27 (Russia's 10th smallest percent rank).
2. Russia ranks 22nd out of 129 economies in 6.1.5, Citable documents H-Index, with a percent rank of 0.84; this indicator is a strength for Russia.
3. Russia ranks 29th in 1.3.1, Ease of starting a business, but with a percent rank of 0.78, this indicator is not a strength for Russia.
4. The rank of 77 (percent rank of 0.01) in 4.2.3, Venture capital deals loans, is a weakness for Russia. By contrast, the similar rank of 78 for Zambia in 1.3.1, Ease of starting a business is a strength for Zambia (with a percent rank of 0.40, this is above the cut-off for strengths for Zambia, which is 0.37).

Percent ranks are not reported in the Economy Profiles but they are presented in the Data Tables (Appendix II).

Data tables

This appendix provides a description of the tables for each of the 80 indicators that make up the Global Innovation Index 2019. These can be found online at https://globalinnovationindex.org.

Structure

Each table is identified by indicator number, with the first digit representing the pillar, the second representing the sub-pillar, and the final digit representing the indicator within that particular sub-pillar. For example, the table for indicator shows results for indicator 5.1.4, GERD financed by business enterprise, which is the fourth indicator of sub-pillar 5.1, Knowledge workers, within pillar 5, Business sophistication.

The sub-heading text provides a detailed description of each indicator and includes information on the units of each variable, the scaling factor (if any), the question asked (for survey questions), and the most frequent year for which data were available

For each indicator for each economy, the most recent value within the period 2009 to 2018 was used (with a few exceptions, which are further explained in Appendix III). In instances where this base year does not correspond to the most frequent year reported in the sub-heading, the year of the value appears in parentheses after the economy name. These instances are noted in the Economy Profiles after the indicator name with a clock symbol.

A total of 57 variables are hard data. A total of 18 variables are composite indicators and 5 are survey questions from the World Economic Forum's Executive Opinion Survey.

The source of each indicator is indicated at the bottom of the page; details for each can be found in Appendix III: Sources and Definitions.

Explanation of scores

The tables list the economies by their rank order, with the best performers at the top. After the rank comes the economy name, the original value of the specific indicator for that economy (in the units specified in the sub-heading), the normalized score in the 0 to 100 range, and the percentage of economies with scores that fall below the normalized score (i.e., percent ranks). To the far right of each column, a solid circle indicates that an indicator is a strength for the economy in question, and a hollow circle indicates that it is a weakness.

- Strengths (●) are all ranks of 1, 2, and 3, as well as all scores with percent ranks greater than the 10th highest percent rank among the 81 indicators in a specific economy.

- Weaknesses (○) are all scores with percent ranks lower than the 10th smallest percent rank among the 80 indicators in a specific economy.

For four hard data series (7.3.1, 7.3.2, 7.3.3, and 7.3.4), the raw data were provided under the condition that only the normalized scores be published and therefore the original value equals the normalized score. For indicators 1.3.1, 1.3.2, 2.3.4, 3.3.2, 4.1.1, and 4.2.1, the range for both measures is the same, 0 to 100, and therefore both measures are also identical.

Details on the computation methodology can be found in Appendix IV.

Notes:

1 Countries/economies are classified according to the World Bank Income Group (July 2018; see https://datahelpdesk.worldbank.org/knowledge-base/articles/906519-world-bank-country-and-lending-groups) and special classification based on the online version of the United Nations publication *Standard Country or Area Codes for Statistical Use*, originally published as Series M, No. 49, and now commonly referred to as the M49 standard (April 2018; see https://unstats.un.org/unsd/methodology/m49/). These are: EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia, East Asia, and Oceania; NAWA = Northern Africa and Western Asia; SSF = Sub-Saharan Africa.

2 Data are from the United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2017 Revision*.

3 Data for GDP and GDP per capita are from the International Monetary Fund World Economic Outlook 2018 database.

4 As the only non-high-income economy in the top 25, China's income group strengths and weaknesses are computed within the non-top 25 group.

5 Data stringency requirements are used in the attribution of strengths and weaknesses at the sub-pillar level. These levels were revised in 2019. When economies do not meet a data minimum coverage (DMC) requirement at the sub-pillar level (for sub-pillars with two indicators, the DMC is 2; for three it is 2; for four it is 3; and for five it is 4), they are not attributed a strength or weakness at the sub-pillar either. Furthermore, if the economy in question does not meet the DMC requirements at the sub-pillar level, but it still obtains a ranking higher than or equal to 10 or a ranking equal to or lower than 100 at the sub-pillar level, for caution this rank is put in brackets. This procedure is to ensure that incomplete data coverage does not lead to erroneous conclusions about strengths or weaknesses, or particularly about strong or weak sub-pillar rankings.

Index of economy profiles

ALBANIA

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
93	70	Upper middle	EUR	2.9	38.3	13,344.5	83

		Score/Value	Rank	
	INSTITUTIONS	**65.8**	**56**	
1.1	**Political environment**	**56.8**	**63**	
1.1.1	Political and operational stability*	73.7	50	
1.1.2	Government effectiveness*	48.4	66	
1.2	**Regulatory environment**	**61.1**	**79**	
1.2.1	Regulatory quality*	47.9	60	
1.2.2	Rule of law*	35.7	85	
1.2.3	Cost of redundancy dismissal, salary weeks	20.8	88	
1.3	**Business environment**	**79.5**	**35**	● ◆
1.3.1	Ease of starting a business*	91.6	44	
1.3.2	Ease of resolving insolvency*	67.4	36	●
	HUMAN CAPITAL & RESEARCH	**22.7**	**88**	
2.1	**Education**	**40.1**	**85**	
2.1.1	Expenditure on education, % GDP	4.0	80	
2.1.2	Government funding/pupil, secondary, % GDP/cap	9.8	98	○ ◇
2.1.3	School life expectancy, years	15.2	48	
2.1.4	PISA scales in reading, maths, & science	415.2	57	
2.1.5	Pupil-teacher ratio, secondary	11.6	45	
2.2	**Tertiary education**	**26.7**	**76**	
2.2.1	Tertiary enrolment, % gross	57.0	51	
2.2.2	Graduates in science & engineering, %	19.2	69	
2.2.3	Tertiary inbound mobility, %	1.5	81	
2.3	**Research & development (R&D)**	**1.2**	**103**	
2.3.1	Researchers, FTE/mn pop. ⊙	156.1	82	
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.2	94	
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	**46.2**	**66**	
3.1	**Information & communication technologies(ICTs)**	**63.8**	**72**	
3.1.1	ICT access*	53.1	82	
3.1.2	ICT use*	52.8	69	
3.1.3	Government's online service*	73.6	57	
3.1.4	E-participation*	75.8	59	
3.2	**General infrastructure**	**26.6**	**94**	
3.2.1	Electricity output, kWh/mn pop.	2,702.1	67	
3.2.2	Logistics performance*	27.9	85	
3.2.3	Gross capital formation, % GDP	21.7	78	
3.3	**Ecological sustainability**	**48.2**	**38**	● ◆
3.3.1	GDP/unit of energy use	14.1	16	● ◆
3.3.2	Environmental performance*	65.5	36	● ◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.9	48	
	MARKET SOPHISTICATION	**53.4**	**42**	●
4.1	**Credit**	**30.9**	**89**	
4.1.1	Ease of getting credit*	70.0	40	
4.1.2	Domestic credit to private sector, % GDP	35.0	88	
4.1.3	Microfinance gross loans, % GDP ⊙	0.5	31	
4.2	**Investment**	**71.7**	**[8]**	
4.2.1	Ease of protecting minority investors*	71.7	24	●
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**	**57.6**	**77**	
4.3.1	Applied tariff rate, weighted avg., %	0.9	7	●
4.3.2	Intensity of local competition†	67.4	72	
4.3.3	Domestic market scale, bn PPP$	38.3	107	◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**24.0**	**105**	
5.1	**Knowledge workers**	**24.5**	**97**	
5.1.1	Knowledge-intensive employment, %	17.4	85	
5.1.2	Firms offering formal training, % firms	23.8	66	
5.1.3	GERD performed by business, % GDP	n/a	n/a	
5.1.4	GERD financed by business, % ⊙	3.3	85	◇
5.1.5	Females employed w/advanced degrees, %	9.9	66	
5.2	**Innovation linkages**	**17.9**	**108**	
5.2.1	University/industry research collaboration†	38.8	73	
5.2.2	State of cluster development†	34.3	112	◇
5.2.3	GERD financed by abroad, % ⊙	7.4	53	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	68	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**29.5**	**85**	
5.3.1	Intellectual property payments, % total trade	0.5	66	
5.3.2	High-tech imports, % total trade	1.5	128	○ ◇
5.3.3	ICT services imports, % total trade	1.5	42	●
5.3.4	FDI net inflows, % GDP	8.4	16	● ◆
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**12.2**	**114**	
6.1	**Knowledge creation**	**2.2**	**121**	○
6.1.1	Patents by origin/bn PPP$ GDP	0.6	75	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	99	○ ◇
6.1.3	Utility models by origin/bn PPP$ GDP	0.0	62	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.2	98	
6.1.5	Citable documents H-index	1.5	122	○
6.2	**Knowledge impact**	**23.3**	**109**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-1.6	104	◇
6.2.2	New businesses/th pop. 15-64	1.4	62	
6.2.3	Computer software spending, % GDP	0.1	88	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.8	39	●
6.2.5	High- & medium-high-tech manufactures, %	0.0	99	○ ◇
6.3	**Knowledge diffusion**	**10.9**	**99**	
6.3.1	Intellectual property receipts, % total trade	0.1	53	
6.3.2	High-tech net exports, % total trade	0.0	125	○
6.3.3	ICT services exports, % total trade	2.0	56	
6.3.4	FDI net outflows, % GDP	0.0	116	
	CREATIVE OUTPUTS	**24.4**	**74**	
7.1	**Intangible assets**	**30.1**	**107**	
7.1.1	Trademarks by origin/bn PPP$ GDP	34.2	71	
7.1.2	Industrial designs by origin/bn PPP$ GDP ⊙	0.4	87	
7.1.3	ICTs & business model creation†	51.3	100	
7.1.4	ICTs & organizational model creation†	39.5	113	◇
7.2	**Creative goods & services**	**30.7**	**29**	● ◆
7.2.1	Cultural & creative services exports, % total trade	1.2	22	●
7.2.2	National feature films/mn pop. 15-69 ⊙	3.3	54	
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	3.4	5	● ◆
7.2.5	Creative goods exports, % total trade ⊙	0.2	89	
7.3	**Online creativity**	**6.6**	**59**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	6.6	48	
7.3.2	Country-code TLDs/th pop. 15-69	2.4	63	
7.3.3	Wikipedia edits/mn pop. 15-69 ⊙	16.0	57	
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.

ALGERIA

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
118	100	Upper middle	NAWA	42.0	660.8	15,439.9	110

		Score/Value	Rank	
	INSTITUTIONS	**51.1**	**106**	◇
1.1	**Political environment**	**38.3**	**111**	◇
1.1.1	Political and operational stability*	50.9	121	◇
1.1.2	Government effectiveness*	32.1	103	◇
1.2	**Regulatory environment**	**51.2**	**109**	◇
1.2.1	Regulatory quality*	9.8	126	○ ◇
1.2.2	Rule of law*	23.5	116	◇
1.2.3	Cost of redundancy dismissal, salary weeks	17.3	71	
1.3	**Business environment**	**63.7**	**88**	
1.3.1	Ease of starting a business*	78.1	112	
1.3.2	Ease of resolving insolvency*	49.2	68	
	HUMAN CAPITAL & RESEARCH	**27.9**	**74**	
2.1	**Education**	**37.7**	**[90]**	
2.1.1	Expenditure on education, % GDP ⊙	4.3	69	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years ⊙	14.3	65	
2.1.4	PISA scales in reading, maths, & science	361.7	69	○
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**40.6**	**36**	●
2.2.1	Tertiary enrolment, % gross	47.7	62	●
2.2.2	Graduates in science & engineering, %	31.1	9	● ◆
2.2.3	Tertiary inbound mobility, %	0.6	94	
2.3	**Research & development (R&D)**	**5.3**	**78**	
2.3.1	Researchers, FTE/mn pop.	820.8	54	●
2.3.2	Gross expenditure on R&D, % GDP	0.5	58	●
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	**42.1**	**81**	
3.1	**Information & communication technologies(ICTs)**	**35.3**	**115**	◇
3.1.1	ICT access*	53.1	83	
3.1.2	ICT use*	46.3	75	
3.1.3	Government's online service*	21.5	125	○ ◇
3.1.4	E-participation*	20.2	123	◇
3.2	**General infrastructure**	**54.8**	**10**	● ◆
3.2.1	Electricity output, kWh/mn pop.	1,748.3	82	
3.2.2	Logistics performance*	18.0	107	◇
3.2.3	Gross capital formation, % GDP	50.6	2	● ◆
3.3	**Ecological sustainability**	**36.1**	**74**	
3.3.1	GDP/unit of energy use	10.3	47	●
3.3.2	Environmental performance*	57.2	77	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	123	
	MARKET SOPHISTICATION	**34.1**	**122**	◇
4.1	**Credit**	**9.8**	**125**	◇
4.1.1	Ease of getting credit*	10.0	126	○ ◇
4.1.2	Domestic credit to private sector, % GDP	24.8	107	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**35.0**	**[99]**	
4.2.1	Ease of protecting minority investors*	35.0	123	◇
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**	**57.6**	**78**	
4.3.1	Applied tariff rate, weighted avg., %	9.4	110	◇
4.3.2	Intensity of local competition†	55.0	121	◇
4.3.3	Domestic market scale, bn PPP$	660.8	34	●

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**18.1**	**126**	○ ◇
5.1	**Knowledge workers**	**19.0**	**110**	◇
5.1.1	Knowledge-intensive employment, %	17.9	81	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.0	75	
5.1.4	GERD financed by business, %	6.7	77	◇
5.1.5	Females employed w/advanced degrees, %	8.1	79	
5.2	**Innovation linkages**	**13.8**	**122**	◇
5.2.1	University/industry research collaboration†	26.9	117	◇
5.2.2	State of cluster development†	40.6	91	
5.2.3	GERD financed by abroad, %	0.0	102	○ ◇
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	94	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	89	
5.3	**Knowledge absorption**	**21.4**	**117**	◇
5.3.1	Intellectual property payments, % total trade	0.4	73	
5.3.2	High-tech imports, % total trade	8.3	53	●
5.3.3	ICT services imports, % total trade	0.7	91	
5.3.4	FDI net inflows, % GDP	0.5	120	◇
5.3.5	Research talent, % in business enterprise	0.5	82	◇
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**12.3**	**113**	
6.1	**Knowledge creation**	**6.0**	**90**	
6.1.1	Patents by origin/bn PPP$ GDP	0.2	91	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	87	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.6	83	
6.1.5	Citable documents H-index	8.0	79	
6.2	**Knowledge impact**	**24.5**	**107**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.5	50	●
6.2.2	New businesses/th pop. 15–64 ⊙	0.6	82	
6.2.3	Computer software spending, % GDP	0.0	125	○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.7	115	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.0	94	◇
6.3	**Knowledge diffusion**	**6.4**	**126**	○ ◇
6.3.1	Intellectual property receipts, % total trade	0.0	100	◇
6.3.2	High-tech net exports, % total trade	0.0	126	○
6.3.3	ICT services exports, % total trade	0.3	109	
6.3.4	FDI net outflows, % GDP	0.0	107	
	CREATIVE OUTPUTS	**14.3**	**117**	◇
7.1	**Intangible assets**	**27.8**	**111**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	12.9	99	
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.9	53	●
7.1.3	ICTs & business model creation†	46.7	114	◇
7.1.4	ICTs & organizational model creation†	41.3	110	◇
7.2	**Creative goods & services**	**1.0**	**125**	◇
7.2.1	Cultural & creative services exports, % total trade	0.0	108	
7.2.2	National feature films/mn pop. 15–69	0.4	97	
7.2.3	Entertainment & Media market/th pop. 15–69	1.3	55	◇
7.2.4	Printing & other media, % manufacturing ⊙	0.3	99	○ ◇
7.2.5	Creative goods exports, % total trade	0.0	124	
7.3	**Online creativity**	**0.8**	**102**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.5	108	
7.3.2	Country-code TLDs/th pop. 15–69	0.1	116	
7.3.3	Wikipedia edits/mn pop. 15–69	3.7	90	
7.3.4	Mobile app creation/bn PPP$ GDP	0.0	94	

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.

ARGENTINA

GII 2019 rank
73

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
75	72	High	LCN	44.7	918.6	20,537.1	80

		Score/Value	Rank	
	INSTITUTIONS	**56.7**	**86**	◇
1.1	**Political environment**	**57.0**	**62**	◇
1.1.1	Political and operational stability*	70.2	61	◇
1.1.2	Government effectiveness*	50.4	61	◇
1.2	**Regulatory environment**	**51.5**	**106**	○ ◇
1.2.1	Regulatory quality*	34.1	92	◇
1.2.2	Rule of law*	39.9	75	◇
1.2.3	Cost of redundancy dismissal, salary weeks	30.3	116	○ ◇
1.3	**Business environment**	**61.6**	**95**	◇
1.3.1	Ease of starting a business*	82.0	99	◇
1.3.2	Ease of resolving insolvency*	41.2	92	◇

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**38.7**	**42**	
2.1	**Education**	**57.9**	**31**	
2.1.1	Expenditure on education, % GDP	5.6	25	●
2.1.2	Government funding/pupil, secondary, % GDP/cap	21.8	42	
2.1.3	School life expectancy, years	17.6	15	●
2.1.4	PISA scales in reading, maths, & science	468.9	39	
2.1.5	Pupil-teacher ratio, secondary ⊙	12.2	50	
2.2	**Tertiary education**	**29.7**	**70**	◇
2.2.1	Tertiary enrolment, % gross ⊙	89.1	7	●
2.2.2	Graduates in science & engineering, %	16.1	81	○ ◇
2.2.3	Tertiary inbound mobility, %	2.5	70	
2.3	**Research & development (R&D)**	**28.6**	**38**	
2.3.1	Researchers, FTE/mn pop. ⊙	1,232.6	47	◇
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.5	59	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	46.3	34	
2.3.4	QS university ranking, average score top 3*	41.9	29	●

		Score/Value	Rank	
	INFRASTRUCTURE	**45.8**	**69**	◇
3.1	**Information & communication technologies(ICTs)**	**68.1**	**62**	◇
3.1.1	ICT access*	73.1	55	◇
3.1.2	ICT use*	61.8	53	◇
3.1.3	Government's online service*	75.0	56	
3.1.4	E-participation*	62.4	84	◇
3.2	**General infrastructure**	**32.1**	**75**	◇
3.2.1	Electricity output, kWh/mn pop.	3,346.1	59	
3.2.2	Logistics performance*	38.5	60	◇
3.2.3	Gross capital formation, % GDP	23.7	57	
3.3	**Ecological sustainability**	**37.3**	**69**	◇
3.3.1	GDP/unit of energy use	9.2	62	
3.3.2	Environmental performance*	59.3	65	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.6	54	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**37.9**	**111**	○ ◇
4.1	**Credit**	**20.1**	**117**	○ ◇
4.1.1	Ease of getting credit*	55.0	77	
4.1.2	Domestic credit to private sector, % GDP	16.1	113	○ ◇
4.1.3	Microfinance gross loans, % GDP	0.0	75	○
4.2	**Investment**	**32.2**	**111**	○ ◇
4.2.1	Ease of protecting minority investors*	61.7	54	
4.2.2	Market capitalization, % GDP	12.7	68	○
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	59	
4.3	**Trade, competition, & market scale**	**61.3**	**61**	
4.3.1	Applied tariff rate, weighted avg., %	7.9	103	○ ◇
4.3.2	Intensity of local competition†	55.4	120	○ ◇
4.3.3	Domestic market scale, bn PPP$	918.6	28	●

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**32.6**	**57**	◇
5.1	**Knowledge workers**	**41.2**	**53**	
5.1.1	Knowledge-intensive employment, %	17.6	84	◇
5.1.2	Firms offering formal training, % firms ⊙	63.6	5	● ◆
5.1.3	GERD performed by business, % GDP ⊙	0.1	58	◇
5.1.4	GERD financed by business, %	18.2	69	◇
5.1.5	Females employed w/advanced degrees, %	14.2	44	
5.2	**Innovation linkages**	**18.0**	**106**	○ ◇
5.2.1	University/industry research collaboration†	37.6	83	◇
5.2.2	State of cluster development†	39.1	95	◇
5.2.3	GERD financed by abroad, %	6.3	57	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	96	○ ◇
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	62	
5.3	**Knowledge absorption**	**38.4**	**42**	
5.3.1	Intellectual property payments, % total trade	2.9	7	● ◆
5.3.2	High-tech imports, % total trade	12.1	18	●
5.3.3	ICT services imports, % total trade	1.5	39	
5.3.4	FDI net inflows, % GDP	1.5	97	
5.3.5	Research talent, % in business enterprise ⊙	8.1	65	◇

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**19.2**	**78**	◇
6.1	**Knowledge creation**	**13.2**	**60**	
6.1.1	Patents by origin/bn PPP$ GDP	0.4	78	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	0.2	43	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.8	65	◇
6.1.5	Citable documents H-index	26.2	36	
6.2	**Knowledge impact**	**28.0**	**101**	◇
6.2.1	Growth rate of PPP$ GDP/worker, %	-1.2	102	○ ◇
6.2.2	New businesses/th pop. 15-64 ⊙	0.4	89	○
6.2.3	Computer software spending, % GDP	0.2	78	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.0	47	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**16.3**	**73**	
6.3.1	Intellectual property receipts, % total trade	0.2	33	
6.3.2	High-tech net exports, % total trade	1.8	56	
6.3.3	ICT services exports, % total trade	2.5	41	
6.3.4	FDI net outflows, % GDP	0.2	87	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**24.0**	**77**	◇
7.1	**Intangible assets**	**37.9**	**80**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	64.7	32	
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.1	65	
7.1.3	ICTs & business model creation†	53.0	93	◇
7.1.4	ICTs & organizational model creation†	50.6	79	◇
7.2	**Creative goods & services**	**14.6**	**69**	◇
7.2.1	Cultural & creative services exports, % total trade	1.1	24	●
7.2.2	National feature films/mn pop. 15-69	7.4	24	●
7.2.3	Entertainment & Media market/th pop. 15-69	10.2	35	◇
7.2.4	Printing & other media, % manufacturing ⊙	1.0	67	
7.2.5	Creative goods exports, % total trade	0.1	98	
7.3	**Online creativity**	**5.4**	**63**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	3.0	62	◇
7.3.2	Country-code TLDs/th pop. 15-69	4.5	55	
7.3.3	Wikipedia edits/mn pop. 15-69	12.1	61	◇
7.3.4	Mobile app creation/bn PPP$ GDP	5.8	48	

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.

ARMENIA

GII 2019 rank

64

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
50	85	Upper middle	NAWA	2.9	30.7	10,176.1	68

		Score/Value	Rank	
	INSTITUTIONS	**63.2**	**64**	
1.1	**Political environment**	**50.5**	**81**	
1.1.1	Political and operational stability*	63.2	86	
1.1.2	Government effectiveness*	44.2	77	
1.2	**Regulatory environment**	**69.1**	**55**	
1.2.1	Regulatory quality*	49.5	57	
1.2.2	Rule of law*	42.3	69	
1.2.3	Cost of redundancy dismissal, salary weeks	13.0	42	
1.3	**Business environment**	**70.1**	**65**	
1.3.1	Ease of starting a business*	96.2	8	● ◆
1.3.2	Ease of resolving insolvency*	44.0	85	

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**16.9**	**107**	◇
2.1	**Education**	**26.9**	**[112]**	
2.1.1	Expenditure on education, % GDP	2.8	111	○ ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap.	14.5	85	
2.1.3	School life expectancy, years	13.0	81	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**22.1**	**87**	
2.2.1	Tertiary enrolment, % gross	52.2	54	
2.2.2	Graduates in science & engineering, %	14.7	88	○ ◇
2.2.3	Tertiary inbound mobility, %	4.3	48	
2.3	**Research & development (R&D)**	**1.6**	**97**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	0.2	86	
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	○ ◇

		Score/Value	Rank	
	INFRASTRUCTURE	**40.2**	**85**	
3.1	**Information & communication technologies(ICTs)**	**60.1**	**78**	
3.1.1	ICT access*	76.7	36	● ◆
3.1.2	ICT use*	50.7	70	
3.1.3	Government's online service*	56.3	95	
3.1.4	E-participation*	56.7	97	
3.2	**General infrastructure**	**26.7**	**93**	
3.2.1	Electricity output, kWh/mn pop.	2,496.6	71	
3.2.2	Logistics performance*	25.4	87	
3.2.3	Gross capital formation, % GDP	22.5	68	
3.3	**Ecological sustainability**	**33.9**	**82**	
3.3.1	GDP/unit of energy use	7.8	80	
3.3.2	Environmental performance*	62.1	56	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	120	○

		Score/Value	Rank	
	MARKET SOPHISTICATION	**50.1**	**55**	
4.1	**Credit**	**31.2**	**86**	
4.1.1	Ease of getting credit*	70.0	40	
4.1.2	Domestic credit to private sector, % GDP	51.5	66	
4.1.3	Microfinance gross loans, % GDP	0.0	60	
4.2	**Investment**	**63.3**	**[17]**	
4.2.1	Ease of protecting minority investors*	63.3	48	
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**	**55.9**	**86**	
4.3.1	Applied tariff rate, weighted avg., %	2.2	56	
4.3.2	Intensity of local competition†	73.6	36	
4.3.3	Domestic market scale, bn PPP$	30.7	113	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**26.3**	**89**	
5.1	**Knowledge workers**	**36.5**	**[66]**	
5.1.1	Knowledge-intensive employment, %	29.4	46	
5.1.2	Firms offering formal training, % firms	16.2	82	○ ◇
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, %	14.9	42	
5.2	**Innovation linkages**	**20.0**	**88**	
5.2.1	University/industry research collaboration†	36.3	89	
5.2.2	State of cluster development†	46.0	69	
5.2.3	GERD financed by abroad, %	1.7	82	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	n/a	n/a	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.2	47	
5.3	**Knowledge absorption**	**22.4**	**114**	○ ◇
5.3.1	Intellectual property payments, % total trade	0.0	120	○ ◇
5.3.2	High-tech imports, % total trade	4.8	109	
5.3.3	ICT services imports, % total trade	0.5	102	
5.3.4	FDI net inflows, % GDP	2.4	74	
5.3.5	Research talent, % in business enterprise	n/a	n/a	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**25.0**	**54**	
6.1	**Knowledge creation**	**22.6**	**37**	
6.1.1	Patents by origin/bn PPP$ GDP	3.9	29	●
6.1.2	PCT patents by origin/bn PPP$ GDP	0.2	50	
6.1.3	Utility models by origin/bn PPP$ GDP	1.4	18	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	25.2	13	● ◆
6.1.5	Citable documents H-index	9.8	69	
6.2	**Knowledge impact**	**35.3**	**70**	
6.2.1	Growth rate of PPP$ GDP/worker, %	6.2	2	● ◆
6.2.2	New businesses/th pop. 15-64	1.7	55	
6.2.3	Computer software spending, % GDP	0.1	84	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.0	107	
6.2.5	High- & medium-high-tech manufactures, %	0.0	96	○ ◇
6.3	**Knowledge diffusion**	**17.2**	**67**	
6.3.1	Intellectual property receipts, % total trade	0.0	109	○ ◇
6.3.2	High-tech net exports, % total trade	0.6	77	
6.3.3	ICT services exports, % total trade	4.3	15	● ◆
6.3.4	FDI net outflows, % GDP	0.3	77	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**32.2**	**48**	
7.1	**Intangible assets**	**43.2**	**55**	
7.1.1	Trademarks by origin/bn PPP$ GDP	94.7	18	●
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.9	52	
7.1.3	ICTs & business model creation†	54.2	88	
7.1.4	ICTs & organizational model creation†	52.8	67	
7.2	**Creative goods & services**	**22.4**	**49**	
7.2.1	Cultural & creative services exports, % total trade	0.6	41	
7.2.2	National feature films/mn pop. 15-69	12.5	11	● ◆
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	1.5	33	
7.2.5	Creative goods exports, % total trade	0.6	55	
7.3	**Online creativity**	**19.8**	**34**	● ◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	3.0	64	
7.3.2	Country-code TLDs/th pop. 15-69	4.6	53	
7.3.3	Wikipedia edits/mn pop. 15-69	102.5	6	● ◆
7.3.4	Mobile app creation/bn PPP$ GDP	2.5	60	

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.

AUSTRALIA

GII 2019 rank

22

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
31	15	High	SEAO	24.8	1,318.6	52,373.5	20

		Score/Value	Rank	
	INSTITUTIONS	**88.8**	**13**	
1.1	**Political environment**	**85.7**	**14**	
1.1.1	Political and operational stability*	89.5	15	
1.1.2	Government effectiveness*	83.8	15	
1.2	**Regulatory environment**	**93.1**	**12**	
1.2.1	Regulatory quality*	93.7	5	●
1.2.2	Rule of law*	90.9	13	
1.2.3	Cost of redundancy dismissal, salary weeks	12.0	38	
1.3	**Business environment**	**87.7**	**11**	
1.3.1	Ease of starting a business*	96.5	7	●
1.3.2	Ease of resolving insolvency*	78.9	19	
	HUMAN CAPITAL & RESEARCH	**57.7**	**10**	●
2.1	**Education**	**61.0**	**19**	
2.1.1	Expenditure on education, % GDP	5.3	32	
2.1.2	Government funding/pupil, secondary, % GDP/cap	17.2	69	○ ◇
2.1.3	School life expectancy, years	22.1	1	● ◆
2.1.4	PISA scales in reading, maths, & science	502.3	19	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**50.6**	**13**	
2.2.1	Tertiary enrolment, % gross	113.8	2	● ◆
2.2.2	Graduates in science & engineering, % ⊙	17.6	76	○ ◇
2.2.3	Tertiary inbound mobility, %	17.5	9	
2.3	**Research & development (R&D)**	**61.4**	**14**	
2.3.1	Researchers, FTE/mn pop. ⊙	4,539.5	16	
2.3.2	Gross expenditure on R&D, % GDP ⊙	1.9	18	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	68.1	20	
2.3.4	QS university ranking, average score top 3*	80.9	5	●
	INFRASTRUCTURE	**60.9**	**19**	
3.1	**Information & communication technologies(ICTs)**	**89.0**	**13**	
3.1.1	ICT access*	80.4	26	
3.1.2	ICT use*	80.2	15	
3.1.3	Government's online service*	97.2	7	●
3.1.4	E-participation*	98.3	5	●
3.2	**General infrastructure**	**49.1**	**20**	
3.2.1	Electricity output, kWh/mn pop.	10,432.2	13	
3.2.2	Logistics performance*	79.0	18	
3.2.3	Gross capital formation, % GDP	24.3	50	
3.3	**Ecological sustainability**	**44.5**	**45**	
3.3.1	GDP/unit of energy use	8.5	67	○
3.3.2	Environmental performance*	74.1	21	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.2	30	
	MARKET SOPHISTICATION	**68.3**	**8**	●
4.1	**Credit**	**79.5**	**5**	● ◆
4.1.1	Ease of getting credit*	90.0	7	● ◆
4.1.2	Domestic credit to private sector, % GDP ⊙	142.5	13	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**46.4**	**51**	
4.2.1	Ease of protecting minority investors*	60.0	61	○
4.2.2	Market capitalization, % GDP	102.3	11	
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	19	
4.3	**Trade, competition, & market scale**	**78.9**	**10**	●
4.3.1	Applied tariff rate, weighted avg., %	0.9	9	●
4.3.2	Intensity of local competition†	79.2	11	
4.3.3	Domestic market scale, bn PPP$	1,318.6	20	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**46.1**	**26**	◇
5.1	**Knowledge workers**	**67.5**	**11**	
5.1.1	Knowledge-intensive employment, % ⊙	46.0	14	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP ⊙	1.0	21	
5.1.4	GERD financed by business, % ⊙	61.9	11	
5.1.5	Females employed w/advanced degrees, % ⊙	22.6	17	
5.2	**Innovation linkages**	**34.6**	**39**	◇
5.2.1	University/industry research collaboration†	53.1	35	◇
5.2.2	State of cluster development†	53.8	40	◇
5.2.3	GERD financed by abroad, % ⊙	1.6	84	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.2	7	●
5.2.5	Patent families 2+ offices/bn PPP$ GDP	1.0	28	◇
5.3	**Knowledge absorption**	**36.2**	**50**	◇
5.3.1	Intellectual property payments, % total trade	1.3	24	
5.3.2	High-tech imports, % total trade	10.5	26	
5.3.3	ICT services imports, % total trade	1.0	71	○ ◇
5.3.4	FDI net inflows, % GDP	3.3	50	
5.3.5	Research talent, % in business enterprise ⊙	27.9	44	◇
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**31.6**	**36**	◇
6.1	**Knowledge creation**	**38.0**	**21**	
6.1.1	Patents by origin/bn PPP$ GDP	2.0	43	◇
6.1.2	PCT patents by origin/bn PPP$ GDP	1.4	26	◇
6.1.3	Utility models by origin/bn PPP$ GDP	0.8	29	
6.1.4	Scientific & technical articles/bn PPP$ GDP	26.9	10	●
6.1.5	Citable documents H-index	65.2	10	●
6.2	**Knowledge impact**	**44.1**	**30**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.4	77	○
6.2.2	New businesses/th pop. 15–64	15.5	7	● ◆
6.2.3	Computer software spending, % GDP	0.3	53	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	9.7	32	
6.2.5	High- & medium-high-tech manufactures, %	0.3	39	
6.3	**Knowledge diffusion**	**12.6**	**88**	○ ◇
6.3.1	Intellectual property receipts, % total trade	0.3	29	◇
6.3.2	High-tech net exports, % total trade	1.7	58	◇
6.3.3	ICT services exports, % total trade	1.0	83	○
6.3.4	FDI net outflows, % GDP	0.1	97	○ ◇
	CREATIVE OUTPUTS	**41.1**	**29**	◇
7.1	**Intangible assets**	**48.7**	**40**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	64.3	33	
7.1.2	Industrial designs by origin/bn PPP$ GDP	2.3	48	
7.1.3	ICTs & business model creation†	70.7	30	◇
7.1.4	ICTs & organizational model creation†	67.3	25	◇
7.2	**Creative goods & services**	**27.5**	**35**	
7.2.1	Cultural & creative services exports, % total trade	0.4	56	
7.2.2	National feature films/mn pop. 15–69	3.2	56	○
7.2.3	Entertainment & Media market/th pop. 15–69	67.0	7	
7.2.4	Printing & other media, % manufacturing	2.3	14	◆
7.2.5	Creative goods exports, % total trade	0.6	54	
7.3	**Online creativity**	**39.5**	**16**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	63.1	10	●
7.3.2	Country-code TLDs/th pop. 15–69	50.9	14	
7.3.3	Wikipedia edits/mn pop. 15–69	47.2	28	
7.3.4	Mobile app creation/bn PPP$ GDP	12.1	37	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

AUSTRIA

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
25	**19**	**High**	**EUR**	**8.8**	**464.0**	**52,137.4**	**21**

		Score/Value	Rank	
	INSTITUTIONS	**86.0**	**17**	
1.1	**Political environment**	**83.9**	**17**	
1.1.1	Political and operational stability*	87.7	18	
1.1.2	Government effectiveness*	82.0	16	
1.2	**Regulatory environment**	**93.7**	**10**	●
1.2.1	Regulatory quality*	80.5	18	
1.2.2	Rule of law*	94.3	9	●
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	**Business environment**	**80.3**	**32**	
1.3.1	Ease of starting a business*	83.2	91	○ ◇
1.3.2	Ease of resolving insolvency*	77.5	20	
	HUMAN CAPITAL & RESEARCH	**60.2**	**8**	●
2.1	**Education**	**60.7**	**22**	
2.1.1	Expenditure on education, % GDP	5.5	28	
2.1.2	Government funding/pupil, secondary, % GDP/cap	27.3	17	◆
2.1.3	School life expectancy, years	16.3	28	
2.1.4	PISA scales in reading, maths, & science	492.2	25	
2.1.5	Pupil-teacher ratio, secondary	9.3	20	◆
2.2	**Tertiary education**	**61.7**	**3**	● ◆
2.2.1	Tertiary enrolment, % gross	86.3	12	●
2.2.2	Graduates in science & engineering, %	30.3	12	◆
2.2.3	Tertiary inbound mobility, %	16.3	10	●
2.3	**Research & development (R&D)**	**58.1**	**18**	
2.3.1	Researchers, FTE/mn pop	5,439.8	9	●
2.3.2	Gross expenditure on R&D, % GDP	3.2	6	●
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	55.4	25	
2.3.4	QS university ranking, average score top 3*	42.0	28	
	INFRASTRUCTURE	**61.4**	**17**	
3.1	**Information & communication technologies(ICTs)**	**82.3**	**26**	
3.1.1	ICT access*	85.2	13	
3.1.2	ICT use*	74.7	29	◇
3.1.3	Government's online service*	86.8	32	
3.1.4	E-participation*	82.6	45	◇
3.2	**General infrastructure**	**51.3**	**14**	
3.2.1	Electricity output, kWh/mn pop	7,666.0	27	
3.2.2	Logistics performance*	91.8	4	●
3.2.3	Gross capital formation, % GDP	25.6	41	
3.3	**Ecological sustainability**	**50.5**	**28**	
3.3.1	GDP/unit of energy use	11.5	37	
3.3.2	Environmental performance*	79.0	8	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.6	37	
	MARKET SOPHISTICATION	**52.8**	**44**	◇
4.1	**Credit**	**47.3**	**39**	
4.1.1	Ease of getting credit*	55.0	77	○
4.1.2	Domestic credit to private sector, % GDP	84.1	34	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**38.8**	**81**	○ ◇
4.2.1	Ease of protecting minority investors*	68.3	30	
4.2.2	Market capitalization, % GDP	30.8	48	○ ◇
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	38	○ ◇
4.3	**Trade, competition, & market scale**	**72.4**	**28**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	78.8	13	
4.3.3	Domestic market scale, bn PPP$	464.0	43	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**53.8**	**18**	
5.1	**Knowledge workers**	**65.0**	**17**	
5.1.1	Knowledge-intensive employment, %	41.6	25	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	2.2	6	●
5.1.4	GERD financed by business, %	54.0	21	
5.1.5	Females employed w/advanced degrees, %	17.2	35	◇
5.2	**Innovation linkages**	**50.8**	**11**	●
5.2.1	University/industry research collaboration†	65.2	16	
5.2.2	State of cluster development†	66.7	14	
5.2.3	GERD financed by abroad, %	16.0	24	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	31	◇
5.2.5	Patent families 2+ offices/bn PPP$ GDP	4.5	12	●
5.3	**Knowledge absorption**	**45.6**	**26**	
5.3.1	Intellectual property payments, % total trade	0.8	49	
5.3.2	High-tech imports, % total trade	8.2	54	○
5.3.3	ICT services imports, % total trade	2.3	18	
5.3.4	FDI net inflows, % GDP	-1.9	127	○
5.3.5	Research talent, % in business enterprise	62.2	9	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**36.7**	**25**	◇
6.1	**Knowledge creation**	**41.3**	**18**	
6.1.1	Patents by origin/bn PPP$ GDP	9.7	13	
6.1.2	PCT patents by origin/bn PPP$ GDP	3.2	11	
6.1.3	Utility models by origin/bn PPP$ GDP	1.0	23	
6.1.4	Scientific & technical articles/bn PPP$ GDP	22.0	20	
6.1.5	Citable documents H-index	43.4	17	
6.2	**Knowledge impact**	**43.6**	**33**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.9	65	○
6.2.2	New businesses/th pop. 15–64	0.6	80	○ ◇
6.2.3	Computer software spending, % GDP	0.6	15	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	8.4	36	
6.2.5	High- & medium-high-tech manufactures, %	0.4	15	
6.3	**Knowledge diffusion**	**25.1**	**40**	◇
6.3.1	Intellectual property receipts, % total trade	0.6	24	
6.3.2	High-tech net exports, % total trade	7.5	21	
6.3.3	ICT services exports, % total trade	3.0	33	
6.3.4	FDI net outflows, % GDP	-1.2	124	○ ◇
	CREATIVE OUTPUTS	**41.4**	**25**	
7.1	**Intangible assets**	**51.2**	**30**	
7.1.1	Trademarks by origin/bn PPP$ GDP	53.3	45	
7.1.2	Industrial designs by origin/bn PPP$ GDP ◷	7.3	17	
7.1.3	ICTs & business model creation†	72.6	27	
7.1.4	ICTs & organizational model creation†	64.9	29	◇
7.2	**Creative goods & services**	**27.1**	**38**	
7.2.1	Cultural & creative services exports, % total trade	1.2	23	
7.2.2	National feature films/mn pop. 15–69	7.1	28	
7.2.3	Entertainment & Media market/th pop. 15–69	65.3	8	
7.2.4	Printing & other media, % manufacturing	1.3	42	○
7.2.5	Creative goods exports, % total trade	0.9	45	
7.3	**Online creativity**	**36.2**	**22**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	36.0	19	
7.3.2	Country-code TLDs/th pop. 15–69	57.9	11	●
7.3.3	Wikipedia edits/mn pop. 15–69	54.2	20	
7.3.4	Mobile app creation/bn PPP$ GDP	14.4	33	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

AZERBAIJAN

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
90	**77**	**Upper middle**	**NAWA**	**9.9**	**178.5**	**18,075.9**	**82**

		Score/Value	Rank	
	INSTITUTIONS	**64.5**	**59**	
1.1	**Political environment**	**51.2**	**77**	
1.1.1	Political and operational stability*	68.4	71	
1.1.2	Government effectiveness*	42.6	82	
1.2	**Regulatory environment**	**62.4**	**73**	
1.2.1	Regulatory quality*	35.4	89	
1.2.2	Rule of law*	31.7	96	
1.2.3	Cost of redundancy dismissal, salary weeks	13.7	53	
1.3	**Business environment**	**80.0**	**33**	● ◆
1.3.1	Ease of starting a business*	96.1	9	● ◆
1.3.2	Ease of resolving insolvency*	63.8	42	
	HUMAN CAPITAL & RESEARCH	**17.0**	**106**	◇
2.1	**Education**	**21.1**	**[123]**	
2.1.1	Expenditure on education, % GDP	2.9	103	◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**27.5**	**74**	
2.2.1	Tertiary enrolment, % gross	27.1	87	◇
2.2.2	Graduates in science & engineering, %	23.6	38	
2.2.3	Tertiary inbound mobility, %	2.1	74	
2.3	**Research & development (R&D)**	**2.5**	**90**	
2.3.1	Researchers, FTE/mn pop	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	0.2	90	
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*	3.7	72	
	INFRASTRUCTURE	**45.3**	**70**	
3.1	**Information & communication technologies(ICTs)**	**65.9**	**68**	
3.1.1	ICT access*	67.0	64	
3.1.2	ICT use*	55.5	63	
3.1.3	Government's online service*	72.9	63	
3.1.4	E-participation*	68.0	77	
3.2	**General infrastructure**	**30.8**	**83**	
3.2.1	Electricity output, kWh/mn pop	2,556.7	70	
3.2.2	Logistics performance*	n/a	n/a	
3.2.3	Gross capital formation, % GDP	25.0	45	
3.3	**Ecological sustainability**	**39.3**	**61**	
3.3.1	GDP/unit of energy use	10.8	44	
3.3.2	Environmental performance*	62.3	52	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	92	
	MARKET SOPHISTICATION	**56.5**	**31**	● ◆
4.1	**Credit**	**29.5**	**95**	
4.1.1	Ease of getting credit*	80.0	20	●
4.1.2	Domestic credit to private sector, % GDP	22.2	109	◇
4.1.3	Microfinance gross loans, % GDP	0.0	66	
4.2	**Investment**	**81.7**	**[1]**	
4.2.1	Ease of protecting minority investors*	81.7	2	● ◆
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**	**58.4**	**74**	
4.3.1	Applied tariff rate, weighted avg., % ◷	5.2	89	
4.3.2	Intensity of local competition†	61.3	102	◇
4.3.3	Domestic market scale, bn PPP$	178.5	66	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**24.5**	**103**	
5.1	**Knowledge workers**	**29.4**	**83**	
5.1.1	Knowledge-intensive employment, %	23.3	62	
5.1.2	Firms offering formal training, % firms	20.2	74	◇
5.1.3	GERD performed by business, % GDP	0.0	82	○
5.1.4	GERD financed by business, %	32.0	56	
5.1.5	Females employed w/advanced degrees, % ◷	12.9	52	
5.2	**Innovation linkages**	**21.4**	**79**	
5.2.1	University/industry research collaboration†	54.2	32	● ◆
5.2.2	State of cluster development†	55.7	33	● ◆
5.2.3	GERD financed by abroad, %	0.1	100	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	84	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	79	
5.3	**Knowledge absorption**	**22.9**	**113**	◇
5.3.1	Intellectual property payments, % total trade ◷	0.1	105	
5.3.2	High-tech imports, % total trade	2.8	124	○ ◇
5.3.3	ICT services imports, % total trade	0.5	106	
5.3.4	FDI net inflows, % GDP	8.8	15	● ◆
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**14.9**	**101**	
6.1	**Knowledge creation**	**3.9**	**109**	
6.1.1	Patents by origin/bn PPP$ GDP ◷	1.1	60	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	67	
6.1.3	Utility models by origin/bn PPP$ GDP ◷	0.1	53	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.5	96	
6.1.5	Citable documents H-index	3.9	104	
6.2	**Knowledge impact**	**21.4**	**111**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-1.6	105	○ ◇
6.2.2	New businesses/th pop. 15–64	1.0	70	
6.2.3	Computer software spending, % GDP	0.1	95	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.2	104	
6.2.5	High- & medium-high-tech manufactures, %	0.1	79	
6.3	**Knowledge diffusion**	**19.4**	**51**	
6.3.1	Intellectual property receipts, % total trade ◷	0.0	108	○ ◇
6.3.2	High-tech net exports, % total trade	0.1	115	○
6.3.3	ICT services exports, % total trade	0.4	107	
6.3.4	FDI net outflows, % GDP	6.4	10	● ◆
	CREATIVE OUTPUTS	**22.8**	**84**	
7.1	**Intangible assets**	**38.7**	**76**	
7.1.1	Trademarks by origin/bn PPP$ GDP ◷	16.7	91	
7.1.2	Industrial designs by origin/bn PPP$ GDP ◷	0.1	110	○
7.1.3	ICTs & business model creation†	65.9	48	◆
7.1.4	ICTs & organizational model creation†	63.4	35	● ◆
7.2	**Creative goods & services**	**8.7**	**92**	
7.2.1	Cultural & creative services exports, % total trade	0.1	75	
7.2.2	National feature films/mn pop. 15–69	7.2	27	● ◆
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	0.7	82	
7.2.5	Creative goods exports, % total trade	0.0	122	○
7.3	**Online creativity**	**5.0**	**66**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.0	94	
7.3.2	Country-code TLDs/th pop. 15–69	1.2	76	
7.3.3	Wikipedia edits/mn pop. 15–69	26.2	41	●
7.3.4	Mobile app creation/bn PPP$ GDP	0.0	93	○

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.

BAHRAIN

GII 2019 rank

78

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
87	69	High	NAWA	1.6	75.2	50,056.5	72

		Score/Value	Rank	
	INSTITUTIONS	**66.0**	**54**	◇
1.1	**Political environment**	**57.4**	**60**	◇
1.1.1	Political and operational stability*	70.2	61	◇
1.1.2	Government effectiveness*	51.0	60	◇
1.2	**Regulatory environment**	**73.5**	**39**	●
1.2.1	Regulatory quality*	53.1	53	◇
1.2.2	Rule of law*	58.2	44	◇
1.2.3	Cost of redundancy dismissal, salary weeks	13.6	51	
1.3	**Business environment**	**67.1**	**75**	◇
1.3.1	Ease of starting a business*	89.6	56	
1.3.2	Ease of resolving insolvency*	44.6	83	◇
	HUMAN CAPITAL & RESEARCH	**24.4**	**85**	◇
2.1	**Education**	**40.5**	**83**	◇
2.1.1	Expenditure on education, % GDP	2.3	115	○ ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	17.5	66	
2.1.3	School life expectancy, years	15.3	46	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	10.1	32	●
2.2	**Tertiary education**	**30.1**	**67**	◇
2.2.1	Tertiary enrolment, % gross	45.5	65	◇
2.2.2	Graduates in science & engineering, %	15.6	85	◇
2.2.3	Tertiary inbound mobility, %	13.1	12	●
2.3	**Research & development (R&D)**	**2.7**	**89**	◇
2.3.1	Researchers, FTE/mn pop. ⊙	368.9	72	◇
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.1	107	○ ◇
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*	4.5	70	◇
	INFRASTRUCTURE	**51.6**	**45**	
3.1	**Information & communication technologies(ICTs)**	**78.8**	**34**	●
3.1.1	ICT access*	82.5	19	●
3.1.2	ICT use*	73.2	30	●
3.1.3	Government's online service*	79.9	45	
3.1.4	E-participation*	79.8	53	
3.2	**General infrastructure**	**47.7**	**27**	●
3.2.1	Electricity output, kWh/mn pop.	19,937.1	3	● ◆
3.2.2	Logistics performance*	40.8	58	◇
3.2.3	Gross capital formation, % GDP	24.0	54	
3.3	**Ecological sustainability**	**28.2**	**106**	◇
3.3.1	GDP/unit of energy use	4.3	114	○ ◇
3.3.2	Environmental performance*	55.2	81	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.9	50	
	MARKET SOPHISTICATION	**45.3**	**79**	◇
4.1	**Credit**	**39.7**	**56**	
4.1.1	Ease of getting credit*	45.0	94	
4.1.2	Domestic credit to private sector, % GDP ⊙	73.7	43	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**43.9**	**60**	
4.2.1	Ease of protecting minority investors*	66.7	35	
4.2.2	Market capitalization, % GDP	61.2	28	
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	24	●
4.3	**Trade, competition, & market scale**	**52.4**	**100**	◇
4.3.1	Applied tariff rate, weighted avg., %	7.8	102	◇
4.3.2	Intensity of local competition†	70.1	60	
4.3.3	Domestic market scale, bn PPP$	75.2	88	◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**27.1**	**83**	◇
5.1	**Knowledge workers**	**26.0**	**[96]**	
5.1.1	Knowledge-intensive employment, % ⊙	21.9	69	◇
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP ⊙	0.0	79	◇
5.1.4	GERD financed by business, % ⊙	21.8	64	◇
5.1.5	Females employed w/advanced degrees, %	n/a	n/a	
5.2	**Innovation linkages**	**37.7**	**33**	●
5.2.1	University/industry research collaboration†	45.4	50	
5.2.2	State of cluster development†	60.3	26	●
5.2.3	GERD financed by abroad, % ⊙	12.4	34	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.2	6	● ◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	75	
5.3	**Knowledge absorption**	**17.7**	**127**	○ ◇
5.3.1	Intellectual property payments, % total trade	n/a	n/a	
5.3.2	High-tech imports, % total trade ⊙	4.7	110	
5.3.3	ICT services imports, % total trade	0.4	111	◇
5.3.4	FDI net inflows, % GDP	0.8	109	
5.3.5	Research talent, % in business enterprise ⊙	0.4	83	○ ◇
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**15.9**	**92**	◇
6.1	**Knowledge creation**	**2.1**	**123**	○ ◇
6.1.1	Patents by origin/bn PPP$ GDP	0.2	100	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	92	◇
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.8	114	○ ◇
6.1.5	Citable documents H-index	2.4	116	○ ◇
6.2	**Knowledge impact**	**35.7**	**69**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.6	72	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.3	39	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.7	54	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.1	85	◇
6.3	**Knowledge diffusion**	**9.8**	**103**	◇
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade ⊙	0.1	110	◇
6.3.3	ICT services exports, % total trade	3.0	32	●
6.3.4	FDI net outflows, % GDP	-2.7	125	○ ◇
	CREATIVE OUTPUTS	**22.8**	**83**	◇
7.1	**Intangible assets**	**36.1**	**90**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	3.6	119	○ ◇
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.4	90	
7.1.3	ICTs & business model creation†	66.8	42	
7.1.4	ICTs & organizational model creation†	58.2	51	
7.2	**Creative goods & services**	**14.8**	**[67]**	
7.2.1	Cultural & creative services exports, % total trade	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Entertainment & Media market/th pop. 15–69	9.3	37	◇
7.2.4	Printing & other media, % manufacturing	n/a	n/a	
7.2.5	Creative goods exports, % total trade ⊙	1.5	35	●
7.3	**Online creativity**	**4.0**	**69**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.7	55	
7.3.2	Country-code TLDs/th pop. 15–69	0.4	96	◇
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	16.2	55	
7.3.4	Mobile app creation/bn PPP$ GDP	0.1	87	○

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.

BANGLADESH

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
108	117	Lower middle	CSA	166.4	758.2	4,619.8	116

		Score/Value	Rank	
	INSTITUTIONS	**45.5**	**124**	○ ◇
1.1	**Political environment**	**37.2**	**116**	◇
1.1.1	Political and operational stability*	54.4	111	
1.1.2	Government effectiveness*	28.7	115	◇
1.2	**Regulatory environment**	**44.7**	**118**	
1.2.1	Regulatory quality*	20.3	116	◇
1.2.2	Rule of law*	28.6	102	
1.2.3	Cost of redundancy dismissal, salary weeks	31.0	118	
1.3	**Business environment**	**54.5**	**119**	◇
1.3.1	Ease of starting a business*	80.8	105	
1.3.2	Ease of resolving insolvency*	28.2	123	○ ◇

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**8.8**	**127**	○ ◇
2.1	**Education**	**15.9**	**127**	○ ◇
2.1.1	Expenditure on education, % GDP	1.5	118	○ ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	10.2	97	
2.1.3	School life expectancy, years	11.2	98	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	34.0	110	○ ◇
2.2	**Tertiary education**	**6.6**	**118**	◇
2.2.1	Tertiary enrolment, % gross	17.6	97	
2.2.2	Graduates in science & engineering, %	11.3	98	○ ◇
2.2.3	Tertiary inbound mobility, % ⊙	0.1	109	○
2.3	**Research & development (R&D)**	**4.0**	**[81]**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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*	8.0	66	

		Score/Value	Rank	
	INFRASTRUCTURE	**40.0**	**86**	
3.1	**Information & communication technologies(ICTs)**	**53.3**	**90**	
3.1.1	ICT access*	35.7	109	◇
3.1.2	ICT use*	18.7	111	◇
3.1.3	Government's online service*	78.5	51	● ◆
3.1.4	E-participation*	80.3	51	● ◆
3.2	**General infrastructure**	**36.6**	**58**	●
3.2.1	Electricity output, kWh/mn pop.	394.8	109	
3.2.2	Logistics performance*	24.0	94	
3.2.3	Gross capital formation, % GDP	33.7	14	●
3.3	**Ecological sustainability**	**30.0**	**96**	
3.3.1	GDP/unit of energy use	13.3	19	● ◆
3.3.2	Environmental performance*	29.6	126	○ ◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	113	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**41.1**	**96**	
4.1	**Credit**	**32.7**	**78**	
4.1.1	Ease of getting credit*	25.0	122	○ ◇
4.1.2	Domestic credit to private sector, % GDP	47.6	73	
4.1.3	Microfinance gross loans, % GDP	3.0	9	●
4.2	**Investment**	**31.0**	**117**	
4.2.1	Ease of protecting minority investors*	55.0	84	
4.2.2	Market capitalization, % GDP	34.5	43	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	73	
4.3	**Trade, competition, & market scale**	**59.5**	**70**	
4.3.1	Applied tariff rate, weighted avg., % ⊙	10.7	116	◇
4.3.2	Intensity of local competition†	67.5	71	
4.3.3	Domestic market scale, bn PPP$	758.2	30	●

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**20.0**	**120**	◇
5.1	**Knowledge workers**	**15.7**	**[116]**	
5.1.1	Knowledge-intensive employment, %	8.3	102	
5.1.2	Firms offering formal training, % firms	21.9	72	
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, %	1.3	105	
5.2	**Innovation linkages**	**21.0**	**82**	
5.2.1	University/industry research collaboration†	26.5	120	○
5.2.2	State of cluster development†	46.8	60	●
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	78	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**23.3**	**111**	
5.3.1	Intellectual property payments, % total trade	0.1	103	
5.3.2	High-tech imports, % total trade ⊙	8.0	58	●
5.3.3	ICT services imports, % total trade	0.2	120	◇
5.3.4	FDI net inflows, % GDP	1.1	104	
5.3.5	Research talent, % in business enterprise	n/a	n/a	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**16.1**	**91**	
6.1	**Knowledge creation**	**6.7**	**[86]**	
6.1.1	Patents by origin/bn PPP$ GDP	0.1	111	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.2	110	
6.1.5	Citable documents H-index	10.4	63	
6.2	**Knowledge impact**	**32.9**	**83**	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.5	12	●
6.2.2	New businesses/th pop. 15–64 ⊙	0.1	101	
6.2.3	Computer software spending, % GDP	0.2	75	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.6	117	◇
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.1	81	
6.3	**Knowledge diffusion**	**8.6**	**114**	
6.3.1	Intellectual property receipts, % total trade	0.0	103	
6.3.2	High-tech net exports, % total trade ⊙	0.2	93	
6.3.3	ICT services exports, % total trade	1.1	78	
6.3.4	FDI net outflows, % GDP	0.0	106	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**15.0**	**115**	◇
7.1	**Intangible assets**	**29.4**	**108**	
7.1.1	Trademarks by origin/bn PPP$ GDP	13.4	98	
7.1.2	Industrial designs by origin/bn PPP$ GDP	2.3	49	●
7.1.3	ICTs & business model creation†	50.2	103	
7.1.4	ICTs & organizational model creation†	42.1	107	
7.2	**Creative goods & services**	**0.8**	**126**	○ ◇
7.2.1	Cultural & creative services exports, % total trade	0.1	86	
7.2.2	National feature films/mn pop. 15–69	0.3	101	
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing ⊙	0.2	101	○ ◇
7.2.5	Creative goods exports, % total trade ⊙	0.1	107	
7.3	**Online creativity**	**0.4**	**110**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.4	112	
7.3.2	Country-code TLDs/th pop. 15–69	0.1	117	
7.3.3	Wikipedia edits/mn pop. 15–69	1.0	104	
7.3.4	Mobile app creation/bn PPP$ GDP	0.5	68	

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.

BELARUS

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
95	50	Upper middle	EUR	9.5	190.8	20,003.0	86

		Score/Value	Rank	
	INSTITUTIONS	**57.7**	**83**	
1.1	**Political environment**	**48.8**	**87**	
1.1.1	Political and operational stability*	70.2	61	
1.1.2	Government effectiveness*	38.1	91	
1.2	**Regulatory environment**	**51.3**	**107**	○ ◇
1.2.1	Regulatory quality*	22.2	113	○ ◇
1.2.2	Rule of law*	24.7	112	○ ◇
1.2.3	Cost of redundancy dismissal, salary weeks	21.7	92	
1.3	**Business environment**	**73.0**	**54**	
1.3.1	Ease of starting a business*	93.4	26	
1.3.2	Ease of resolving insolvency*	52.6	66	
	HUMAN CAPITAL & RESEARCH	**41.6**	**39**	◆
2.1	**Education**	**60.8**	**20**	◆
2.1.1	Expenditure on education, % GDP	4.8	53	
2.1.2	Government funding/pupil, secondary, % GDP/cap	35.9	8	● ◆
2.1.3	School life expectancy, years	15.4	43	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	8.2	11	● ◆
2.2	**Tertiary education**	**54.8**	**9**	● ◆
2.2.1	Tertiary enrolment, % gross	86.7	11	● ◆
2.2.2	Graduates in science & engineering, %	33.2	6	● ◆
2.2.3	Tertiary inbound mobility, %	4.2	51	
2.3	**Research & development (R&D)**	**9.1**	**61**	
2.3.1	Researchers, FTE/mn pop	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	0.6	54	
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*	14.8	57	
	INFRASTRUCTURE	**48.2**	**60**	
3.1	**Information & communication technologies(ICTs)**	**77.9**	**37**	◆
3.1.1	ICT access*	80.8	23	◆
3.1.2	ICT use*	68.8	37	◆
3.1.3	Government's online service*	73.6	57	
3.1.4	E-participation*	88.2	33	
3.2	**General infrastructure**	**31.7**	**79**	
3.2.1	Electricity output, kWh/mn pop	3,529.5	57	
3.2.2	Logistics performance*	23.9	97	◇
3.2.3	Gross capital formation, % GDP	26.6	36	
3.3	**Ecological sustainability**	**35.2**	**78**	
3.3.1	GDP/unit of energy use	6.2	99	○ ◇
3.3.2	Environmental performance*	65.0	40	◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.9	51	
	MARKET SOPHISTICATION	**50.0**	**56**	
4.1	**Credit**	**21.8**	**115**	○ ◇
4.1.1	Ease of getting credit*	55.0	77	
4.1.2	Domestic credit to private sector, % GDP	26.4	104	○
4.1.3	Microfinance gross loans, % GDP	0.0	81	○ ◇
4.2	**Investment**	**63.3**	**[17]**	
4.2.1	Ease of protecting minority investors*	63.3	48	
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**	**64.8**	**54**	
4.3.1	Applied tariff rate, weighted avg., %	1.5	15	●
4.3.2	Intensity of local competition†	n/a	n/a	
4.3.3	Domestic market scale, bn PPP$	190.8	64	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**32.6**	**56**	
5.1	**Knowledge workers**	**61.3**	**23**	◆
5.1.1	Knowledge-intensive employment, %	39.2	27	◆
5.1.2	Firms offering formal training, % firms	51.1	19	
5.1.3	GERD performed by business, % GDP	0.4	41	
5.1.4	GERD financed by business, %	43.0	41	
5.1.5	Females employed w/advanced degrees, %	32.6	1	● ◆
5.2	**Innovation linkages**	**11.4**	**[126]**	
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	GERD financed by abroad, %	14.1	29	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	100	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	60	
5.3	**Knowledge absorption**	**25.1**	**101**	
5.3.1	Intellectual property payments, % total trade	0.4	70	
5.3.2	High-tech imports, % total trade	5.1	104	
5.3.3	ICT services imports, % total trade	0.7	93	
5.3.4	FDI net inflows, % GDP	2.6	63	
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**25.5**	**51**	
6.1	**Knowledge creation**	**17.5**	**52**	
6.1.1	Patents by origin/bn PPP$ GDP	3.1	30	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	61	
6.1.3	Utility models by origin/bn PPP$ GDP	2.2	10	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.3	78	
6.1.5	Citable documents H-index	9.7	70	
6.2	**Knowledge impact**	**40.1**	**48**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.5	35	
6.2.2	New businesses/th pop. 15-64	1.1	69	
6.2.3	Computer software spending, % GDP	0.0	107	○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	22.2	14	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.3	45	
6.3	**Knowledge diffusion**	**18.7**	**55**	
6.3.1	Intellectual property receipts, % total trade	0.1	59	
6.3.2	High-tech net exports, % total trade	1.8	57	
6.3.3	ICT services exports, % total trade	4.0	19	● ◆
6.3.4	FDI net outflows, % GDP	0.2	89	
	CREATIVE OUTPUTS	**10.8**	**126**	○ ◇
7.1	**Intangible assets**	**8.0**	**[127]**	
7.1.1	Trademarks by origin/bn PPP$ GDP	24.8	81	
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.0	68	
7.1.3	ICTs & business model creation†	n/a	n/a	
7.1.4	ICTs & organizational model creation†	n/a	n/a	
7.2	**Creative goods & services**	**5.0**	**101**	◇
7.2.1	Cultural & creative services exports, % total trade	0.2	69	
7.2.2	National feature films/mn pop. 15-69 ◷	0.1	105	○ ◇
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	0.5	90	○
7.2.5	Creative goods exports, % total trade	0.4	63	
7.3	**Online creativity**	**22.1**	**31**	◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1.7	83	
7.3.2	Country-code TLDs/th pop. 15-69	5.2	47	
7.3.3	Wikipedia edits/mn pop. 15-69	22.2	47	
7.3.4	Mobile app creation/bn PPP$ GDP	66.5	6	● ◆

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.

BELGIUM

GII 2019 rank

23

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
24	21	High	EUR	11.5	549.7	48,244.7	25

		Score/Value	Rank	
	INSTITUTIONS	**82.0**	**21**	
1.1	**Political environment**	**77.0**	**28**	◇
1.1.1	Political and operational stability*	80.7	35	◇
1.1.2	Government effectiveness*	75.2	24	◇
1.2	**Regulatory environment**	**80.4**	**30**	
1.2.1	Regulatory quality*	75.3	24	
1.2.2	Rule of law*	81.9	21	
1.2.3	Cost of redundancy dismissal, salary weeks	19.7	81	○
1.3	**Business environment**	**88.5**	**9**	●
1.3.1	Ease of starting a business*	93.0	30	
1.3.2	Ease of resolving insolvency*	83.9	8	●

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**55.0**	**13**	●
2.1	**Education**	**68.6**	**5**	● ◆
2.1.1	Expenditure on education, % GDP	6.6	14	
2.1.2	Government funding/pupil, secondary, % GDP/cap ◷	24.5	26	
2.1.3	School life expectancy, years	19.7	2	● ◆
2.1.4	PISA scales in reading, maths, & science	502.5	18	
2.1.5	Pupil-teacher ratio, secondary ◷	9.1	18	◆
2.2	**Tertiary education**	**37.2**	**44**	
2.2.1	Tertiary enrolment, % gross ◷	75.9	22	
2.2.2	Graduates in science & engineering, %	17.1	78	○ ◇
2.2.3	Tertiary inbound mobility, %	12.0	13	
2.3	**Research & development (R&D)**	**59.2**	**16**	
2.3.1	Researchers, FTE/mn pop.	4,905.5	14	
2.3.2	Gross expenditure on R&D, % GDP	2.6	11	●
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	66.8	21	
2.3.4	QS university ranking, average score top 3*	54.2	16	

		Score/Value	Rank	
	INFRASTRUCTURE	**57.2**	**29**	◇
3.1	**Information & communication technologies(ICTs)**	**77.1**	**38**	◇
3.1.1	ICT access*	81.5	21	
3.1.2	ICT use*	75.6	27	
3.1.3	Government's online service*	75.7	55	◇
3.1.4	E-participation*	75.8	59	○ ◇
3.2	**General infrastructure**	**50.5**	**16**	
3.2.1	Electricity output, kWh/mn pop.	7,496.2	29	
3.2.2	Logistics performance*	92.4	3	●
3.2.3	Gross capital formation, % GDP	24.9	47	
3.3	**Ecological sustainability**	**44.1**	**46**	
3.3.1	GDP/unit of energy use	8.5	68	○
3.3.2	Environmental performance*	77.4	15	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.0	47	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**55.3**	**37**	
4.1	**Credit**	**47.8**	**36**	
4.1.1	Ease of getting credit*	65.0	54	○
4.1.2	Domestic credit to private sector, % GDP	66.3	46	◇
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**45.0**	**56**	
4.2.1	Ease of protecting minority investors*	61.7	54	
4.2.2	Market capitalization, % GDP	86.9	17	
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	21	
4.3	**Trade, competition, & market scale**	**73.2**	**25**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	78.6	14	
4.3.3	Domestic market scale, bn PPP$	549.7	37	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**54.1**	**17**	
5.1	**Knowledge workers**	**73.1**	**7**	●
5.1.1	Knowledge-intensive employment, %	47.6	9	●
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	1.8	11	
5.1.4	GERD financed by business, % ◷	58.6	12	
5.1.5	Females employed w/advanced degrees, %	25.0	11	●
5.2	**Innovation linkages**	**46.0**	**19**	
5.2.1	University/industry research collaboration†	68.7	12	●
5.2.2	State of cluster development†	64.9	16	
5.2.3	GERD financed by abroad, % ◷	16.5	22	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	26	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	2.8	16	
5.3	**Knowledge absorption**	**43.2**	**31**	
5.3.1	Intellectual property payments, % total trade	0.8	46	
5.3.2	High-tech imports, % total trade	7.4	67	○
5.3.3	ICT services imports, % total trade	2.3	20	
5.3.4	FDI net inflows, % GDP	-1.3	126	○
5.3.5	Research talent, % in business enterprise	54.1	21	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**40.8**	**21**	
6.1	**Knowledge creation**	**49.1**	**14**	●
6.1.1	Patents by origin/bn PPP$ GDP	6.0	19	
6.1.2	PCT patents by origin/bn PPP$ GDP	2.4	15	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	23.1	18	
6.1.5	Citable documents H-index	53.4	14	●
6.2	**Knowledge impact**	**43.1**	**39**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.2	83	○
6.2.2	New businesses/th pop. 15–64	3.7	34	
6.2.3	Computer software spending, % GDP	0.7	7	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.9	53	
6.2.5	High- & medium-high-tech manufactures, %	0.4	29	
6.3	**Knowledge diffusion**	**30.2**	**31**	
6.3.1	Intellectual property receipts, % total trade	0.9	20	
6.3.2	High-tech net exports, % total trade	8.1	20	
6.3.3	ICT services exports, % total trade	3.0	34	
6.3.4	FDI net outflows, % GDP	-0.1	119	○ ◇

		Score/Value	Rank	
	CREATIVE OUTPUTS	**38.5**	**33**	◇
7.1	**Intangible assets**	**49.1**	**38**	
7.1.1	Trademarks by origin/bn PPP$ GDP	45.8	55	
7.1.2	Industrial designs by origin/bn PPP$ GDP	2.4	47	
7.1.3	ICTs & business model creation†	74.9	18	
7.1.4	ICTs & organizational model creation†	72.2	16	
7.2	**Creative goods & services**	**30.9**	**27**	
7.2.1	Cultural & creative services exports, % total trade	1.4	18	
7.2.2	National feature films/mn pop. 15–69	10.9	14	
7.2.3	Entertainment & Media market/th pop. 15–69	53.9	14	
7.2.4	Printing & other media, % manufacturing ◷	1.3	38	
7.2.5	Creative goods exports, % total trade	1.6	34	
7.3	**Online creativity**	**24.9**	**29**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	21.2	27	
7.3.2	Country-code TLDs/th pop. 15–69	56.0	13	●
7.3.3	Wikipedia edits/mn pop. 15–69	30.7	39	
7.3.4	Mobile app creation/bn PPP$ GDP	1.8	62	○ ◇

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

BENIN

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
125	114	Low	SSF	11.5	27.5	2,426.5	n/a

		Score/Value	Rank	
	INSTITUTIONS	**56.6**	**87**	
1.1	**Political environment**	**42.3**	**98**	
1.1.1	Political and operational stability*	64.9	79	
1.1.2	Government effectiveness*	30.9	109	
1.2	**Regulatory environment**	**62.0**	**74**	●
1.2.1	Regulatory quality*	29.3	102	
1.2.2	Rule of law*	29.8	98	
1.2.3	Cost of redundancy dismissal, salary weeks	11.6	37	●
1.3	**Business environment**	**65.6**	**80**	
1.3.1	Ease of starting a business*	90.6	52	●
1.3.2	Ease of resolving insolvency*	40.7	97	
	HUMAN CAPITAL & RESEARCH	**21.1**	**92**	◆
2.1	**Education**	**36.8**	**96**	
2.1.1	Expenditure on education, % GDP	4.0	79	
2.1.2	Government funding/pupil, secondary, % GDP/cap	10.8	93	
2.1.3	School life expectancy, years	12.6	85	◆
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ◷	11.0	38	● ◆
2.2	**Tertiary education**	**26.4**	**78**	◆
2.2.1	Tertiary enrolment, % gross ◷	12.9	101	
2.2.2	Graduates in science & engineering, % ◷	20.7	59	●
2.2.3	Tertiary inbound mobility, %	8.3	24	● ◆
2.3	**Research & development (R&D)**	**0.0**	**[120]**	
2.3.1	Researchers, FTE/mn pop	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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	**27.7**	**118**	
3.1	**Information & communication technologies(ICTs)**	**31.1**	**118**	
3.1.1	ICT access*	31.4	115	
3.1.2	ICT use*	8.9	124	○ ◇
3.1.3	Government's online service*	47.2	108	
3.1.4	E-participation*	37.1	114	
3.2	**General infrastructure**	**32.5**	**72**	●
3.2.1	Electricity output, kWh/mn pop	32.7	119	○
3.2.2	Logistics performance*	32.1	75	● ◆
3.2.3	Gross capital formation, % GDP	28.4	25	●
3.3	**Ecological sustainability**	**19.5**	**125**	
3.3.1	GDP/unit of energy use	4.8	110	
3.3.2	Environmental performance*	38.2	120	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	126	○
	MARKET SOPHISTICATION	**32.1**	**124**	
4.1	**Credit**	**25.7**	**106**	
4.1.1	Ease of getting credit*	30.0	115	
4.1.2	Domestic credit to private sector, % GDP	22.7	108	
4.1.3	Microfinance gross loans, % GDP	2.2	11	●
4.2	**Investment**	**40.0**	**[72]**	
4.2.1	Ease of protecting minority investors*	40.0	114	
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**	**30.7**	**126**	○ ◇
4.3.1	Applied tariff rate, weighted avg., %	17.8	128	○ ◇
4.3.2	Intensity of local competition†	63.2	89	
4.3.3	Domestic market scale, bn PPP$	27.5	117	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**19.9**	**[121]**	
5.1	**Knowledge workers**	**15.2**	**[118]**	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	20.0	75	
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, % ◷	0.8	109	
5.2	**Innovation linkages**	**19.5**	**[90]**	
5.2.1	University/industry research collaboration†	30.8	104	
5.2.2	State of cluster development†	33.4	114	
5.2.3	GERD financed by abroad, %	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	93	○ ◇
5.3	**Knowledge absorption**	**24.9**	**104**	
5.3.1	Intellectual property payments, % total trade	0.0	118	○
5.3.2	High-tech imports, % total trade	3.6	121	
5.3.3	ICT services imports, % total trade	1.1	63	●
5.3.4	FDI net inflows, % GDP	1.8	87	
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**5.6**	**126**	○ ◇
6.1	**Knowledge creation**	**6.2**	**89**	
6.1.1	Patents by origin/bn PPP$ GDP	0.1	108	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	99	○ ◇
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	8.6	55	● ◆
6.1.5	Citable documents H-index	3.5	109	
6.2	**Knowledge impact**	**3.9**	**[124]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.1	100	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.6	95	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**6.6**	**125**	
6.3.1	Intellectual property receipts, % total trade ◷	0.0	107	
6.3.2	High-tech net exports, % total trade	0.1	105	
6.3.3	ICT services exports, % total trade	0.1	120	
6.3.4	FDI net outflows, % GDP	0.3	82	
	CREATIVE OUTPUTS	**13.1**	**124**	
7.1	**Intangible assets**	**26.0**	**118**	
7.1.1	Trademarks by origin/bn PPP$ GDP	7.0	109	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.2	107	
7.1.3	ICTs & business model creation†	49.9	105	
7.1.4	ICTs & organizational model creation†	39.2	114	
7.2	**Creative goods & services**	**0.1**	**[128]**	
7.2.1	Cultural & creative services exports, % total trade ◷	0.0	111	
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	n/a	n/a	
7.2.5	Creative goods exports, % total trade	0.0	128	○ ◇
7.3	**Online creativity**	**0.4**	**111**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.6	103	◆
7.3.2	Country-code TLDs/th pop. 15–69	0.0	125	
7.3.3	Wikipedia edits/mn pop. 15–69 ◷	0.9	106	
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.

BOLIVIA (PLURINATIONAL STATE OF)

GII 2019 rank

110

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
113	102	Lower middle	LCN	11.2	89.4	7,476.9	117

		Score/Value	Rank	
	INSTITUTIONS	**36.8**	**128**	○ ◇
1.1	**Political environment**	**41.1**	**100**	
1.1.1	Political and operational stability*	49.1	122	○ ◇
1.1.2	Government effectiveness*	37.1	94	
1.2	**Regulatory environment**	**16.1**	**129**	○ ◇
1.2.1	Regulatory quality*	17.8	122	○ ◇
1.2.2	Rule of law*	14.4	124	○ ◇
1.2.3	Cost of redundancy dismissal, salary weeks	n/a	n/a	
1.3	**Business environment**	**53.3**	**121**	◇
1.3.1	Ease of starting a business*	64.3	127	○ ◇
1.3.2	Ease of resolving insolvency*	42.3	90	

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**26.5**	**[79]**	
2.1	**Education**	**51.7**	**[54]**	
2.1.1	Expenditure on education, % GDP ◷	7.3	8	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap ◷	18.1	61	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	20.6	91	
2.2	**Tertiary education**	**n/a**	**[n/a]**	
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**1.2**	**101**	
2.3.1	Researchers, FTE/mn pop. ◷	166.0	81	
2.3.2	Gross expenditure on R&D, % GDP ◷	0.2	93	
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	○ ◇

		Score/Value	Rank	
	INFRASTRUCTURE	**35.1**	**102**	
3.1	**Information & communication technologies(ICTs)**	**51.1**	**93**	
3.1.1	ICT access*	48.4	92	
3.1.2	ICT use*	42.0	85	
3.1.3	Government's online service*	56.3	95	
3.1.4	E-participation*	57.9	93	
3.2	**General infrastructure**	**21.2**	**114**	
3.2.1	Electricity output, kWh/mn pop.	864.0	98	
3.2.2	Logistics performance*	13.8	115	◇
3.2.3	Gross capital formation, % GDP	21.5	80	
3.3	**Ecological sustainability**	**32.9**	**84**	
3.3.1	GDP/unit of energy use	8.1	75	
3.3.2	Environmental performance*	56.0	79	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.7	77	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**49.7**	**59**	
4.1	**Credit**	**54.9**	**26**	● ◆
4.1.1	Ease of getting credit*	35.0	110	◇
4.1.2	Domestic credit to private sector, % GDP	64.5	49	●
4.1.3	Microfinance gross loans, % GDP	28.2	1	● ◆
4.2	**Investment**	**40.0**	**[72]**	
4.2.1	Ease of protecting minority investors*	40.0	114	◇
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**	**54.1**	**91**	
4.3.1	Applied tariff rate, weighted avg., %	6.1	95	
4.3.2	Intensity of local competition†	63.8	85	
4.3.3	Domestic market scale, bn PPP$	89.4	83	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**24.1**	**104**	
5.1	**Knowledge workers**	**34.7**	**71**	
5.1.1	Knowledge-intensive employment, %	15.8	89	
5.1.2	Firms offering formal training, % firms	49.9	21	●
5.1.3	GERD performed by business, % GDP	n/a	n/a	
5.1.4	GERD financed by business, % ◷	5.2	80	
5.1.5	Females employed w/advanced degrees, %	8.5	77	
5.2	**Innovation linkages**	**12.3**	**125**	○ ◇
5.2.1	University/industry research collaboration†	27.0	116	
5.2.2	State of cluster development†	31.1	118	◇
5.2.3	GERD financed by abroad, % ◷	1.9	78	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	93	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**25.3**	**99**	
5.3.1	Intellectual property payments, % total trade	0.9	40	● ◆
5.3.2	High-tech imports, % total trade	9.1	41	●
5.3.3	ICT services imports, % total trade	0.9	78	
5.3.4	FDI net inflows, % GDP	1.5	96	
5.3.5	Research talent, % in business enterprise ◷	0.4	84	○

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**14.5**	**105**	
6.1	**Knowledge creation**	**3.8**	**110**	
6.1.1	Patents by origin/bn PPP$ GDP	0.7	71	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	0.1	51	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.6	118	
6.1.5	Citable documents H-index	5.8	91	
6.2	**Knowledge impact**	**30.3**	**93**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.8	45	●
6.2.2	New businesses/th pop. 15–64	0.5	83	
6.2.3	Computer software spending, % GDP	0.3	51	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.8	79	
6.2.5	High- & medium-high-tech manufactures, % ◷	0.1	89	
6.3	**Knowledge diffusion**	**9.2**	**108**	
6.3.1	Intellectual property receipts, % total trade	0.2	34	●
6.3.2	High-tech net exports, % total trade	0.2	100	
6.3.3	ICT services exports, % total trade	0.6	94	
6.3.4	FDI net outflows, % GDP	0.2	92	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**15.7**	**111**	
7.1	**Intangible assets**	**25.0**	**121**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	41.7	62	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.2	103	
7.1.3	ICTs & business model creation†	39.0	122	○ ◇
7.1.4	ICTs & organizational model creation†	31.7	122	○ ◇
7.2	**Creative goods & services**	**11.7**	**79**	
7.2.1	Cultural & creative services exports, % total trade	0.1	89	
7.2.2	National feature films/mn pop. 15–69	0.9	84	
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing ◷	1.0	64	
7.2.5	Creative goods exports, % total trade	1.3	39	●
7.3	**Online creativity**	**1.2**	**100**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.8	80	
7.3.2	Country-code TLDs/th pop. 15–69	0.5	95	
7.3.3	Wikipedia edits/mn pop. 15–69 ◷	3.5	92	
7.3.4	Mobile app creation/bn PPP$ GDP	0.1	88	

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.

BOSNIA AND HERZEGOVINA

GII 2019 rank

76

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
79	71	Upper middle	EUR	3.5	47.3	13,491.0	77

		Score/Value	Rank	
	INSTITUTIONS	**58.9**	**79**	
1.1	**Political environment**	**44.3**	**94**	◇
1.1.1	Political and operational stability*	63.2	86	
1.1.2	Government effectiveness*	34.9	96	◇
1.2	**Regulatory environment**	**68.7**	**59**	
1.2.1	Regulatory quality*	37.9	82	
1.2.2	Rule of law*	40.8	73	
1.2.3	Cost of redundancy dismissal, salary weeks	9.2	24	●
1.3	**Business environment**	**63.7**	**87**	
1.3.1	Ease of starting a business*	59.6	128	○ ◇
1.3.2	Ease of resolving insolvency*	67.8	34	● ◆
	HUMAN CAPITAL & RESEARCH	**42.0**	**37**	◆
2.1	**Education**	**92.2**	**[1]**	
2.1.1	Expenditure on education, % GDP	n/a	n/a	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	9.3	21	●
2.2	**Tertiary education**	**29.7**	**71**	
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	20.3	64	
2.2.3	Tertiary inbound mobility, %	7.1	31	◆
2.3	**Research & development (R&D)**	**4.1**	**79**	
2.3.1	Researchers, FTE/mn pop	463.9	70	
2.3.2	Gross expenditure on R&D, % GDP	0.2	89	
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*	7.0	67	
	INFRASTRUCTURE	**35.3**	**100**	◇
3.1	**Information & communication technologies(ICTs)**	**50.1**	**95**	
3.1.1	ICT access*	65.8	66	
3.1.2	ICT use*	48.1	74	
3.1.3	Government's online service*	43.1	112	○ ◇
3.1.4	E-participation*	43.3	109	◇
3.2	**General infrastructure**	**25.5**	**99**	
3.2.1	Electricity output, kWh/mn pop	5,047.4	43	
3.2.2	Logistics performance*	34.8	71	
3.2.3	Gross capital formation, % GDP	17.2	108	○
3.3	**Ecological sustainability**	**30.4**	**92**	◇
3.3.1	GDP/unit of energy use	5.6	102	◇
3.3.2	Environmental performance*	41.8	117	○ ◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	5.5	20	●
	MARKET SOPHISTICATION	**49.3**	**62**	
4.1	**Credit**	**34.3**	**71**	
4.1.1	Ease of getting credit*	65.0	54	
4.1.2	Domestic credit to private sector, % GDP	54.4	59	
4.1.3	Microfinance gross loans, % GDP	0.8	25	
4.2	**Investment**	**58.3**	**[22]**	
4.2.1	Ease of protecting minority investors*	58.3	68	
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**	**55.1**	**88**	
4.3.1	Applied tariff rate, weighted avg., %	2.5	60	
4.3.2	Intensity of local competition†	61.9	97	◇
4.3.3	Domestic market scale, bn PPP$	47.3	97	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**26.5**	**88**	
5.1	**Knowledge workers**	**37.8**	**59**	
5.1.1	Knowledge-intensive employment, %	22.1	68	
5.1.2	Firms offering formal training, % firms	52.4	16	●
5.1.3	GERD performed by business, % GDP	0.1	67	
5.1.4	GERD financed by business, %	29.1	62	
5.1.5	Females employed w/advanced degrees, %	6.9	81	
5.2	**Innovation linkages**	**21.9**	**72**	
5.2.1	University/industry research collaboration†	27.2	114	○ ◇
5.2.2	State of cluster development†	37.4	97	
5.2.3	GERD financed by abroad, %	16.4	23	●
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	58	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**19.8**	**125**	○ ◇
5.3.1	Intellectual property payments, % total trade	0.1	97	
5.3.2	High-tech imports, % total trade	5.0	106	
5.3.3	ICT services imports, % total trade	0.6	101	
5.3.4	FDI net inflows, % GDP	2.2	79	
5.3.5	Research talent, % in business enterprise	7.2	66	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**21.8**	**65**	
6.1	**Knowledge creation**	**8.2**	**79**	
6.1.1	Patents by origin/bn PPP$ GDP	1.9	46	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	66	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	8.0	58	
6.1.5	Citable documents H-index	3.3	111	○
6.2	**Knowledge impact**	**42.0**	**41**	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.7	15	●
6.2.2	New businesses/th pop. 15–64	1.1	67	
6.2.3	Computer software spending, % GDP	0.1	92	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	25.4	8	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.2	64	
6.3	**Knowledge diffusion**	**15.3**	**76**	
6.3.1	Intellectual property receipts, % total trade	0.2	42	◆
6.3.2	High-tech net exports, % total trade	2.4	50	
6.3.3	ICT services exports, % total trade	1.8	60	
6.3.4	FDI net outflows, % GDP	0.4	75	
	CREATIVE OUTPUTS	**19.0**	**99**	
7.1	**Intangible assets**	**27.2**	**115**	○ ◇
7.1.1	Trademarks by origin/bn PPP$ GDP	16.5	92	
7.1.2	Industrial designs by origin/bn PPP$ GDP	2.4	46	
7.1.3	ICTs & business model creation†	44.0	116	○ ◇
7.1.4	ICTs & organizational model creation†	39.0	115	○ ◇
7.2	**Creative goods & services**	**13.2**	**74**	
7.2.1	Cultural & creative services exports, % total trade	0.0	96	
7.2.2	National feature films/mn pop. 15–69	7.3	26	● ◆
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	1.2	53	
7.2.5	Creative goods exports, % total trade	0.4	67	
7.3	**Online creativity**	**8.3**	**56**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.7	69	
7.3.2	Country-code TLDs/th pop. 15–69	2.3	64	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	41.7	34	● ◆
7.3.4	Mobile app creation/bn PPP$ GDP	0.1	80	

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.

BOTSWANA

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
117	**80**	**Upper middle**	**SSF**	**2.3**	**41.8**	**17,965.4**	**91**

		Score/Value	Rank	
	INSTITUTIONS	**65.7**	**58**	
1.1	**Political environment**	**66.0**	**43**	◆
1.1.1	Political and operational stability*	84.2	25	● ◆
1.1.2	Government effectiveness*	56.8	46	◆
1.2	**Regulatory environment**	**69.0**	**56**	
1.2.1	Regulatory quality*	54.4	47	
1.2.2	Rule of law*	60.0	41	◆
1.2.3	Cost of redundancy dismissal, salary weeks	20.6	85	
1.3	**Business environment**	**62.1**	**93**	
1.3.1	Ease of starting a business*	76.2	116	○
1.3.2	Ease of resolving insolvency*	48.0	73	
	HUMAN CAPITAL & RESEARCH	**28.2**	**73**	
2.1	**Education**	**67.5**	**[7]**	
2.1.1	Expenditure on education, % GDP 🕒	9.6	1	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap 🕒	36.4	6	● ◆
2.1.3	School life expectancy, years 🕒	12.2	89	◇
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**13.8**	**102**	◇
2.2.1	Tertiary enrolment, % gross	23.0	89	◇
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	2.7	69	
2.3	**Research & development (R&D)**	**3.4**	**85**	
2.3.1	Researchers, FTE/mn pop. 🕒	179.5	80	
2.3.2	Gross expenditure on R&D, % GDP 🕒	0.5	57	
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	**35.2**	**101**	◇
3.1	**Information & communication technologies(ICTs)**	**32.4**	**116**	○ ◇
3.1.1	ICT access*	52.5	84	
3.1.2	ICT use*	36.8	94	◇
3.1.3	Government's online service*	20.8	126	○ ◇
3.1.4	E-participation*	19.7	125	○ ◇
3.2	**General infrastructure**	**34.0**	**68**	
3.2.1	Electricity output, kWh/mn pop.	1,194.7	91	◇
3.2.2	Logistics performance*	n/a	n/a	
3.2.3	Gross capital formation, % GDP	28.3	26	●
3.3	**Ecological sustainability**	**39.2**	**62**	
3.3.1	GDP/unit of energy use	13.3	19	●
3.3.2	Environmental performance*	51.7	92	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	93	
	MARKET SOPHISTICATION	**49.0**	**63**	
4.1	**Credit**	**34.0**	**73**	
4.1.1	Ease of getting credit*	55.0	77	
4.1.2	Domestic credit to private sector, % GDP	31.4	93	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**56.7**	**[27]**	
4.2.1	Ease of protecting minority investors*	56.7	79	
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**	**56.3**	**85**	
4.3.1	Applied tariff rate, weighted avg., %	1.1	11	●
4.3.2	Intensity of local competition†	61.7	100	◇
4.3.3	Domestic market scale, bn PPP$	41.8	104	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**26.2**	**91**	
5.1	**Knowledge workers**	**34.4**	**73**	
5.1.1	Knowledge-intensive employment, % 🕒	17.8	82	
5.1.2	Firms offering formal training, % firms 🕒	51.9	17	●
5.1.3	GERD performed by business, % GDP 🕒	0.1	61	
5.1.4	GERD financed by business, % 🕒	17.7	71	
5.1.5	Females employed w/advanced degrees, % 🕒	9.1	71	
5.2	**Innovation linkages**	**24.3**	**68**	
5.2.1	University/industry research collaboration†	34.7	94	
5.2.2	State of cluster development†	34.5	108	◇
5.2.3	GERD financed by abroad, % 🕒	21.7	17	● ◆
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	67	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**19.8**	**123**	○ ◇
5.3.1	Intellectual property payments, % total trade	0.1	94	
5.3.2	High-tech imports, % total trade	3.6	122	○
5.3.3	ICT services imports, % total trade	1.0	70	
5.3.4	FDI net inflows, % GDP	2.6	66	
5.3.5	Research talent, % in business enterprise 🕒	1.0	76	◇
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**13.7**	**107**	
6.1	**Knowledge creation**	**4.1**	**105**	
6.1.1	Patents by origin/bn PPP$ GDP	0.1	117	○
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	99	○ ◇
6.1.3	Utility models by origin/bn PPP$ GDP	0.1	52	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.9	71	
6.1.5	Citable documents H-index	4.5	98	
6.2	**Knowledge impact**	**25.9**	**[105]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	18.4	3	● ◆
6.2.3	Computer software spending, % GDP	0.1	85	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.5	121	○
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**11.0**	**98**	
6.3.1	Intellectual property receipts, % total trade	0.0	93	
6.3.2	High-tech net exports, % total trade	0.8	71	
6.3.3	ICT services exports, % total trade	0.3	110	
6.3.4	FDI net outflows, % GDP	1.7	36	●
	CREATIVE OUTPUTS	**14.3**	**118**	○ ◇
7.1	**Intangible assets**	**27.4**	**114**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	11.9	100	
7.1.2	Industrial designs by origin/bn PPP$ GDP 🕒	0.3	93	
7.1.3	ICTs & business model creation†	49.4	107	◇
7.1.4	ICTs & organizational model creation†	41.9	108	◇
7.2	**Creative goods & services**	**1.6**	**[118]**	
7.2.1	Cultural & creative services exports, % total trade 🕒	0.0	106	
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	n/a	n/a	
7.2.5	Creative goods exports, % total trade	0.2	86	
7.3	**Online creativity**	**0.8**	**101**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.1	93	
7.3.2	Country-code TLDs/th pop. 15–69	1.2	77	
7.3.3	Wikipedia edits/mn pop. 15–69 🕒	0.4	110	
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.

BRAZIL

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
67	60	Upper middle	LCN	210.9	3,370.6	16,154.3	64

		Score/Value	Rank	
	INSTITUTIONS	**58.9**	**80**	
1.1	**Political environment**	**48.6**	**88**	
1.1.1	Political and operational stability*	66.7	74	
1.1.2	Government effectiveness*	39.6	87	
1.2	**Regulatory environment**	**63.8**	**72**	
1.2.1	Regulatory quality*	38.9	76	
1.2.2	Rule of law*	38.9	78	
1.2.3	Cost of redundancy dismissal, salary weeks	15.4	62	
1.3	**Business environment**	**64.4**	**83**	
1.3.1	Ease of starting a business*	80.2	106	○
1.3.2	Ease of resolving insolvency*	48.5	69	

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**36.0**	**48**	
2.1	**Education**	**50.1**	**59**	
2.1.1	Expenditure on education, % GDP	6.2	18	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	21.7	44	
2.1.3	School life expectancy, years ⓘ	15.3	44	
2.1.4	PISA scales in reading, maths, & science	395.0	64	○
2.1.5	Pupil-teacher ratio, secondary ⓘ	16.6	73	
2.2	**Tertiary education**	**22.3**	**85**	
2.2.1	Tertiary enrolment, % gross ⓘ	50.5	56	
2.2.2	Graduates in science & engineering, %	17.7	75	
2.2.3	Tertiary inbound mobility, %	0.2	105	○ ◇
2.3	**Research & development (R&D)**	**35.6**	**32**	◆
2.3.1	Researchers, FTE/mn pop. ⓘ	881.4	53	
2.3.2	Gross expenditure on R&D, % GDP ⓘ	1.3	28	● ◆
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	61.5	22	● ◆
2.3.4	QS university ranking, average score top 3*	43.0	25	● ◆

		Score/Value	Rank	
	INFRASTRUCTURE	**46.8**	**64**	
3.1	**Information & communication technologies(ICTs)**	**77.9**	**36**	◆
3.1.1	ICT access*	61.9	72	
3.1.2	ICT use*	60.2	57	
3.1.3	Government's online service*	92.4	22	● ◆
3.1.4	E-participation*	97.2	12	● ◆
3.2	**General infrastructure**	**24.4**	**102**	○
3.2.1	Electricity output, kWh/mn pop.	2,787.8	64	
3.2.2	Logistics performance*	43.1	55	
3.2.3	Gross capital formation, % GDP	16.1	115	○ ◇
3.3	**Ecological sustainability**	**38.2**	**65**	
3.3.1	GDP/unit of energy use	10.0	52	
3.3.2	Environmental performance*	60.7	62	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.9	68	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**44.2**	**84**	
4.1	**Credit**	**25.8**	**105**	○
4.1.1	Ease of getting credit*	50.0	87	
4.1.2	Domestic credit to private sector, % GDP	59.7	56	
4.1.3	Microfinance gross loans, % GDP	0.0	74	○
4.2	**Investment**	**36.8**	**91**	
4.2.1	Ease of protecting minority investors*	65.0	45	
4.2.2	Market capitalization, % GDP	38.6	40	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	61	○
4.3	**Trade, competition, & market scale**	**70.1**	**33**	
4.3.1	Applied tariff rate, weighted avg., %	8.6	104	○ ◇
4.3.2	Intensity of local competition†	68.2	67	
4.3.3	Domestic market scale, bn PPP$	3,370.6	8	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**37.6**	**40**	◆
5.1	**Knowledge workers**	**46.3**	**42**	
5.1.1	Knowledge-intensive employment, %	23.1	65	
5.1.2	Firms offering formal training, % firms ⓘ	42.2	30	
5.1.3	GERD performed by business, % GDP	n/a	n/a	
5.1.4	GERD financed by business, %	45.0	35	
5.1.5	Females employed w/advanced degrees, %	12.5	55	
5.2	**Innovation linkages**	**25.0**	**66**	
5.2.1	University/industry research collaboration†	42.5	58	
5.2.2	State of cluster development†	49.7	50	
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	82	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	55	
5.3	**Knowledge absorption**	**41.7**	**36**	◆
5.3.1	Intellectual property payments, % total trade	2.3	10	● ◆
5.3.2	High-tech imports, % total trade	10.1	28	●
5.3.3	ICT services imports, % total trade	1.6	35	
5.3.4	FDI net inflows, % GDP	4.0	41	
5.3.5	Research talent, % in business enterprise ⓘ	26.6	45	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**23.0**	**58**	
6.1	**Knowledge creation**	**19.8**	**47**	
6.1.1	Patents by origin/bn PPP$ GDP	1.7	50	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.2	53	
6.1.3	Utility models by origin/bn PPP$ GDP	0.9	25	
6.1.4	Scientific & technical articles/bn PPP$ GDP	9.7	50	
6.1.5	Citable documents H-index	36.3	24	● ◆
6.2	**Knowledge impact**	**31.9**	**86**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.3	96	○
6.2.2	New businesses/th pop. 15–64	0.1	98	○
6.2.3	Computer software spending, % GDP	0.2	74	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.4	58	
6.2.5	High- & medium-high-tech manufactures, % ⓘ	0.3	32	
6.3	**Knowledge diffusion**	**17.4**	**66**	
6.3.1	Intellectual property receipts, % total trade	0.3	31	◆
6.3.2	High-tech net exports, % total trade	4.5	32	
6.3.3	ICT services exports, % total trade	0.9	84	
6.3.4	FDI net outflows, % GDP	0.6	63	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**22.8**	**82**	
7.1	**Intangible assets**	**38.9**	**73**	
7.1.1	Trademarks by origin/bn PPP$ GDP	49.0	50	
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.1	64	
7.1.3	ICTs & business model creation†	61.1	57	
7.1.4	ICTs & organizational model creation†	52.6	69	
7.2	**Creative goods & services**	**7.0**	**94**	
7.2.1	Cultural & creative services exports, % total trade	0.5	50	
7.2.2	National feature films/mn pop. 15–69	1.0	81	
7.2.3	Entertainment & Media market/th pop. 15–69	8.5	39	◆
7.2.4	Printing & other media, % manufacturing ⓘ	0.6	86	○
7.2.5	Creative goods exports, % total trade	0.2	77	
7.3	**Online creativity**	**6.4**	**61**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.5	87	
7.3.2	Country-code TLDs/th pop. 15–69	7.2	44	
7.3.3	Wikipedia edits/mn pop. 15–69	6.3	71	
7.3.4	Mobile app creation/bn PPP$ GDP	12.7	36	

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.

BRUNEI DARUSSALAM

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
120	35	High	SEAO	0.4	35.5	79,529.9	67

		Score/Value	Rank	
	INSTITUTIONS	**78.9**	**27**	
1.1	**Political environment**	**80.5**	**21**	●
1.1.1	Political and operational stability*	93.0	7	● ◆
1.1.2	Government effectiveness*	74.3	26	●
1.2	**Regulatory environment**	**81.2**	**27**	
1.2.1	Regulatory quality*	61.1	38	
1.2.2	Rule of law*	63.5	37	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	● ◆
1.3	**Business environment**	**75.0**	**45**	
1.3.1	Ease of starting a business*	94.9	14	●
1.3.2	Ease of resolving insolvency*	55.1	59	

	HUMAN CAPITAL & RESEARCH	**33.3**	**55**	◇
2.1	**Education**	**50.2**	**58**	
2.1.1	Expenditure on education, % GDP	4.4	63	
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.8	30	
2.1.3	School life expectancy, years	14.4	64	◇
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	8.7	13	●
2.2	**Tertiary education**	**39.8**	**39**	
2.2.1	Tertiary enrolment, % gross	32.9	79	◇
2.2.2	Graduates in science & engineering, % ⊙	30.5	11	● ◆
2.2.3	Tertiary inbound mobility, %	3.8	56	
2.3	**Research & development (R&D)**	**9.8**	**[57]**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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*	19.6	53	

	INFRASTRUCTURE	**50.4**	**52**	◇
3.1	**Information & communication technologies(ICTs)**	**69.9**	**58**	◇
3.1.1	ICT access*	76.6	39	
3.1.2	ICT use*	70.3	33	
3.1.3	Government's online service*	72.2	67	◇
3.1.4	E-participation*	60.7	92	◇
3.2	**General infrastructure**	**41.9**	**41**	
3.2.1	Electricity output, kWh/mn pop.	10,166.7	14	●
3.2.2	Logistics performance*	30.1	79	◇
3.2.3	Gross capital formation, % GDP	29.1	23	● ◆
3.3	**Ecological sustainability**	**39.3**	**60**	
3.3.1	GDP/unit of energy use	10.1	49	
3.3.2	Environmental performance*	63.6	48	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.8	71	◇

	MARKET SOPHISTICATION	**60.1**	**17**	●
4.1	**Credit**	**58.5**	**20**	●
4.1.1	Ease of getting credit*	100.0	1	● ◆
4.1.2	Domestic credit to private sector, % GDP	39.5	84	◇
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**65.0**	**[15]**	
4.2.1	Ease of protecting minority investors*	65.0	45	
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**	**56.7**	**84**	◇
4.3.1	Applied tariff rate, weighted avg., %	0.0	2	● ◆
4.3.2	Intensity of local competition†	61.2	104	◇
4.3.3	Domestic market scale, bn PPP$	35.5	110	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**36.0**	**45**	
5.1	**Knowledge workers**	**60.1**	**[24]**	
5.1.1	Knowledge-intensive employment, %	40.6	26	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
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, %	12.0	59	◇
5.2	**Innovation linkages**	**21.7**	**76**	◇
5.2.1	University/industry research collaboration†	37.3	86	◇
5.2.2	State of cluster development†	41.5	87	◇
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	60	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**26.3**	**97**	◇
5.3.1	Intellectual property payments, % total trade	0.5	68	
5.3.2	High-tech imports, % total trade	6.1	92	
5.3.3	ICT services imports, % total trade	0.8	86	
5.3.4	FDI net inflows, % GDP	1.3	99	
5.3.5	Research talent, % in business enterprise	n/a	n/a	

	KNOWLEDGE & TECHNOLOGY OUTPUTS	**8.9**	**120**	○ ◇
6.1	**Knowledge creation**	**2.7**	**117**	○ ◇
6.1.1	Patents by origin/bn PPP$ GDP	0.2	92	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	83	◇
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	102	◇
6.1.5	Citable documents H-index	1.9	119	○ ◇
6.2	**Knowledge impact**	**6.2**	**[119]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	2.5	44	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.2	76	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.0	101	○ ◇
6.3	**Knowledge diffusion**	**17.7**	**62**	
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	3.1	44	
6.3.3	ICT services exports, % total trade	0.0	128	○ ◇
6.3.4	FDI net outflows, % GDP	1.6	39	

	CREATIVE OUTPUTS	**17.0**	**107**	◇
7.1	**Intangible assets**	**30.4**	**105**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	5.2	116	○ ◇
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.0	117	○ ◇
7.1.3	ICTs & business model creation†	58.0	74	◇
7.1.4	ICTs & organizational model creation†	47.5	89	◇
7.2	**Creative goods & services**	**3.3**	**[109]**	
7.2.1	Cultural & creative services exports, % total trade	0.0	119	○ ◇
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 ⊙	0.5	93	○ ◇
7.2.5	Creative goods exports, % total trade	0.2	91	
7.3	**Online creativity**	**4.0**	**68**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	7.5	45	
7.3.2	Country-code TLDs/th pop. 15–69	0.8	83	◇
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	5.7	79	◇
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.

BULGARIA

GII 2019 rank

40

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
38	45	Upper middle	EUR	7.0	162.7	23,155.6	37

		Score/Value	Rank	
	INSTITUTIONS	**68.3**	**48**	
1.1	**Political environment**	**58.1**	**59**	
1.1.1	Political and operational stability*	68.4	71	
1.1.2	Government effectiveness*	52.9	52	
1.2	**Regulatory environment**	**75.5**	**37**	◆
1.2.1	Regulatory quality*	58.7	43	◆
1.2.2	Rule of law*	45.3	66	
1.2.3	Cost of redundancy dismissal, salary weeks	8.6	17	●
1.3	**Business environment**	**71.5**	**60**	
1.3.1	Ease of starting a business*	85.4	76	
1.3.2	Ease of resolving insolvency*	57.5	51	
	HUMAN CAPITAL & RESEARCH	**30.6**	**62**	
2.1	**Education**	**47.0**	**68**	
2.1.1	Expenditure on education, % GDP ⊙	4.1	77	○
2.1.2	Government funding/pupil, secondary, % GDP/cap ⊙	21.7	43	
2.1.3	School life expectancy, years	14.8	56	
2.1.4	PISA scales in reading, maths, & science	439.6	45	○
2.1.5	Pupil-teacher ratio, secondary ⊙	12.6	52	
2.2	**Tertiary education**	**33.1**	**58**	
2.2.1	Tertiary enrolment, % gross ⊙	71.2	26	◆
2.2.2	Graduates in science & engineering, %	19.7	67	○
2.2.3	Tertiary inbound mobility, %	4.6	44	
2.3	**Research & development (R&D)**	**11.7**	**51**	
2.3.1	Researchers, FTE/mn pop.	2,130.5	38	◆
2.3.2	Gross expenditure on R&D, % GDP	0.8	47	
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*	4.7	68	
	INFRASTRUCTURE	**53.7**	**39**	◆
3.1	**Information & communication technologies(ICTs)**	**74.9**	**45**	
3.1.1	ICT access*	70.3	62	
3.1.2	ICT use*	65.8	42	◆
3.1.3	Government's online service*	76.4	54	
3.1.4	E-participation*	87.1	35	
3.2	**General infrastructure**	**33.9**	**69**	
3.2.1	Electricity output, kWh/mn pop.	6,262.4	33	◆
3.2.2	Logistics performance*	45.4	51	
3.2.3	Gross capital formation, % GDP	21.5	82	○
3.3	**Ecological sustainability**	**52.2**	**21**	● ◆
3.3.1	GDP/unit of energy use	6.8	88	○
3.3.2	Environmental performance*	67.9	29	◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	11.9	2	● ◆
	MARKET SOPHISTICATION	**47.5**	**66**	
4.1	**Credit**	**31.8**	**84**	○
4.1.1	Ease of getting credit*	65.0	54	
4.1.2	Domestic credit to private sector, % GDP	50.6	67	
4.1.3	Microfinance gross loans, % GDP	0.4	32	
4.2	**Investment**	**47.1**	**46**	
4.2.1	Ease of protecting minority investors*	68.3	30	
4.2.2	Market capitalization, % GDP ⊙	15.2	64	○
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	n/a	
4.3	**Trade, competition, & market scale**	**63.7**	**56**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	65.1	81	○
4.3.3	Domestic market scale, bn PPP$	162.7	69	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**40.3**	**34**	◆
5.1	**Knowledge workers**	**48.9**	**39**	
5.1.1	Knowledge-intensive employment, %	31.4	42	◆
5.1.2	Firms offering formal training, % firms	42.7	29	
5.1.3	GERD performed by business, % GDP	0.5	38	
5.1.4	GERD financed by business, %	43.6	39	
5.1.5	Females employed w/advanced degrees, %	19.2	26	◆
5.2	**Innovation linkages**	**36.3**	**37**	◆
5.2.1	University/industry research collaboration†	40.2	69	
5.2.2	State of cluster development†	46.8	61	
5.2.3	GERD financed by abroad, %	34.2	10	● ◆
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	35	◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.2	44	
5.3	**Knowledge absorption**	**35.7**	**52**	
5.3.1	Intellectual property payments, % total trade	0.5	60	
5.3.2	High-tech imports, % total trade	6.7	78	○
5.3.3	ICT services imports, % total trade	1.1	65	
5.3.4	FDI net inflows, % GDP	4.0	42	
5.3.5	Research talent, % in business enterprise	43.4	29	◆
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**31.4**	**37**	◆
6.1	**Knowledge creation**	**17.8**	**51**	
6.1.1	Patents by origin/bn PPP$ GDP	1.5	54	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.4	41	
6.1.3	Utility models by origin/bn PPP$ GDP	1.7	14	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	10.0	49	
6.1.5	Citable documents H-index	14.4	50	
6.2	**Knowledge impact**	**54.9**	**9**	● ◆
6.2.1	Growth rate of PPP$ GDP/worker, %	2.9	26	
6.2.2	New businesses/th pop. 15-64	10.9	11	● ◆
6.2.3	Computer software spending, % GDP	0.3	54	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	35.3	2	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.2	48	
6.3	**Knowledge diffusion**	**21.7**	**44**	
6.3.1	Intellectual property receipts, % total trade	0.1	44	◆
6.3.2	High-tech net exports, % total trade	3.8	38	
6.3.3	ICT services exports, % total trade	3.0	31	
6.3.4	FDI net outflows, % GDP	1.1	51	
	CREATIVE OUTPUTS	**33.8**	**41**	◆
7.1	**Intangible assets**	**49.9**	**37**	
7.1.1	Trademarks by origin/bn PPP$ GDP	98.6	12	●
7.1.2	Industrial designs by origin/bn PPP$ GDP	8.1	15	● ◆
7.1.3	ICTs & business model creation†	58.0	75	○
7.1.4	ICTs & organizational model creation†	53.7	64	
7.2	**Creative goods & services**	**19.3**	**57**	
7.2.1	Cultural & creative services exports, % total trade	1.4	19	●
7.2.2	National feature films/mn pop. 15-69	4.8	44	
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	1.2	48	
7.2.5	Creative goods exports, % total trade	0.8	49	
7.3	**Online creativity**	**16.0**	**40**	◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	22.9	25	● ◆
7.3.2	Country-code TLDs/th pop. 15-69	3.3	59	
7.3.3	Wikipedia edits/mn pop. 15-69	46.2	30	◆
7.3.4	Mobile app creation/bn PPP$ GDP	7.0	45	

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.

BURKINA FASO

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
115	111	Low	SSF	19.8	38.8	1,996.1	124

		Score/Value	Rank	
	INSTITUTIONS	**56.4**	**88**	
1.1	**Political environment**	**40.2**	**103**	
1.1.1	Political and operational stability*	56.1	105	
1.1.2	Government effectiveness*	32.3	102	
1.2	**Regulatory environment**	**64.5**	**68**	●
1.2.1	Regulatory quality*	30.0	100	
1.2.2	Rule of law*	35.7	86	
1.2.3	Cost of redundancy dismissal, salary weeks	10.5	33	●
1.3	**Business environment**	**64.5**	**81**	
1.3.1	Ease of starting a business*	88.2	64	●
1.3.2	Ease of resolving insolvency*	40.9	94	
	HUMAN CAPITAL & RESEARCH	**14.4**	**110**	
2.1	**Education**	**29.4**	**109**	
2.1.1	Expenditure on education, % GDP	4.2	73	●
2.1.2	Government funding/pupil, secondary, % GDP/cap	17.6	65	
2.1.3	School life expectancy, years	8.9	112	○
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	23.3	95	
2.2	**Tertiary education**	**12.6**	**105**	
2.2.1	Tertiary enrolment, % gross	6.0	116	○
2.2.2	Graduates in science & engineering, %	15.4	87	
2.2.3	Tertiary inbound mobility, %	2.9	65	●
2.3	**Research & development (R&D)**	**1.2**	**102**	
2.3.1	Researchers, FTE/mn pop.	47.6	91	
2.3.2	Gross expenditure on R&D, % GDP	0.2	87	
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	**31.2**	**110**	
3.1	**Information & communication technologies(ICTs)**	**40.8**	**103**	
3.1.1	ICT access*	32.4	114	
3.1.2	ICT use*	14.9	116	
3.1.3	Government's online service*	53.5	101	
3.1.4	E-participation*	62.4	84	◆
3.2	**General infrastructure**	**23.8**	**106**	
3.2.1	Electricity output, kWh/mn pop.	n/a	n/a	
3.2.2	Logistics performance*	26.1	86	
3.2.3	Gross capital formation, % GDP	16.3	114	
3.3	**Ecological sustainability**	**29.0**	**104**	
3.3.1	GDP/unit of energy use	n/a	n/a	
3.3.2	Environmental performance*	42.8	116	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	117	
	MARKET SOPHISTICATION	**36.2**	**116**	
4.1	**Credit**	**24.9**	**108**	
4.1.1	Ease of getting credit*	30.0	115	
4.1.2	Domestic credit to private sector, % GDP	31.3	94	
4.1.3	Microfinance gross loans, % GDP	1.8	14	●
4.2	**Investment**	**40.0**	**[72]**	
4.2.1	Ease of protecting minority investors*	40.0	114	○
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**	**43.7**	**122**	○
4.3.1	Applied tariff rate, weighted avg., %	9.1	108	
4.3.2	Intensity of local competition†	57.7	116	
4.3.3	Domestic market scale, bn PPP$	38.8	106	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**23.3**	**111**	
5.1	**Knowledge workers**	**18.1**	**[111]**	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	24.8	65	
5.1.3	GERD performed by business, % GDP	n/a	n/a	
5.1.4	GERD financed by business, %	11.9	72	◆
5.1.5	Females employed w/advanced degrees, %	0.5	112	○
5.2	**Innovation linkages**	**18.1**	**105**	
5.2.1	University/industry research collaboration†	31.9	99	
5.2.2	State of cluster development†	33.3	115	
5.2.3	GERD financed by abroad, %	1.5	86	◇
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	86	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	n/a	n/a	
5.3	**Knowledge absorption**	**33.8**	**63**	●
5.3.1	Intellectual property payments, % total trade	0.0	117	○
5.3.2	High-tech imports, % total trade	4.4	112	
5.3.3	ICT services imports, % total trade	2.2	21	●
5.3.4	FDI net inflows, % GDP	3.3	51	●
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**15.1**	**98**	
6.1	**Knowledge creation**	**4.9**	**100**	
6.1.1	Patents by origin/bn PPP$ GDP	0.2	103	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	0.1	50	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.5	75	●
6.1.5	Citable documents H-index	4.8	95	
6.2	**Knowledge impact**	**31.1**	**90**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.5	36	●
6.2.2	New businesses/th pop. 15–64	0.2	95	
6.2.3	Computer software spending, % GDP	0.0	114	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.6	93	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**9.3**	**106**	
6.3.1	Intellectual property receipts, % total trade	0.0	80	
6.3.2	High-tech net exports, % total trade	0.1	106	
6.3.3	ICT services exports, % total trade	1.2	74	●
6.3.4	FDI net outflows, % GDP	0.3	81	
	CREATIVE OUTPUTS	**13.5**	**120**	
7.1	**Intangible assets**	**26.3**	**117**	
7.1.1	Trademarks by origin/bn PPP$ GDP	5.7	114	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.5	84	
7.1.3	ICTs & business model creation†	50.0	104	
7.1.4	ICTs & organizational model creation†	39.5	112	
7.2	**Creative goods & services**	**1.2**	**[122]**	
7.2.1	Cultural & creative services exports, % total trade	0.1	79	
7.2.2	National feature films/mn pop. 15–69	0.5	95	
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	119	
7.3	**Online creativity**	**0.0**	**127**	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	124	○
7.3.2	Country-code TLDs/th pop. 15–69	0.0	124	○
7.3.3	Wikipedia edits/mn pop. 15–69	0.0	125	○
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.

BURUNDI

GII 2019 rank

128

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
126	128	Low	SSF	10.9	8.0	735.2	n/a

		Score/Value	Rank	
	INSTITUTIONS	**45.6**	**123**	
1.1	**Political environment**	**22.8**	**128**	○ ◇
1.1.1	Political and operational stability*	40.4	128	○
1.1.2	Government effectiveness*	14.1	128	○ ◇
1.2	**Regulatory environment**	**51.2**	**108**	
1.2.1	Regulatory quality*	19.5	118	
1.2.2	Rule of law*	9.5	128	○ ◇
1.2.3	Cost of redundancy dismissal, salary weeks	15.9	66	●
1.3	**Business environment**	**62.7**	**92**	
1.3.1	Ease of starting a business*	94.8	15	● ◆
1.3.2	Ease of resolving insolvency*	30.6	117	◇

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**17.7**	**103**	
2.1	**Education**	**38.7**	**88**	
2.1.1	Expenditure on education, % GDP	4.3	68	
2.1.2	Government funding/pupil, secondary, % GDP/cap. ⊙	28.0	15	●
2.1.3	School life expectancy, years	11.3	95	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	28.0	103	
2.2	**Tertiary education**	**13.8**	**101**	
2.2.1	Tertiary enrolment, % gross	6.2	115	
2.2.2	Graduates in science & engineering, %	16.2	80	
2.2.3	Tertiary inbound mobility, %	2.9	66	
2.3	**Research & development (R&D)**	**0.8**	**109**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.1	100	
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	○ ◇

		Score/Value	Rank	
	INFRASTRUCTURE	**14.0**	**129**	○ ◇
3.1	**Information & communication technologies(ICTs)**	**22.9**	**126**	
3.1.1	ICT access*	24.0	122	
3.1.2	ICT use*	6.1	126	○ ◇
3.1.3	Government's online service*	30.6	119	
3.1.4	E-participation*	30.9	119	
3.2	**General infrastructure**	**0.2**	**129**	○ ◇
3.2.1	Electricity output, kWh/mn pop.	n/a	n/a	
3.2.2	Logistics performance*	0.0	122	○ ◇
3.2.3	Gross capital formation, % GDP	6.0	124	◇
3.3	**Ecological sustainability**	**18.9**	**128**	○
3.3.1	GDP/unit of energy use	n/a	n/a	
3.3.2	Environmental performance*	27.4	127	○ ◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	108	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**26.1**	**129**	○ ◇
4.1	**Credit**	**6.1**	**128**	○ ◇
4.1.1	Ease of getting credit*	10.0	126	◇
4.1.2	Domestic credit to private sector, % GDP	15.5	115	
4.1.3	Microfinance gross loans, % GDP ⊙	0.2	42	●
4.2	**Investment**	**43.3**	**[61]**	
4.2.1	Ease of protecting minority investors*	43.3	105	
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**	**28.8**	**128**	○ ◇
4.3.1	Applied tariff rate, weighted avg., % ⊙	5.9	94	
4.3.2	Intensity of local competition†	48.5	124	◇
4.3.3	Domestic market scale, bn PPP$	8.2	129	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**29.3**	**74**	
5.1	**Knowledge workers**	**16.0**	**[115]**	
5.1.1	Knowledge-intensive employment, %	2.3	114	
5.1.2	Firms offering formal training, % firms	32.0	47	●
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, % ⊙	0.2	116	
5.2	**Innovation linkages**	**38.7**	**30**	●
5.2.1	University/industry research collaboration†	33.8	96	
5.2.2	State of cluster development†	35.1	106	
5.2.3	GERD financed by abroad, % ⊙	39.9	7	●
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	n/a	n/a	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.5	33	● ◆
5.3	**Knowledge absorption**	**33.1**	**65**	●
5.3.1	Intellectual property payments, % total trade	0.0	116	
5.3.2	High-tech imports, % total trade	9.0	44	●
5.3.3	ICT services imports, % total trade	1.6	37	●
5.3.4	FDI net inflows, % GDP	0.5	118	
5.3.5	Research talent, % in business enterprise	n/a	n/a	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**4.8**	**[127]**	◇
6.1	**Knowledge creation**	**3.8**	**[112]**	
6.1.1	Patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.3	89	
6.1.5	Citable documents H-index	0.0	128	○ ◇
6.2	**Knowledge impact**	**3.6**	**[126]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.1	96	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.5	120	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.0	97	
6.3	**Knowledge diffusion**	**7.1**	**122**	
6.3.1	Intellectual property receipts, % total trade	0.0	98	
6.3.2	High-tech net exports, % total trade	0.0	120	
6.3.3	ICT services exports, % total trade	0.6	96	
6.3.4	FDI net outflows, % GDP	0.0	113	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**12.7**	**125**	
7.1	**Intangible assets**	**24.0**	**123**	
7.1.1	Trademarks by origin/bn PPP$ GDP	6.6	111	
7.1.2	Industrial designs by origin/bn PPP$ GDP	n/a	n/a	
7.1.3	ICTs & business model creation†	37.3	123	◇
7.1.4	ICTs & organizational model creation†	33.3	121	
7.2	**Creative goods & services**	**2.6**	**[112]**	
7.2.1	Cultural & creative services exports, % total trade	0.3	66	●
7.2.2	National feature films/mn pop. 15–69	0.8	89	
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	0.1	109	
7.3	**Online creativity**	**0.1**	**126**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.0	127	
7.3.2	Country-code TLDs/th pop. 15–69	0.1	114	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	0.1	122	
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.

CAMBODIA

GII 2019 rank

98

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
84	104	Lower middle	SEAO	16.2	70.3	4,334.7	98

		Score/Value	Rank	
	INSTITUTIONS	**49.6**	**112**	
1.1	**Political environment**	**45.0**	**93**	
1.1.1	Political and operational stability*	73.7	50	● ◆
1.1.2	Government effectiveness*	30.7	110	
1.2	**Regulatory environment**	**53.1**	**104**	
1.2.1	Regulatory quality*	28.5	104	
1.2.2	Rule of law*	18.4	122	◇
1.2.3	Cost of redundancy dismissal, salary weeks	19.4	80	
1.3	**Business environment**	**50.6**	**125**	○ ◇
1.3.1	Ease of starting a business*	52.8	129	○ ◇
1.3.2	Ease of resolving insolvency*	48.4	71	
	HUMAN CAPITAL & RESEARCH	**11.2**	**120**	◇
2.1	**Education**	**17.8**	**[126]**	
2.1.1	Expenditure on education, % GDP ◷	1.9	117	○ ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years ◷	10.6	101	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**15.2**	**100**	
2.2.1	Tertiary enrolment, % gross	13.1	100	
2.2.2	Graduates in science & engineering, % ◷	15.4	86	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**0.6**	**113**	
2.3.1	Researchers, FTE/mn pop. ◷	30.4	100	○
2.3.2	Gross expenditure on R&D, % GDP ◷	0.1	102	
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	**26.5**	**123**	○ ◇
3.1	**Information & communication technologies(ICTs)**	**29.5**	**121**	◇
3.1.1	ICT access*	41.6	102	
3.1.2	ICT use*	34.1	96	
3.1.3	Government's online service*	25.0	123	○ ◇
3.1.4	E-participation*	17.4	126	○ ◇
3.2	**General infrastructure**	**23.9**	**105**	
3.2.1	Electricity output, kWh/mn pop.	354.9	111	
3.2.2	Logistics performance*	24.1	93	
3.2.3	Gross capital formation, % GDP	22.0	76	
3.3	**Ecological sustainability**	**26.0**	**112**	
3.3.1	GDP/unit of energy use	7.0	85	
3.3.2	Environmental performance*	43.2	115	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.7	78	
	MARKET SOPHISTICATION	**56.8**	**30**	● ◆
4.1	**Credit**	**73.6**	**8**	● ◆
4.1.1	Ease of getting credit*	80.0	20	●
4.1.2	Domestic credit to private sector, % GDP	86.7	32	● ◆
4.1.3	Microfinance gross loans, % GDP	7.5	1	● ◆
4.2	**Investment**	**50.0**	**[39]**	
4.2.1	Ease of protecting minority investors*	50.0	93	
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**	**46.7**	**114**	◇
4.3.1	Applied tariff rate, weighted avg., % ◷	9.8	111	
4.3.2	Intensity of local competition†	59.6	108	◇
4.3.3	Domestic market scale, bn PPP$	70.3	91	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**23.5**	**109**	
5.1	**Knowledge workers**	**13.2**	**120**	◇
5.1.1	Knowledge-intensive employment, % ◷	5.3	107	◇
5.1.2	Firms offering formal training, % firms	22.2	70	
5.1.3	GERD performed by business, % GDP ◷	0.0	81	
5.1.4	GERD financed by business, % ◷	19.4	67	
5.1.5	Females employed w/advanced degrees, % ◷	1.1	107	
5.2	**Innovation linkages**	**36.9**	**35**	● ◆
5.2.1	University/industry research collaboration†	37.4	85	
5.2.2	State of cluster development†	52.2	44	●
5.2.3	GERD financed by abroad, % ◷	34.9	9	● ◆
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	33	●
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**20.4**	**122**	◇
5.3.1	Intellectual property payments, % total trade	0.1	102	
5.3.2	High-tech imports, % total trade ◷	2.7	125	○ ◇
5.3.3	ICT services imports, % total trade	0.6	97	
5.3.4	FDI net inflows, % GDP	11.7	10	● ◆
5.3.5	Research talent, % in business enterprise ◷	4.3	72	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**19.6**	**[75]**	
6.1	**Knowledge creation**	**3.6**	**[114]**	
6.1.1	Patents by origin/bn PPP$ GDP ◷	0.0	121	○
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.3	109	
6.1.5	Citable documents H-index	4.3	99	
6.2	**Knowledge impact**	**46.0**	**[25]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.9	9	● ◆
6.2.2	New businesses/th pop. 15-64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.0	115	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.4	82	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**9.1**	**109**	
6.3.1	Intellectual property receipts, % total trade	0.0	92	
6.3.2	High-tech net exports, % total trade ◷	1.1	65	
6.3.3	ICT services exports, % total trade	0.4	105	
6.3.4	FDI net outflows, % GDP	0.5	69	
	CREATIVE OUTPUTS	**19.8**	**97**	
7.1	**Intangible assets**	**37.1**	**83**	
7.1.1	Trademarks by origin/bn PPP$ GDP ◷	23.4	83	
7.1.2	Industrial designs by origin/bn PPP$ GDP ◷	0.2	106	
7.1.3	ICTs & business model creation†	60.1	66	
7.1.4	ICTs & organizational model creation†	60.6	41	● ◆
7.2	**Creative goods & services**	**4.4**	**[105]**	
7.2.1	Cultural & creative services exports, % total trade ◷	0.0	112	
7.2.2	National feature films/mn pop. 15-69	3.2	55	
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 ◷	0.3	76	
7.3	**Online creativity**	**0.6**	**107**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.8	99	
7.3.2	Country-code TLDs/th pop. 15-69	0.0	121	
7.3.3	Wikipedia edits/mn pop. 15-69 ◷	1.8	100	
7.3.4	Mobile app creation/bn PPP$ GDP	0.3	74	

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.

CAMEROON

GII 2019 rank

115

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
106	112	Lower middle	SSF	24.7	95.1	3,828.2	111

		Score/Value	Rank	
	INSTITUTIONS	**49.6**	**111**	
1.1	**Political environment**	**36.5**	**118**	◇
1.1.1	Political and operational stability*	56.1	105	
1.1.2	Government effectiveness*	26.7	118	◇
1.2	**Regulatory environment**	**50.8**	**110**	
1.2.1	Regulatory quality*	19.9	117	◇
1.2.2	Rule of law*	19.3	120	◇
1.2.3	Cost of redundancy dismissal, salary weeks	19.9	82	
1.3	**Business environment**	**61.4**	**98**	
1.3.1	Ease of starting a business*	86.3	73	●
1.3.2	Ease of resolving insolvency*	36.6	108	
	HUMAN CAPITAL & RESEARCH	**18.8**	**98**	
2.1	**Education**	**34.5**	**98**	
2.1.1	Expenditure on education, % GDP	3.1	102	
2.1.2	Government funding/pupil, secondary, % GDP/cap. ◷	17.4	68	
2.1.3	School life expectancy, years	12.7	82	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ◷	19.3	85	
2.2	**Tertiary education**	**21.9**	**88**	
2.2.1	Tertiary enrolment, % gross ◷	19.2	95	
2.2.2	Graduates in science & engineering, % ◷	21.3	54	●
2.2.3	Tertiary inbound mobility, % ◷	1.1	86	
2.3	**Research & development (R&D)**	**0.0**	**[120]**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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	**29.9**	**113**	◇
3.1	**Information & communication technologies(ICTs)**	**31.7**	**117**	◇
3.1.1	ICT access*	34.6	112	◇
3.1.2	ICT use*	13.7	119	○ ◇
3.1.3	Government's online service*	45.8	110	
3.1.4	E-participation*	32.6	116	◇
3.2	**General infrastructure**	**31.8**	**77**	
3.2.1	Electricity output, kWh/mn pop.	357.0	110	
3.2.2	Logistics performance*	24.9	90	
3.2.3	Gross capital formation, % GDP	29.1	24	●
3.3	**Ecological sustainability**	**26.3**	**111**	
3.3.1	GDP/unit of energy use	8.3	71	
3.3.2	Environmental performance*	40.8	119	○ ◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	114	
	MARKET SOPHISTICATION	**36.4**	**115**	◇
4.1	**Credit**	**22.4**	**114**	
4.1.1	Ease of getting credit*	60.0	66	
4.1.2	Domestic credit to private sector, % GDP	14.5	117	◇
4.1.3	Microfinance gross loans, % GDP	0.2	47	
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**	**45.1**	**117**	◇
4.3.1	Applied tariff rate, weighted avg., % ◷	12.7	125	○ ◇
4.3.2	Intensity of local competition†	63.2	88	
4.3.3	Domestic market scale, bn PPP$	95.1	79	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**23.9**	**106**	
5.1	**Knowledge workers**	**26.3**	**[94]**	
5.1.1	Knowledge-intensive employment, % ◷	10.9	98	
5.1.2	Firms offering formal training, % firms	37.6	37	●
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, % ◷	2.0	100	
5.2	**Innovation linkages**	**18.3**	**102**	
5.2.1	University/industry research collaboration†	38.4	77	
5.2.2	State of cluster development†	35.3	104	
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	103	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**27.0**	**94**	
5.3.1	Intellectual property payments, % total trade	0.1	106	◇
5.3.2	High-tech imports, % total trade	5.4	101	
5.3.3	ICT services imports, % total trade	1.1	67	●
5.3.4	FDI net inflows, % GDP	2.2	78	
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**15.7**	**93**	
6.1	**Knowledge creation**	**6.5**	**87**	
6.1.1	Patents by origin/bn PPP$ GDP	0.3	83	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	94	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.8	64	●
6.1.5	Citable documents H-index	6.0	89	
6.2	**Knowledge impact**	**29.9**	**94**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.0	62	● ◇
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.2	76	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.7	116	◇
6.2.5	High- & medium-high-tech manufactures, % ◷	0.0	103	○ ◇
6.3	**Knowledge diffusion**	**10.6**	**100**	
6.3.1	Intellectual property receipts, % total trade	0.0	89	
6.3.2	High-tech net exports, % total trade	0.2	95	
6.3.3	ICT services exports, % total trade	1.9	57	●
6.3.4	FDI net outflows, % GDP	0.0	105	
	CREATIVE OUTPUTS	**16.5**	**109**	
7.1	**Intangible assets**	**27.6**	**113**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	5.9	113	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.3	95	
7.1.3	ICTs & business model creation†	52.0	99	
7.1.4	ICTs & organizational model creation†	42.4	106	
7.2	**Creative goods & services**	**10.4**	**84**	
7.2.1	Cultural & creative services exports, % total trade	0.3	61	●
7.2.2	National feature films/mn pop. 15–69 ◷	1.9	68	
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing ◷	1.3	40	●
7.2.5	Creative goods exports, % total trade	0.0	121	○
7.3	**Online creativity**	**0.5**	**108**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.2	117	◇
7.3.2	Country-code TLDs/th pop. 15–69	1.3	75	
7.3.3	Wikipedia edits/mn pop. 15–69 ◷	0.1	119	○
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.

CANADA

GII 2019 rank

17

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
22	9	High	NAC	37.0	1,852.5	49,651.2	18

		Score/Value	Rank	
1	**INSTITUTIONS**	**92.3**	**4**	●
1.1	**Political environment**	**92.0**	**6**	●
1.1.1	Political and operational stability*	93.0	7	
1.1.2	Government effectiveness*	91.5	6	●
1.2	**Regulatory environment**	**95.1**	**8**	
1.2.1	Regulatory quality*	92.6	6	●
1.2.2	Rule of law*	94.0	10	
1.2.3	Cost of redundancy dismissal, salary weeks	10.0	29	
1.3	**Business environment**	**89.8**	**4**	●
1.3.1	Ease of starting a business*	98.2	3	● ◆
1.3.2	Ease of resolving insolvency*	81.5	12	
2	**HUMAN CAPITAL & RESEARCH**	**50.9**	**19**	
2.1	**Education**	**51.9**	**51**	◇
2.1.1	Expenditure on education, % GDP ⊙	5.3	33	
2.1.2	Government funding/pupil, secondary, % GDP/cap ⊙	18.3	58	○ ◇
2.1.3	School life expectancy, years	16.1	33	
2.1.4	PISA scales in reading, maths, & science	523.3	5	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**41.2**	**32**	
2.2.1	Tertiary enrolment, % gross ⊙	67.0	33	
2.2.2	Graduates in science & engineering, %	21.3	55	○
2.2.3	Tertiary inbound mobility, %	11.9	14	
2.3	**Research & development (R&D)**	**59.5**	**15**	
2.3.1	Researchers, FTE/mn pop. ⊙	4,274.7	22	
2.3.2	Gross expenditure on R&D, % GDP ⊙	1.7	21	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	69.6	19	
2.3.4	QS university ranking, average score top 3*	80.2	6	●
3	**INFRASTRUCTURE**	**58.5**	**27**	◇
3.1	**Information & communication technologies(ICTs)**	**85.0**	**21**	
3.1.1	ICT access*	80.0	29	
3.1.2	ICT use*	76.1	25	
3.1.3	Government's online service*	93.1	17	
3.1.4	E-participation*	91.0	27	
3.2	**General infrastructure**	**55.4**	**8**	
3.2.1	Electricity output, kWh/mn pop.	18,368.9	4	● ◆
3.2.2	Logistics performance*	77.8	20	
3.2.3	Gross capital formation, % GDP	23.8	56	
3.3	**Ecological sustainability**	**35.1**	**79**	○ ◇
3.3.1	GDP/unit of energy use	5.5	103	○ ◇
3.3.2	Environmental performance*	72.2	24	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.7	76	○ ◇
4	**MARKET SOPHISTICATION**	**80.4**	**2**	● ◆
4.1	**Credit**	**85.0**	**[4]**	
4.1.1	Ease of getting credit*	85.0	11	◆
4.1.2	Domestic credit to private sector, % GDP	n/a	n/a	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**77.7**	**4**	● ◆
4.2.1	Ease of protecting minority investors*	78.3	10	◆
4.2.2	Market capitalization, % GDP	125.1	7	
4.2.3	Venture capital deals/bn PPP$ GDP	0.5	1	● ◆
4.3	**Trade, competition, & market scale**	**78.6**	**13**	
4.3.1	Applied tariff rate, weighted avg., %	1.5	16	
4.3.2	Intensity of local competition†	74.5	31	
4.3.3	Domestic market scale, bn PPP$	1,852.5	17	

		Score/Value	Rank	
5	**BUSINESS SOPHISTICATION**	**49.9**	**22**	
5.1	**Knowledge workers**	**56.4**	**28**	◇
5.1.1	Knowledge-intensive employment, % ⊙	43.7	19	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.8	24	
5.1.4	GERD financed by business, %	40.9	43	◇
5.1.5	Females employed w/advanced degrees, %	17.6	31	
5.2	**Innovation linkages**	**48.4**	**15**	
5.2.1	University/industry research collaboration†	63.0	20	
5.2.2	State of cluster development†	62.0	22	
5.2.3	GERD financed by abroad, %	10.9	36	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.3	1	● ◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	2.1	20	
5.3	**Knowledge absorption**	**44.9**	**28**	
5.3.1	Intellectual property payments, % total trade	2.2	11	
5.3.2	High-tech imports, % total trade	10.0	30	
5.3.3	ICT services imports, % total trade	0.9	77	○ ◇
5.3.4	FDI net inflows, % GDP	2.6	64	
5.3.5	Research talent, % in business enterprise ⊙	56.7	18	
6	**KNOWLEDGE & TECHNOLOGY OUTPUTS**	**41.3**	**19**	
6.1	**Knowledge creation**	**50.5**	**13**	
6.1.1	Patents by origin/bn PPP$ GDP	2.3	38	◇
6.1.2	PCT patents by origin/bn PPP$ GDP	1.3	27	◇
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	20.6	22	
6.1.5	Citable documents H-index	80.0	4	● ◆
6.2	**Knowledge impact**	**41.5**	**43**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.7	68	○
6.2.2	New businesses/th pop. 15–64	0.1	104	○ ◇
6.2.3	Computer software spending, % GDP	0.7	5	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.4	73	○ ◇
6.2.5	High- & medium-high-tech manufactures, %	0.4	24	
6.3	**Knowledge diffusion**	**32.0**	**27**	
6.3.1	Intellectual property receipts, % total trade	0.8	21	
6.3.2	High-tech net exports, % total trade	4.9	31	
6.3.3	ICT services exports, % total trade	1.5	68	○
6.3.4	FDI net outflows, % GDP	5.0	12	
7	**CREATIVE OUTPUTS**	**41.4**	**27**	
7.1	**Intangible assets**	**50.7**	**31**	
7.1.1	Trademarks by origin/bn PPP$ GDP	58.5	37	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.5	86	○ ◇
7.1.3	ICTs & business model creation†	75.7	16	
7.1.4	ICTs & organizational model creation†	77.0	11	
7.2	**Creative goods & services**	**24.7**	**45**	
7.2.1	Cultural & creative services exports, % total trade	0.8	34	
7.2.2	National feature films/mn pop. 15–69	3.5	53	
7.2.3	Entertainment & Media market/th pop. 15–69	59.4	10	
7.2.4	Printing & other media, % manufacturing	1.5	34	
7.2.5	Creative goods exports, % total trade	1.0	43	
7.3	**Online creativity**	**39.4**	**17**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	76.5	6	● ◆
7.3.2	Country-code TLDs/th pop. 15–69	29.4	19	
7.3.3	Wikipedia edits/mn pop. 15–69	49.0	25	
7.3.4	Mobile app creation/bn PPP$ GDP	18.8	24	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

CHILE

GII 2019 rank

51

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
62	43	High	LCN	18.2	481.0	25,978.3	47

		Score/Value	Rank	
	INSTITUTIONS	**73.0**	**39**	
1.1	**Political environment**	**71.7**	**37**	
1.1.1	Political and operational stability*	80.7	35	
1.1.2	Government effectiveness*	67.2	36	
1.2	**Regulatory environment**	**72.9**	**41**	
1.2.1	Regulatory quality*	77.8	21	●
1.2.2	Rule of law*	73.1	29	
1.2.3	Cost of redundancy dismissal, salary weeks	27.4	107	○ ◇
1.3	**Business environment**	**74.5**	**50**	
1.3.1	Ease of starting a business*	89.1	58	
1.3.2	Ease of resolving insolvency*	59.9	46	
	HUMAN CAPITAL & RESEARCH	**32.5**	**57**	◇
2.1	**Education**	**49.8**	**60**	
2.1.1	Expenditure on education, % GDP	5.4	30	
2.1.2	Government funding/pupil, secondary, % GDP/cap	18.2	59	
2.1.3	School life expectancy, years	16.5	20	●
2.1.4	PISA scales in reading, maths, & science	442.7	44	
2.1.5	Pupil-teacher ratio, secondary	18.4	79	○ ◇
2.2	**Tertiary education**	**34.3**	**56**	
2.2.1	Tertiary enrolment, % gross	91.5	5	● ◆
2.2.2	Graduates in science & engineering, %	20.5	62	
2.2.3	Tertiary inbound mobility, %	0.4	100	○ ◇
2.3	**Research & development (R&D)**	**13.3**	**49**	◇
2.3.1	Researchers, FTE/mn pop. ⊙	502.1	67	◇
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.4	71	◇
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*	39.5	32	
	INFRASTRUCTURE	**51.0**	**50**	◇
3.1	**Information & communication technologies(ICTs)**	**76.1**	**41**	
3.1.1	ICT access*	72.8	57	◇
3.1.2	ICT use*	66.3	41	
3.1.3	Government's online service*	83.3	37	
3.1.4	E-participation*	82.0	46	
3.2	**General infrastructure**	**36.5**	**59**	
3.2.1	Electricity output, kWh/mn pop.	4,262.7	51	
3.2.2	Logistics performance*	58.6	33	
3.2.3	Gross capital formation, % GDP	22.4	71	
3.3	**Ecological sustainability**	**40.3**	**53**	
3.3.1	GDP/unit of energy use	10.1	49	
3.3.2	Environmental performance*	57.5	73	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.1	31	
	MARKET SOPHISTICATION	**51.7**	**49**	
4.1	**Credit**	**41.4**	**51**	
4.1.1	Ease of getting credit*	55.0	77	
4.1.2	Domestic credit to private sector, % GDP	112.6	19	●
4.1.3	Microfinance gross loans, % GDP	0.9	21	◆
4.2	**Investment**	**40.3**	**71**	
4.2.1	Ease of protecting minority investors*	60.0	61	
4.2.2	Market capitalization, % GDP	89.8	15	●
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	53	
4.3	**Trade, competition, & market scale**	**73.3**	**24**	●
4.3.1	Applied tariff rate, weighted avg., %	0.5	4	● ◆
4.3.2	Intensity of local competition†	74.5	30	
4.3.3	Domestic market scale, bn PPP$	481.0	42	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**33.1**	**53**	
5.1	**Knowledge workers**	**44.4**	**47**	
5.1.1	Knowledge-intensive employment, %	26.4	53	◇
5.1.2	Firms offering formal training, % firms ⊙	57.5	10	● ◆
5.1.3	GERD performed by business, % GDP ⊙	0.1	57	
5.1.4	GERD financed by business, %	35.8	52	
5.1.5	Females employed w/advanced degrees, %	8.8	75	◇
5.2	**Innovation linkages**	**18.7**	**96**	○ ◇
5.2.1	University/industry research collaboration†	43.8	55	
5.2.2	State of cluster development†	44.1	77	◇
5.2.3	GERD financed by abroad, %	1.9	77	○ ◇
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	85	○ ◇
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.2	42	
5.3	**Knowledge absorption**	**36.3**	**49**	
5.3.1	Intellectual property payments, % total trade	2.2	12	●
5.3.2	High-tech imports, % total trade	8.5	50	
5.3.3	ICT services imports, % total trade	0.7	88	○
5.3.4	FDI net inflows, % GDP	5.3	28	
5.3.5	Research talent, % in business enterprise ⊙	29.5	42	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**22.9**	**61**	
6.1	**Knowledge creation**	**14.6**	**56**	
6.1.1	Patents by origin/bn PPP$ GDP	0.9	64	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.5	35	
6.1.3	Utility models by origin/bn PPP$ GDP	0.2	41	
6.1.4	Scientific & technical articles/bn PPP$ GDP	13.2	40	
6.1.5	Citable documents H-index	22.5	37	
6.2	**Knowledge impact**	**38.3**	**56**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.7	67	
6.2.2	New businesses/th pop. 15–64	8.9	15	●
6.2.3	Computer software spending, % GDP	0.3	43	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	9.4	33	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.2	62	
6.3	**Knowledge diffusion**	**15.8**	**74**	
6.3.1	Intellectual property receipts, % total trade	0.1	65	
6.3.2	High-tech net exports, % total trade	0.8	72	
6.3.3	ICT services exports, % total trade	0.5	102	○
6.3.4	FDI net outflows, % GDP	3.8	16	●
	CREATIVE OUTPUTS	**27.2**	**66**	◇
7.1	**Intangible assets**	**45.4**	**48**	
7.1.1	Trademarks by origin/bn PPP$ GDP	70.2	28	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.2	105	○
7.1.3	ICTs & business model creation†	72.1	28	
7.1.4	ICTs & organizational model creation†	57.8	54	
7.2	**Creative goods & services**	**10.9**	**80**	◇
7.2.1	Cultural & creative services exports, % total trade	0.3	65	
7.2.2	National feature films/mn pop. 15–69	3.7	49	
7.2.3	Entertainment & Media market/th pop. 15–69	13.5	31	◇
7.2.4	Printing & other media, % manufacturing ⊙	1.1	59	
7.2.5	Creative goods exports, % total trade	0.2	90	○
7.3	**Online creativity**	**6.9**	**58**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.2	76	◇
7.3.2	Country-code TLDs/th pop. 15–69	12.2	37	
7.3.3	Wikipedia edits/mn pop. 15–69	16.2	56	
7.3.4	Mobile app creation/bn PPP$ GDP	2.4	61	

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.

CHINA

GII 2019 rank

14

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
5	26	Upper middle	SEAO	1,415.0	25,313.3	18,109.8	17

		Score/Value	Rank	
	INSTITUTIONS	**64.1**	**60**	
1.1	**Political environment**	**63.0**	**47**	◆
1.1.1	Political and operational stability*	75.4	46	
1.1.2	Government effectiveness*	56.8	47	◆
1.2	**Regulatory environment**	**54.6**	**100**	○
1.2.1	Regulatory quality*	38.0	81	
1.2.2	Rule of law*	39.4	77	
1.2.3	Cost of redundancy dismissal, salary weeks	27.4	107	○
1.3	**Business environment**	**74.7**	**48**	
1.3.1	Ease of starting a business*	93.5	25	
1.3.2	Ease of resolving insolvency*	55.8	56	

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**47.6**	**25**	◆
2.1	**Education**	**63.4**	**[13]**	
2.1.1	Expenditure on education, % GDP	n/a	n/a	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years ⊙	13.5	74	
2.1.4	PISA scales in reading, maths, & science	514.3	8	◆
2.1.5	Pupil-teacher ratio, secondary	13.3	59	
2.2	**Tertiary education**	**20.6**	**94**	○
2.2.1	Tertiary enrolment, % gross	51.0	55	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.4	101	○
2.3	**Research & development (R&D)**	**58.8**	**17**	◆
2.3.1	Researchers, FTE/mn pop.	1,234.8	46	
2.3.2	Gross expenditure on R&D, % GDP	2.1	15	◆
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	91.7	6	◆
2.3.4	QS university ranking, average score top 3*	82.5	3	● ◆

		Score/Value	Rank	
	INFRASTRUCTURE	**58.7**	**26**	◆
3.1	**Information & communication technologies (ICTs)**	**74.5**	**46**	
3.1.1	ICT access*	60.0	75	
3.1.2	ICT use*	61.5	55	
3.1.3	Government's online service*	86.1	34	
3.1.4	E-participation*	90.5	29	◆
3.2	**General infrastructure**	**63.8**	**2**	● ◆
3.2.1	Electricity output, kWh/mn pop.	4,487.7	48	
3.2.2	Logistics performance*	72.1	26	◆
3.2.3	Gross capital formation, % GDP	44.2	4	● ◆
3.3	**Ecological sustainability**	**37.9**	**67**	
3.3.1	GDP/unit of energy use	6.6	94	○
3.3.2	Environmental performance*	50.7	97	○ ◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	7.1	14	◆

		Score/Value	Rank	
	MARKET SOPHISTICATION	**58.6**	**21**	◆
4.1	**Credit**	**45.3**	**43**	◆
4.1.1	Ease of getting credit*	60.0	66	
4.1.2	Domestic credit to private sector, % GDP	155.8	7	◆
4.1.3	Microfinance gross loans, % GDP	0.0	69	○
4.2	**Investment**	**42.2**	**64**	
4.2.1	Ease of protecting minority investors*	60.0	61	
4.2.2	Market capitalization, % GDP	70.2	22	
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	22	◆
4.3	**Trade, competition, & market scale**	**88.2**	**2**	● ◆
4.3.1	Applied tariff rate, weighted avg., %	3.8	73	
4.3.2	Intensity of local competition†	74.4	32	
4.3.3	Domestic market scale, bn PPP$	25,313.3	1	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**55.4**	**14**	◆
5.1	**Knowledge workers**	**84.9**	**[1]**	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms ⊙	79.2	1	● ◆
5.1.3	GERD performed by business, % GDP	1.7	12	◆
5.1.4	GERD financed by business, %	76.5	2	● ◆
5.1.5	Females employed w/advanced degrees, %	n/a	n/a	
5.2	**Innovation linkages**	**27.2**	**58**	
5.2.1	University/industry research collaboration†	56.5	27	◆
5.2.2	State of cluster development†	59.6	28	◆
5.2.3	GERD financed by abroad, %	0.6	93	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	57	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	1.0	27	◆
5.3	**Knowledge absorption**	**54.1**	**13**	◆
5.3.1	Intellectual property payments, % total trade	1.1	30	
5.3.2	High-tech imports, % total trade	23.3	4	● ◆
5.3.3	ICT services imports, % total trade	0.8	85	
5.3.4	FDI net inflows, % GDP	1.7	88	○
5.3.5	Research talent, % in business enterprise	60.7	12	◆

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**57.2**	**5**	◆
6.1	**Knowledge creation**	**68.1**	**4**	● ◆
6.1.1	Patents by origin/bn PPP$ GDP	53.7	1	● ◆
6.1.2	PCT patents by origin/bn PPP$ GDP	2.1	17	◆
6.1.3	Utility models by origin/bn PPP$ GDP	72.4	1	● ◆
6.1.4	Scientific & technical articles/bn PPP$ GDP	11.9	42	
6.1.5	Citable documents H-index	54.2	13	◆
6.2	**Knowledge impact**	**66.6**	**1**	● ◆
6.2.1	Growth rate of PPP$ GDP/worker, %	7.1	1	● ◆
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.4	24	◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	16.9	20	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.5	12	◆
6.3	**Knowledge diffusion**	**37.0**	**22**	◆
6.3.1	Intellectual property receipts, % total trade	0.1	56	
6.3.2	High-tech net exports, % total trade	27.9	1	● ◆
6.3.3	ICT services exports, % total trade	1.2	75	
6.3.4	FDI net outflows, % GDP	1.4	42	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**48.3**	**12**	◆
7.1	**Intangible assets**	**77.6**	**1**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP	238.7	1	● ◆
7.1.2	Industrial designs by origin/bn PPP$ GDP	26.3	1	● ◆
7.1.3	ICTs & business model creation†	61.7	56	
7.1.4	ICTs & organizational model creation†	59.7	46	◆
7.2	**Creative goods & services**	**35.2**	**15**	◆
7.2.1	Cultural & creative services exports, % total trade	0.5	49	
7.2.2	National feature films/mn pop. 15–69	0.8	87	○
7.2.3	Entertainment & Media market/th pop. 15–69	6.9	42	
7.2.4	Printing & other media, % manufacturing ⊙	0.8	79	○
7.2.5	Creative goods exports, % total trade	11.9	1	● ◆
7.3	**Online creativity**	**2.7**	**79**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.4	75	
7.3.2	Country-code TLDs/th pop. 15–69	5.4	46	
7.3.3	Wikipedia edits/mn pop. 15–69	0.3	111	○
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.

COLOMBIA

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
76	58	Upper middle	LCN	49.5	748.6	14,943.5	63

		Score/Value	Rank	
	INSTITUTIONS	**64.0**	**61**	
1.1	**Political environment**	**50.4**	**82**	
1.1.1	Political and operational stability*	61.4	91	○
1.1.2	Government effectiveness*	44.9	74	
1.2	**Regulatory environment**	**65.4**	**66**	
1.2.1	Regulatory quality*	51.1	55	
1.2.2	Rule of law*	36.9	83	
1.2.3	Cost of redundancy dismissal, salary weeks	16.7	69	
1.3	**Business environment**	**76.4**	**41**	
1.3.1	Ease of starting a business*	85.3	77	
1.3.2	Ease of resolving insolvency*	67.4	37	
	HUMAN CAPITAL & RESEARCH	**27.0**	**78**	
2.1	**Education**	**38.8**	**87**	
2.1.1	Expenditure on education, % GDP	4.4	64	
2.1.2	Government funding/pupil, secondary, % GDP/cap	17.5	67	
2.1.3	School life expectancy, years	14.6	59	
2.1.4	PISA scales in reading, maths, & science	410.1	59	○
2.1.5	Pupil-teacher ratio, secondary	26.0	98	○ ◇
2.2	**Tertiary education**	**32.5**	**60**	
2.2.1	Tertiary enrolment, % gross	60.4	44	
2.2.2	Graduates in science & engineering, %	23.7	37	
2.2.3	Tertiary inbound mobility, %	0.2	106	○ ◇
2.3	**Research & development (R&D)**	**9.8**	**58**	
2.3.1	Researchers, FTE/mn pop. ⊙	88.5	88	○
2.3.2	Gross expenditure on R&D, % GDP	0.2	85	
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*	33.2	34	
	INFRASTRUCTURE	**51.3**	**47**	◆
3.1	**Information & communication technologies(ICTs)**	**71.4**	**55**	
3.1.1	ICT access*	61.3	74	
3.1.2	ICT use*	44.2	79	
3.1.3	Government's online service*	88.2	30	◆
3.1.4	E-participation*	92.1	23	● ◆
3.2	**General infrastructure**	**28.7**	**88**	
3.2.1	Electricity output, kWh/mn pop.	1,580.8	87	
3.2.2	Logistics performance*	41.1	57	
3.2.3	Gross capital formation, % GDP	21.5	79	
3.3	**Ecological sustainability**	**53.8**	**13**	● ◆
3.3.1	GDP/unit of energy use	15.6	10	● ◆
3.3.2	Environmental performance*	65.2	38	◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	4.2	27	●
	MARKET SOPHISTICATION	**50.4**	**53**	
4.1	**Credit**	**39.7**	**55**	
4.1.1	Ease of getting credit*	95.0	3	● ◆
4.1.2	Domestic credit to private sector, % GDP	49.4	70	
4.1.3	Microfinance gross loans, % GDP	0.1	53	
4.2	**Investment**	**41.2**	**70**	
4.2.1	Ease of protecting minority investors*	75.0	14	● ◆
4.2.2	Market capitalization, % GDP	34.9	42	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	66	○
4.3	**Trade, competition, & market scale**	**70.2**	**32**	
4.3.1	Applied tariff rate, weighted avg., %	4.4	78	
4.3.2	Intensity of local competition†	75.0	28	● ◆
4.3.3	Domestic market scale, bn PPP$	748.6	31	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**32.6**	**58**	
5.1	**Knowledge workers**	**46.8**	**41**	
5.1.1	Knowledge-intensive employment, % ⊙	16.7	86	
5.1.2	Firms offering formal training, % firms ⊙	65.1	4	● ◆
5.1.3	GERD performed by business, % GDP	0.1	60	
5.1.4	GERD financed by business, %	49.3	29	
5.1.5	Females employed w/advanced degrees, %	13.7	49	
5.2	**Innovation linkages**	**17.7**	**109**	○
5.2.1	University/industry research collaboration†	41.9	60	
5.2.2	State of cluster development†	45.1	75	
5.2.3	GERD financed by abroad, %	0.5	96	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	75	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	59	
5.3	**Knowledge absorption**	**33.1**	**64**	
5.3.1	Intellectual property payments, % total trade	0.9	44	
5.3.2	High-tech imports, % total trade	13.2	16	●
5.3.3	ICT services imports, % total trade	1.4	51	
5.3.4	FDI net inflows, % GDP	4.4	37	
5.3.5	Research talent, % in business enterprise ⊙	2.4	75	○ ◇
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**19.5**	**76**	
6.1	**Knowledge creation**	**8.6**	**75**	
6.1.1	Patents by origin/bn PPP$ GDP	0.8	66	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.2	48	
6.1.3	Utility models by origin/bn PPP$ GDP	0.3	39	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.5	85	
6.1.5	Citable documents H-index	15.8	46	
6.2	**Knowledge impact**	**37.5**	**60**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.5	51	
6.2.2	New businesses/th pop. 15–64	2.3	45	
6.2.3	Computer software spending, % GDP	0.2	73	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	16.1	21	●
6.2.5	High- & medium-high-tech manufactures, %	0.2	53	
6.3	**Knowledge diffusion**	**12.5**	**90**	
6.3.1	Intellectual property receipts, % total trade	0.1	55	
6.3.2	High-tech net exports, % total trade	1.3	64	
6.3.3	ICT services exports, % total trade	0.7	92	
6.3.4	FDI net outflows, % GDP	1.4	44	
	CREATIVE OUTPUTS	**22.3**	**85**	
7.1	**Intangible assets**	**36.8**	**86**	
7.1.1	Trademarks by origin/bn PPP$ GDP	33.4	73	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.4	92	○
7.1.3	ICTs & business model creation†	60.3	65	
7.1.4	ICTs & organizational model creation†	54.5	62	
7.2	**Creative goods & services**	**9.9**	**87**	
7.2.1	Cultural & creative services exports, % total trade	0.3	68	
7.2.2	National feature films/mn pop. 15–69	1.4	73	
7.2.3	Entertainment & Media market/th pop. 15–69	5.5	47	
7.2.4	Printing & other media, % manufacturing	1.3	43	
7.2.5	Creative goods exports, % total trade	0.2	79	
7.3	**Online creativity**	**6.0**	**62**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.8	66	
7.3.2	Country-code TLDs/th pop. 15–69	17.4	29	●
7.3.3	Wikipedia edits/mn pop. 15–69	4.7	84	
7.3.4	Mobile app creation/bn PPP$ GDP	0.4	72	

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.

COSTA RICA

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
48	68	Upper middle	LCN	5.0	88.7	17,559.1	54

		Score/Value	Rank	
	INSTITUTIONS	**61.9**	**68**	
1.1	**Political environment**	**58.4**	**58**	
1.1.1	Political and operational stability*	70.2	61	
1.1.2	Government effectiveness*	52.5	56	
1.2	**Regulatory environment**	**69.9**	**54**	
1.2.1	Regulatory quality*	54.0	48	
1.2.2	Rule of law*	58.4	43	◆
1.2.3	Cost of redundancy dismissal, salary weeks	18.7	76	
1.3	**Business environment**	**57.2**	**110**	○ ◇
1.3.1	Ease of starting a business*	79.9	108	
1.3.2	Ease of resolving insolvency*	34.5	111	○ ◇
	HUMAN CAPITAL & RESEARCH	**28.5**	**72**	
2.1	**Education**	**57.5**	**36**	
2.1.1	Expenditure on education, % GDP	7.4	7	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.9	28	
2.1.3	School life expectancy, years	15.4	41	
2.1.4	PISA scales in reading, maths, & science	415.8	54	
2.1.5	Pupil-teacher ratio, secondary ◷	12.7	55	
2.2	**Tertiary education**	**19.6**	**95**	
2.2.1	Tertiary enrolment, % gross	55.6	52	
2.2.2	Graduates in science & engineering, %	14.4	90	○ ◇
2.2.3	Tertiary inbound mobility, %	1.3	84	
2.3	**Research & development (R&D)**	**8.3**	**64**	
2.3.1	Researchers, FTE/mn pop. ◷	529.9	66	
2.3.2	Gross expenditure on R&D, % GDP ◷	0.5	66	
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*	17.1	54	
	INFRASTRUCTURE	**47.0**	**63**	
3.1	**Information & communication technologies(ICTs)**	**68.7**	**59**	
3.1.1	ICT access*	65.6	67	
3.1.2	ICT use*	64.8	46	◆
3.1.3	Government's online service*	67.4	74	
3.1.4	E-participation*	77.0	57	
3.2	**General infrastructure**	**23.4**	**108**	
3.2.1	Electricity output, kWh/mn pop.	2,238.9	73	
3.2.2	Logistics performance*	34.1	72	
3.2.3	Gross capital formation, % GDP	17.8	105	○
3.3	**Ecological sustainability**	**49.0**	**34**	◆
3.3.1	GDP/unit of energy use	14.5	15	● ◆
3.3.2	Environmental performance*	67.9	29	◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.4	59	
	MARKET SOPHISTICATION	**44.2**	**85**	
4.1	**Credit**	**37.8**	**60**	
4.1.1	Ease of getting credit*	85.0	11	● ◆
4.1.2	Domestic credit to private sector, % GDP	62.0	53	
4.1.3	Microfinance gross loans, % GDP ◷	0.0	71	○
4.2	**Investment**	**32.2**	**112**	○
4.2.1	Ease of protecting minority investors*	48.3	99	
4.2.2	Market capitalization, % GDP	4.6	74	○ ◇
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	n/a	
4.3	**Trade, competition, & market scale**	**62.4**	**58**	
4.3.1	Applied tariff rate, weighted avg., % ◷	1.8	22	●
4.3.2	Intensity of local competition†	72.9	39	
4.3.3	Domestic market scale, bn PPP$	88.7	84	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**33.2**	**52**	
5.1	**Knowledge workers**	**37.0**	**65**	
5.1.1	Knowledge-intensive employment, %	24.4	58	
5.1.2	Firms offering formal training, % firms ◷	54.7	14	●
5.1.3	GERD performed by business, % GDP ◷	0.2	54	
5.1.4	GERD financed by business, %	2.8	87	○ ◇
5.1.5	Females employed w/advanced degrees, %	10.5	63	
5.2	**Innovation linkages**	**18.8**	**95**	
5.2.1	University/industry research collaboration†	45.1	51	
5.2.2	State of cluster development†	49.6	51	
5.2.3	GERD financed by abroad, %	1.3	88	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	109	○ ◇
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	70	
5.3	**Knowledge absorption**	**43.8**	**29**	◆
5.3.1	Intellectual property payments, % total trade	2.8	8	● ◆
5.3.2	High-tech imports, % total trade	9.1	43	
5.3.3	ICT services imports, % total trade	1.4	50	
5.3.4	FDI net inflows, % GDP	5.0	30	
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**24.3**	**56**	
6.1	**Knowledge creation**	**5.9**	**91**	
6.1.1	Patents by origin/bn PPP$ GDP	0.2	94	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	57	
6.1.3	Utility models by origin/bn PPP$ GDP	0.1	49	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.0	81	
6.1.5	Citable documents H-index	10.1	66	
6.2	**Knowledge impact**	**36.9**	**62**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.3	38	
6.2.2	New businesses/th pop. 15-64	2.1	49	
6.2.3	Computer software spending, % GDP	0.3	46	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.6	67	
6.2.5	High- & medium-high-tech manufactures, %	0.3	41	
6.3	**Knowledge diffusion**	**30.2**	**30**	◆
6.3.1	Intellectual property receipts, % total trade	0.0	79	
6.3.2	High-tech net exports, % total trade	5.7	28	
6.3.3	ICT services exports, % total trade	6.1	7	● ◆
6.3.4	FDI net outflows, % GDP	0.7	60	
	CREATIVE OUTPUTS	**34.3**	**39**	◆
7.1	**Intangible assets**	**48.6**	**41**	
7.1.1	Trademarks by origin/bn PPP$ GDP	94.1	19	●
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.1	113	○
7.1.3	ICTs & business model creation†	68.3	34	◆
7.1.4	ICTs & organizational model creation†	63.0	36	◆
7.2	**Creative goods & services**	**34.8**	**16**	● ◆
7.2.1	Cultural & creative services exports, % total trade	4.2	1	● ◆
7.2.2	National feature films/mn pop. 15-69	3.7	50	
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	2.2	15	●
7.2.5	Creative goods exports, % total trade	0.4	65	
7.3	**Online creativity**	**5.1**	**65**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	11.3	37	◆
7.3.2	Country-code TLDs/th pop. 15-69	1.4	70	
7.3.3	Wikipedia edits/mn pop. 15-69 ◷	11.0	62	
7.3.4	Mobile app creation/bn PPP$ GDP	0.4	73	

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.

CÔTE D'IVOIRE

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
91	110	Lower middle	SSF	24.9	106.8	4,177.6	123

		Score/Value	Rank	
	INSTITUTIONS	**57.5**	**84**	
1.1	**Political environment**	**40.1**	**105**	
1.1.1	Political and operational stability*	63.2	86	
1.1.2	Government effectiveness*	28.6	116	◇
1.2	**Regulatory environment**	**61.6**	**77**	
1.2.1	Regulatory quality*	32.2	96	
1.2.2	Rule of law*	29.7	99	
1.2.3	Cost of redundancy dismissal, salary weeks	13.1	48	●
1.3	**Business environment**	**70.9**	**63**	
1.3.1	Ease of starting a business*	93.7	23	● ◆
1.3.2	Ease of resolving insolvency*	48.0	72	

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**13.6**	**113**	
2.1	**Education**	**33.7**	**101**	
2.1.1	Expenditure on education, % GDP	4.4	65	
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.5	33	●
2.1.3	School life expectancy, years	9.6	108	◇
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	26.3	100	
2.2	**Tertiary education**	**7.2**	**116**	◇
2.2.1	Tertiary enrolment, % gross ⊙	9.2	110	◇
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	2.1	73	
2.3	**Research & development (R&D)**	**0.0**	**[120]**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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	○ ◇

		Score/Value	Rank	
	INFRASTRUCTURE	**28.1**	**117**	◇
3.1	**Information & communication technologies(ICTs)**	**27.4**	**122**	○ ◇
3.1.1	ICT access*	37.0	107	
3.1.2	ICT use*	32.9	98	
3.1.3	Government's online service*	22.2	124	○ ◇
3.1.4	E-participation*	17.4	126	○ ◇
3.2	**General infrastructure**	**31.7**	**78**	
3.2.1	Electricity output, kWh/mn pop.	432.6	108	
3.2.2	Logistics performance*	47.6	49	● ◆
3.2.3	Gross capital formation, % GDP	23.7	58	
3.3	**Ecological sustainability**	**25.3**	**115**	
3.3.1	GDP/unit of energy use	6.4	95	
3.3.2	Environmental performance*	45.3	108	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	96	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**36.7**	**113**	◇
4.1	**Credit**	**31.2**	**87**	
4.1.1	Ease of getting credit*	70.0	40	●
4.1.2	Domestic credit to private sector, % GDP	26.5	102	
4.1.3	Microfinance gross loans, % GDP	0.8	27	●
4.2	**Investment**	**28.2**	**123**	○
4.2.1	Ease of protecting minority investors*	40.0	114	○ ◇
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	43	
4.3	**Trade, competition, & market scale**	**50.8**	**105**	
4.3.1	Applied tariff rate, weighted avg., %	10.3	114	◇
4.3.2	Intensity of local competition†	70.2	57	
4.3.3	Domestic market scale, bn PPP$	106.8	76	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**26.1**	**[94]**	
5.1	**Knowledge workers**	**28.8**	**[85]**	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	35.5	39	●
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, % ⊙	0.8	108	
5.2	**Innovation linkages**	**17.4**	**[113]**	
5.2.1	University/industry research collaboration†	22.1	124	○ ◇
5.2.2	State of cluster development†	32.5	116	◇
5.2.3	GERD financed by abroad, %	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	93	○ ◇
5.3	**Knowledge absorption**	**32.1**	**72**	
5.3.1	Intellectual property payments, % total trade	0.0	114	○ ◇
5.3.2	High-tech imports, % total trade	5.6	96	
5.3.3	ICT services imports, % total trade	1.9	29	● ◆
5.3.4	FDI net inflows, % GDP	1.6	94	
5.3.5	Research talent, % in business enterprise	n/a	n/a	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**19.7**	**74**	
6.1	**Knowledge creation**	**3.3**	**115**	
6.1.1	Patents by origin/bn PPP$ GDP	0.2	97	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	99	○ ◇
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.9	113	
6.1.5	Citable documents H-index	5.3	94	
6.2	**Knowledge impact**	**45.8**	**[26]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.1	7	● ◆
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.0	121	○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.1	86	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**10.1**	**102**	
6.3.1	Intellectual property receipts, % total trade ⊙	0.0	91	
6.3.2	High-tech net exports, % total trade	1.1	66	
6.3.3	ICT services exports, % total trade	1.2	76	
6.3.4	FDI net outflows, % GDP	0.1	103	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**17.6**	**105**	
7.1	**Intangible assets**	**34.5**	**97**	
7.1.1	Trademarks by origin/bn PPP$ GDP	9.5	106	
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.5	58	
7.1.3	ICTs & business model creation†	63.7	53	● ◆
7.1.4	ICTs & organizational model creation†	50.3	80	
7.2	**Creative goods & services**	**1.1**	**[124]**	
7.2.1	Cultural & creative services exports, % total trade	0.1	93	
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	n/a	n/a	
7.2.5	Creative goods exports, % total trade	0.1	103	
7.3	**Online creativity**	**0.3**	**116**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.5	109	
7.3.2	Country-code TLDs/th pop. 15–69	0.2	108	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	0.5	108	
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.

CROATIA

GII 2019 rank

44

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
52	46	High	EUR	4.2	107.4	26,221.4	41

		Score/Value	Rank	
	INSTITUTIONS	**69.3**	**45**	
1.1	**Political environment**	**66.7**	**42**	
1.1.1	Political and operational stability*	78.9	42	
1.1.2	Government effectiveness*	60.5	41	
1.2	**Regulatory environment**	**71.7**	**46**	
1.2.1	Regulatory quality*	53.3	49	◇
1.2.2	Rule of law*	55.2	48	◇
1.2.3	Cost of redundancy dismissal, salary weeks	15.1	61	
1.3	**Business environment**	**69.4**	**68**	
1.3.1	Ease of starting a business*	82.6	95	○ ◇
1.3.2	Ease of resolving insolvency*	56.2	54	
	HUMAN CAPITAL & RESEARCH	**35.6**	**50**	
2.1	**Education**	**59.1**	**28**	●
2.1.1	Expenditure on education, % GDP ⊙	4.6	60	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	15.0	54	
2.1.4	PISA scales in reading, maths, & science	475.4	34	
2.1.5	Pupil-teacher ratio, secondary ⊙	6.7	1	● ◆
2.2	**Tertiary education**	**36.4**	**48**	
2.2.1	Tertiary enrolment, % gross ⊙	67.5	32	
2.2.2	Graduates in science & engineering, %	25.3	28	
2.2.3	Tertiary inbound mobility, %	0.4	98	○ ◇
2.3	**Research & development (R&D)**	**11.5**	**52**	◇
2.3.1	Researchers, FTE/mn pop.	1,865.4	42	
2.3.2	Gross expenditure on R&D, % GDP	0.9	41	
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*	4.7	68	◇
	INFRASTRUCTURE	**51.6**	**46**	
3.1	**Information & communication technologies(ICTs)**	**71.1**	**57**	◇
3.1.1	ICT access*	75.8	40	
3.1.2	ICT use*	63.4	49	◇
3.1.3	Government's online service*	68.1	73	◇
3.1.4	E-participation*	77.0	57	
3.2	**General infrastructure**	**30.7**	**85**	◇
3.2.1	Electricity output, kWh/mn pop.	3,025.2	63	
3.2.2	Logistics performance*	48.7	48	
3.2.3	Gross capital formation, % GDP	20.4	90	○
3.3	**Ecological sustainability**	**52.9**	**19**	●
3.3.1	GDP/unit of energy use	10.1	48	
3.3.2	Environmental performance*	65.5	37	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	9.5	6	● ◆
	MARKET SOPHISTICATION	**46.0**	**71**	
4.1	**Credit**	**40.6**	**53**	
4.1.1	Ease of getting credit*	55.0	77	
4.1.2	Domestic credit to private sector, % GDP	57.4	58	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**38.3**	**84**	
4.2.1	Ease of protecting minority investors*	66.7	35	
4.2.2	Market capitalization, % GDP	39.2	38	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	44	
4.3	**Trade, competition, & market scale**	**59.2**	**71**	
4.3.1	Applied tariff rate, weighted avg., % ⊙	2.0	53	
4.3.2	Intensity of local competition†	57.1	117	○ ◇
4.3.3	Domestic market scale, bn PPP$	107.4	75	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**34.3**	**49**	
5.1	**Knowledge workers**	**52.3**	**33**	
5.1.1	Knowledge-intensive employment, %	36.3	34	
5.1.2	Firms offering formal training, % firms	49.3	22	●
5.1.3	GERD performed by business, % GDP	0.4	40	
5.1.4	GERD financed by business, %	42.9	42	
5.1.5	Females employed w/advanced degrees, %	16.8	37	
5.2	**Innovation linkages**	**18.5**	**99**	○ ◇
5.2.1	University/industry research collaboration†	27.7	111	○ ◇
5.2.2	State of cluster development†	30.4	119	○ ◇
5.2.3	GERD financed by abroad, %	10.8	37	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	46	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	56	
5.3	**Knowledge absorption**	**32.2**	**70**	
5.3.1	Intellectual property payments, % total trade	1.1	31	
5.3.2	High-tech imports, % total trade	6.1	91	○
5.3.3	ICT services imports, % total trade	1.5	43	
5.3.4	FDI net inflows, % GDP	2.5	70	
5.3.5	Research talent, % in business enterprise	21.3	56	◇
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**25.6**	**49**	
6.1	**Knowledge creation**	**17.9**	**50**	
6.1.1	Patents by origin/bn PPP$ GDP	1.5	53	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.4	40	
6.1.3	Utility models by origin/bn PPP$ GDP	0.5	34	
6.1.4	Scientific & technical articles/bn PPP$ GDP	22.7	19	●
6.1.5	Citable documents H-index	15.9	45	
6.2	**Knowledge impact**	**40.4**	**46**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.4	53	
6.2.2	New businesses/th pop. 15–64	5.0	27	●
6.2.3	Computer software spending, % GDP	0.1	99	○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	23.3	12	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.2	51	
6.3	**Knowledge diffusion**	**18.5**	**56**	
6.3.1	Intellectual property receipts, % total trade	0.2	38	
6.3.2	High-tech net exports, % total trade	3.1	42	
6.3.3	ICT services exports, % total trade	2.8	36	
6.3.4	FDI net outflows, % GDP	0.2	88	○
	CREATIVE OUTPUTS	**31.0**	**51**	
7.1	**Intangible assets**	**40.6**	**65**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	46.8	54	
7.1.2	Industrial designs by origin/bn PPP$ GDP	4.9	27	●
7.1.3	ICTs & business model creation†	57.9	76	◇
7.1.4	ICTs & organizational model creation†	51.9	72	◇
7.2	**Creative goods & services**	**30.1**	**31**	●
7.2.1	Cultural & creative services exports, % total trade	1.9	7	● ◆
7.2.2	National feature films/mn pop. 15–69	2.0	64	◇
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	2.7	9	● ◆
7.2.5	Creative goods exports, % total trade	0.8	50	
7.3	**Online creativity**	**12.6**	**46**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	14.2	32	●
7.3.2	Country-code TLDs/th pop. 15–69	9.7	40	
7.3.3	Wikipedia edits/mn pop. 15–69	33.2	37	
7.3.4	Mobile app creation/bn PPP$ GDP	4.3	53	

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.

CYPRUS

GII 2019 rank

28

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
23	28	High	NAWA	1.2	33.8	39,973.2	29

		Score/Value	Rank	
	INSTITUTIONS	**80.3**	**25**	
1.1	**Political environment**	**72.8**	**34**	
1.1.1	Political and operational stability*	80.7	35	
1.1.2	Government effectiveness*	68.8	33	
1.2	**Regulatory environment**	**84.8**	**21**	
1.2.1	Regulatory quality*	69.6	31	
1.2.2	Rule of law*	69.8	33	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	● ◆
1.3	**Business environment**	**83.3**	**24**	
1.3.1	Ease of starting a business*	91.2	46	
1.3.2	Ease of resolving insolvency*	75.5	24	
	HUMAN CAPITAL & RESEARCH	**35.8**	**49**	
2.1	**Education**	**63.4**	**12**	
2.1.1	Expenditure on education, % GDP	6.4	16	
2.1.2	Government funding/pupil, secondary, % GDP/cap	39.4	3	● ◆
2.1.3	School life expectancy, years	14.6	62	◇
2.1.4	PISA scales in reading, maths, & science	437.5	46	
2.1.5	Pupil-teacher ratio, secondary	10.4	33	
2.2	**Tertiary education**	**37.5**	**42**	
2.2.1	Tertiary enrolment, % gross	60.1	45	
2.2.2	Graduates in science & engineering, %	15.9	82	○ ◇
2.2.3	Tertiary inbound mobility, %	17.5	8	◆
2.3	**Research & development (R&D)**	**6.5**	**71**	◇
2.3.1	Researchers, FTE/mn pop.	1,174.4	49	◇
2.3.2	Gross expenditure on R&D, % GDP	0.6	55	
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	**55.9**	**34**	
3.1	**Information & communication technologies(ICTs)**	**79.9**	**32**	
3.1.1	ICT access*	79.7	31	
3.1.2	ICT use*	79.6	18	
3.1.3	Government's online service*	78.5	51	
3.1.4	E-participation*	82.0	46	
3.2	**General infrastructure**	**29.9**	**86**	◇
3.2.1	Electricity output, kWh/mn pop.	5,749.4	36	
3.2.2	Logistics performance*	50.9	44	
3.2.3	Gross capital formation, % GDP	17.0	111	○ ◇
3.3	**Ecological sustainability**	**57.8**	**11**	
3.3.1	GDP/unit of energy use	12.2	28	
3.3.2	Environmental performance*	72.6	23	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	8.5	9	◆
	MARKET SOPHISTICATION	**58.2**	**24**	
4.1	**Credit**	**78.8**	**6**	● ◆
4.1.1	Ease of getting credit*	60.0	66	
4.1.2	Domestic credit to private sector, % GDP	199.1	2	● ◆
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**38.0**	**86**	
4.2.1	Ease of protecting minority investors*	66.7	35	
4.2.2	Market capitalization, % GDP	12.9	66	○
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	25	
4.3	**Trade, competition, & market scale**	**57.7**	**76**	◇
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	76.0	20	
4.3.3	Domestic market scale, bn PPP$	33.8	111	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**47.6**	**24**	
5.1	**Knowledge workers**	**49.9**	**38**	
5.1.1	Knowledge-intensive employment, %	35.3	37	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.2	52	
5.1.4	GERD financed by business, %	34.9	53	
5.1.5	Females employed w/advanced degrees, %	24.6	14	◆
5.2	**Innovation linkages**	**36.4**	**36**	
5.2.1	University/industry research collaboration†	39.2	72	◇
5.2.2	State of cluster development†	46.3	67	
5.2.3	GERD financed by abroad, %	18.6	20	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.1	17	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	1.7	23	
5.3	**Knowledge absorption**	**56.3**	**9**	◆
5.3.1	Intellectual property payments, % total trade	1.0	36	
5.3.2	High-tech imports, % total trade	4.6	111	○ ◇
5.3.3	ICT services imports, % total trade	8.1	1	● ◆
5.3.4	FDI net inflows, % GDP	43.8	2	● ◆
5.3.5	Research talent, % in business enterprise	25.6	47	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**41.2**	**20**	
6.1	**Knowledge creation**	**24.6**	**35**	
6.1.1	Patents by origin/bn PPP$ GDP	1.9	47	
6.1.2	PCT patents by origin/bn PPP$ GDP	1.2	28	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	25.6	12	
6.1.5	Citable documents H-index	10.4	63	
6.2	**Knowledge impact**	**48.2**	**19**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.1	84	○
6.2.2	New businesses/th pop. 15-64	16.6	5	● ◆
6.2.3	Computer software spending, % GDP	0.2	71	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	29.6	4	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.2	60	
6.3	**Knowledge diffusion**	**50.6**	**10**	
6.3.1	Intellectual property receipts, % total trade	0.0	82	○
6.3.2	High-tech net exports, % total trade	0.4	86	◇
6.3.3	ICT services exports, % total trade	14.6	1	● ◆
6.3.4	FDI net outflows, % GDP	48.5	1	● ◆
	CREATIVE OUTPUTS	**41.1**	**28**	
7.1	**Intangible assets**	**44.2**	**52**	
7.1.1	Trademarks by origin/bn PPP$ GDP	97.0	17	◆
7.1.2	Industrial designs by origin/bn PPP$ GDP	3.4	37	
7.1.3	ICTs & business model creation†	58.1	73	◇
7.1.4	ICTs & organizational model creation†	47.3	92	◇
7.2	**Creative goods & services**	**22.4**	**50**	
7.2.1	Cultural & creative services exports, % total trade	0.1	88	○ ◇
7.2.2	National feature films/mn pop. 15-69	6.8	32	
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	2.4	12	◆
7.2.5	Creative goods exports, % total trade	0.5	59	
7.3	**Online creativity**	**53.6**	**9**	◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	75.2	7	● ◆
7.3.2	Country-code TLDs/th pop. 15-69	4.7	52	
7.3.3	Wikipedia edits/mn pop. 15-69	51.2	23	
7.3.4	Mobile app creation/bn PPP$ GDP	100.0	1	● ◆

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.

CZECH REPUBLIC (THE)

GII 2019 rank

26

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
21	29	High	EUR	10.6	396.4	37,371.0	27

		Score/Value	Rank	
	INSTITUTIONS	**78.6**	**29**	
1.1	**Political environment**	**75.6**	**31**	
1.1.1	Political and operational stability*	84.2	25	
1.1.2	Government effectiveness*	71.3	30	
1.2	**Regulatory environment**	**78.4**	**33**	
1.2.1	Regulatory quality*	75.0	25	
1.2.2	Rule of law*	75.9	26	
1.2.3	Cost of redundancy dismissal, salary weeks	20.2	83	○
1.3	**Business environment**	**81.8**	**29**	
1.3.1	Ease of starting a business*	83.6	89	○ ◇
1.3.2	Ease of resolving insolvency*	80.1	14	●
	HUMAN CAPITAL & RESEARCH	**43.4**	**34**	
2.1	**Education**	**59.7**	**26**	
2.1.1	Expenditure on education, % GDP	5.8	23	
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.7	31	
2.1.3	School life expectancy, years	16.8	19	
2.1.4	PISA scales in reading, maths, & science	490.8	28	
2.1.5	Pupil-teacher ratio, secondary ⊕	11.5	44	
2.2	**Tertiary education**	**43.2**	**26**	
2.2.1	Tertiary enrolment, % gross ⊕	63.7	38	
2.2.2	Graduates in science & engineering, %	23.5	39	
2.2.3	Tertiary inbound mobility, %	11.5	15	
2.3	**Research & development (R&D)**	**27.3**	**40**	
2.3.1	Researchers, FTE/mn pop.	3,689.9	25	
2.3.2	Gross expenditure on R&D, % GDP	1.8	20	
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*	25.4	42	
	INFRASTRUCTURE	**56.4**	**32**	
3.1	**Information & communication technologies(ICTs)**	**67.3**	**64**	◇
3.1.1	ICT access*	71.9	60	◇
3.1.2	ICT use*	70.0	34	
3.1.3	Government's online service*	65.3	82	○ ◇
3.1.4	E-participation*	61.8	88	○ ◇
3.2	**General infrastructure**	**48.6**	**22**	
3.2.1	Electricity output, kWh/mn pop.	8,107.8	21	
3.2.2	Logistics performance*	75.6	22	
3.2.3	Gross capital formation, % GDP	26.5	37	
3.3	**Ecological sustainability**	**53.4**	**16**	●
3.3.1	GDP/unit of energy use	7.8	79	○
3.3.2	Environmental performance*	67.7	32	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	11.7	3	● ◆
	MARKET SOPHISTICATION	**52.4**	**46**	
4.1	**Credit**	**46.6**	**41**	
4.1.1	Ease of getting credit*	70.0	40	
4.1.2	Domestic credit to private sector, % GDP	51.6	65	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**39.2**	**80**	○
4.2.1	Ease of protecting minority investors*	58.3	68	○
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	70	○
4.3	**Trade, competition, & market scale**	**71.5**	**31**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	78.2	16	
4.3.3	Domestic market scale, bn PPP$	396.4	46	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**46.3**	**25**	
5.1	**Knowledge workers**	**55.2**	**30**	
5.1.1	Knowledge-intensive employment, %	38.0	31	
5.1.2	Firms offering formal training, % firms	55.1	13	
5.1.3	GERD performed by business, % GDP	1.1	19	
5.1.4	GERD financed by business, %	39.3	46	
5.1.5	Females employed w/advanced degrees, %	12.2	58	◇
5.2	**Innovation linkages**	**34.5**	**40**	
5.2.1	University/industry research collaboration†	50.9	39	
5.2.2	State of cluster development†	50.5	46	
5.2.3	GERD financed by abroad, %	25.0	13	● ◆
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	62	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.7	30	
5.3	**Knowledge absorption**	**49.1**	**21**	
5.3.1	Intellectual property payments, % total trade	0.8	47	
5.3.2	High-tech imports, % total trade	17.4	8	● ◆
5.3.3	ICT services imports, % total trade	1.3	55	
5.3.4	FDI net inflows, % GDP	3.6	47	
5.3.5	Research talent, % in business enterprise	51.6	23	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**43.8**	**16**	●
6.1	**Knowledge creation**	**35.1**	**24**	
6.1.1	Patents by origin/bn PPP$ GDP	2.7	34	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.5	37	
6.1.3	Utility models by origin/bn PPP$ GDP	3.2	6	● ◆
6.1.4	Scientific & technical articles/bn PPP$ GDP	23.4	17	
6.1.5	Citable documents H-index	28.8	31	
6.2	**Knowledge impact**	**54.5**	**10**	● ◆
6.2.1	Growth rate of PPP$ GDP/worker, %	1.7	47	
6.2.2	New businesses/th pop. 15–64	4.0	31	
6.2.3	Computer software spending, % GDP	0.3	35	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	29.7	3	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.6	5	● ◆
6.3	**Knowledge diffusion**	**41.7**	**19**	
6.3.1	Intellectual property receipts, % total trade	0.3	30	
6.3.2	High-tech net exports, % total trade	17.1	1	● ◆
6.3.3	ICT services exports, % total trade	2.3	45	
6.3.4	FDI net outflows, % GDP	1.7	35	
	CREATIVE OUTPUTS	**43.1**	**21**	
7.1	**Intangible assets**	**50.0**	**36**	
7.1.1	Trademarks by origin/bn PPP$ GDP	61.9	34	
7.1.2	Industrial designs by origin/bn PPP$ GDP	6.5	21	
7.1.3	ICTs & business model creation†	65.7	49	
7.1.4	ICTs & organizational model creation†	66.3	26	
7.2	**Creative goods & services**	**42.2**	**6**	● ◆
7.2.1	Cultural & creative services exports, % total trade	0.5	47	
7.2.2	National feature films/mn pop. 15–69	7.1	29	
7.2.3	Entertainment & Media market/th pop. 15–69	22.2	26	
7.2.4	Printing & other media, % manufacturing	1.0	66	○
7.2.5	Creative goods exports, % total trade	10.1	1	● ◆
7.3	**Online creativity**	**30.1**	**26**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	17.1	30	
7.3.2	Country-code TLDs/th pop. 15–69	48.5	15	●
7.3.3	Wikipedia edits/mn pop. 15–69	56.1	18	
7.3.4	Mobile app creation/bn PPP$ GDP	17.2	27	

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.

DENMARK

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
12	**5**	**High**	**EUR**	**5.8**	**300.3**	**52,120.5**	**8**

		Score/Value	Rank
	INSTITUTIONS	**91.7**	**6 ●**
1.1	**Political environment**	**91.1**	**10**
1.1.1	Political and operational stability*	93.0	7
1.1.2	Government effectiveness*	90.1	9
1.2	**Regulatory environment**	**95.3**	**7**
1.2.1	Regulatory quality*	85.5	16
1.2.2	Rule of law*	95.7	6 ●
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1 ●
1.3	**Business environment**	**88.8**	**8**
1.3.1	Ease of starting a business*	92.5	38
1.3.2	Ease of resolving insolvency*	85.1	6 ●
	HUMAN CAPITAL & RESEARCH	**63.1**	**4 ● ◆**
2.1	**Education**	**73.5**	**2 ● ◆**
2.1.1	Expenditure on education, % GDP ⊙	7.6	3 ● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap ⊙	31.1	11 ◆
2.1.3	School life expectancy, years	19.1	5 ●
2.1.4	PISA scales in reading, maths, & science	504.3	16
2.1.5	Pupil-teacher ratio, secondary ⊙	11.3	41
2.2	**Tertiary education**	**42.6**	**29**
2.2.1	Tertiary enrolment, % gross ⊙	81.1	18
2.2.2	Graduates in science & engineering, %	21.0	58 ○
2.2.3	Tertiary inbound mobility, %	10.8	17
2.3	**Research & development (R&D)**	**73.3**	**8**
2.3.1	Researchers, FTE/mn pop	7,923.2	2 ● ◆
2.3.2	Gross expenditure on R&D, % GDP	3.1	7
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	72.8	16
2.3.4	QS university ranking, average score top 3*	57.1	15
	INFRASTRUCTURE	**65.8**	**6 ●**
3.1	**Information & communication technologies(ICTs)**	**93.1**	**2 ● ◆**
3.1.1	ICT access*	82.5	18
3.1.2	ICT use*	90.0	1 ● ◆
3.1.3	Government's online service*	100.0	1 ● ◆
3.1.4	E-participation*	100.0	1 ●
3.2	**General infrastructure**	**44.1**	**33**
3.2.1	Electricity output, kWh/mn pop	5,273.1	40
3.2.2	Logistics performance*	90.2	8
3.2.3	Gross capital formation, % GDP	21.4	83 ○
3.3	**Ecological sustainability**	**60.1**	**7**
3.3.1	GDP/unit of energy use	15.6	13
3.3.2	Environmental performance*	81.6	3 ●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.9	28
	MARKET SOPHISTICATION	**66.9**	**9**
4.1	**Credit**	**75.3**	**7**
4.1.1	Ease of getting credit*	70.0	40
4.1.2	Domestic credit to private sector, % GDP	165.4	6 ●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a
4.2	**Investment**	**57.1**	**26**
4.2.1	Ease of protecting minority investors*	66.7	35
4.2.2	Market capitalization, % GDP	n/a	n/a
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	12
4.3	**Trade, competition, & market scale**	**68.2**	**41**
4.3.1	Applied tariff rate, weighted avg., %	1.8	23
4.3.2	Intensity of local competition†	70.9	50
4.3.3	Domestic market scale, bn PPP$	300.3	56 ○

		Score/Value	Rank
	BUSINESS SOPHISTICATION	**59.1**	**9**
5.1	**Knowledge workers**	**71.6**	**8**
5.1.1	Knowledge-intensive employment, %	46.3	13
5.1.2	Firms offering formal training, % firms	n/a	n/a
5.1.3	GERD performed by business, % GDP	2.0	9
5.1.4	GERD financed by business, %	58.5	13
5.1.5	Females employed w/advanced degrees, %	22.2	18
5.2	**Innovation linkages**	**56.4**	**7**
5.2.1	University/industry research collaboration†	64.0	19
5.2.2	State of cluster development†	63.9	19
5.2.3	GERD financed by abroad, %	8.9	46 ○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	14
5.2.5	Patent families 2+ offices/bn PPP$ GDP	5.8	10
5.3	**Knowledge absorption**	**49.3**	**20**
5.3.1	Intellectual property payments, % total trade	1.0	39
5.3.2	High-tech imports, % total trade	5.7	94 ○
5.3.3	ICT services imports, % total trade	3.0	9
5.3.4	FDI net inflows, % GDP	1.3	102 ○
5.3.5	Research talent, % in business enterprise	60.5	13
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**46.4**	**14**
6.1	**Knowledge creation**	**52.0**	**12**
6.1.1	Patents by origin/bn PPP$ GDP	12.5	8
6.1.2	PCT patents by origin/bn PPP$ GDP	4.8	8
6.1.3	Utility models by origin/bn PPP$ GDP	0.3	37 ○
6.1.4	Scientific & technical articles/bn PPP$ GDP	35.6	1 ● ◆
6.1.5	Citable documents H-index	50.2	15
6.2	**Knowledge impact**	**48.9**	**16**
6.2.1	Growth rate of PPP$ GDP/worker, %	0.3	81 ○
6.2.2	New businesses/th pop. 15–64	9.9	13
6.2.3	Computer software spending, % GDP	0.6	12
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	9.2	34
6.2.5	High- & medium-high-tech manufactures, %	0.4	16
6.3	**Knowledge diffusion**	**38.4**	**21**
6.3.1	Intellectual property receipts, % total trade	1.7	13
6.3.2	High-tech net exports, % total trade	5.2	30
6.3.3	ICT services exports, % total trade	2.7	38
6.3.4	FDI net outflows, % GDP	3.5	18
	CREATIVE OUTPUTS	**48.6**	**11**
7.1	**Intangible assets**	**54.3**	**23**
7.1.1	Trademarks by origin/bn PPP$ GDP	44.7	57 ○
7.1.2	Industrial designs by origin/bn PPP$ GDP	6.8	20
7.1.3	ICTs & business model creation†	74.4	20
7.1.4	ICTs & organizational model creation†	78.9	7
7.2	**Creative goods & services**	**30.7**	**28**
7.2.1	Cultural & creative services exports, % total trade	0.6	44
7.2.2	National feature films/mn pop. 15–69	13.5	9
7.2.3	Entertainment & Media market/th pop. 15–69	78.0	4
7.2.4	Printing & other media, % manufacturing	1.0	69 ○
7.2.5	Creative goods exports, % total trade	1.6	33
7.3	**Online creativity**	**55.3**	**8**
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	48.7	16
7.3.2	Country-code TLDs/th pop. 15–69	91.9	4 ● ◆
7.3.3	Wikipedia edits/mn pop. 15–69	48.0	26
7.3.4	Mobile app creation/bn PPP$ GDP	48.5	11

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

DOMINICAN REPUBLIC (THE)

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
88	90	Upper middle	LCN	10.9	188.3	18,424.6	87

		Score/Value	Rank	
	INSTITUTIONS	**54.3**	**94**	◇
1.1	**Political environment**	**47.5**	**89**	
1.1.1	Political and operational stability*	66.7	74	
1.1.2	Government effectiveness*	38.0	92	
1.2	**Regulatory environment**	**54.9**	**98**	
1.2.1	Regulatory quality*	39.8	74	
1.2.2	Rule of law*	35.3	91	
1.2.3	Cost of redundancy dismissal, salary weeks	26.2	103	
1.3	**Business environment**	**60.5**	**103**	
1.3.1	Ease of starting a business*	83.4	90	
1.3.2	Ease of resolving insolvency*	37.5	106	◇
	HUMAN CAPITAL & RESEARCH	**18.0**	**101**	◇
2.1	**Education**	**37.3**	**91**	
2.1.1	Expenditure on education, % GDP	n/a	n/a	
2.1.2	Government funding/pupil, secondary, % GDP/cap	19.1	54	
2.1.3	School life expectancy, years	14.2	69	
2.1.4	PISA scales in reading, maths, & science	339.0	70	○
2.1.5	Pupil-teacher ratio, secondary	18.6	82	
2.2	**Tertiary education**	**16.9**	**98**	◇
2.2.1	Tertiary enrolment, % gross	59.9	46	●
2.2.2	Graduates in science & engineering, %	11.6	97	○ ◇
2.2.3	Tertiary inbound mobility, %	1.7	79	
2.3	**Research & development (R&D)**	**0.0**	**[120]**	
2.3.1	Researchers, FTE/mn pop	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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	**44.6**	**73**	
3.1	**Information & communication technologies(ICTs)**	**55.8**	**83**	
3.1.1	ICT access*	46.1	96	◇
3.1.2	ICT use*	43.0	82	
3.1.3	Government's online service*	66.0	79	
3.1.4	E-participation*	68.0	77	
3.2	**General infrastructure**	**28.7**	**89**	
3.2.1	Electricity output, kWh/mn pop	1,822.9	80	
3.2.2	Logistics performance*	28.0	84	
3.2.3	Gross capital formation, % GDP	24.3	52	●
3.3	**Ecological sustainability**	**49.4**	**32**	● ◆
3.3.1	GDP/unit of energy use	16.7	8	● ◆
3.3.2	Environmental performance*	64.7	42	● ◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	118	○
	MARKET SOPHISTICATION	**46.1**	**70**	
4.1	**Credit**	**19.2**	**119**	○ ◇
4.1.1	Ease of getting credit*	45.0	94	◇
4.1.2	Domestic credit to private sector, % GDP	28.7	98	
4.1.3	Microfinance gross loans, % GDP	0.1	57	
4.2	**Investment**	**56.7**	**[27]**	
4.2.1	Ease of protecting minority investors*	56.7	79	
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**	**62.3**	**59**	
4.3.1	Applied tariff rate, weighted avg., %	4.2	75	
4.3.2	Intensity of local competition†	70.3	56	●
4.3.3	Domestic market scale, bn PPP$	188.3	65	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**26.3**	**[90]**	
5.1	**Knowledge workers**	**27.1**	**[89]**	
5.1.1	Knowledge-intensive employment, %	16.0	88	
5.1.2	Firms offering formal training, % firms	23.4	68	
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, %	9.4	70	
5.2	**Innovation linkages**	**25.2**	**[64]**	
5.2.1	University/industry research collaboration†	31.8	101	
5.2.2	State of cluster development†	46.9	59	
5.2.3	GERD financed by abroad, %	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	85	
5.3	**Knowledge absorption**	**26.5**	**95**	
5.3.1	Intellectual property payments, % total trade	0.5	62	
5.3.2	High-tech imports, % total trade	6.5	83	
5.3.3	ICT services imports, % total trade	0.5	107	
5.3.4	FDI net inflows, % GDP	3.8	44	●
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**15.6**	**95**	
6.1	**Knowledge creation**	**0.9**	**129**	○ ◇
6.1.1	Patents by origin/bn PPP$ GDP	0.1	109	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	89	
6.1.3	Utility models by origin/bn PPP$ GDP	0.1	59	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.3	128	○ ◇
6.1.5	Citable documents H-index	2.0	118	○
6.2	**Knowledge impact**	**31.8**	**87**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.5	31	●
6.2.2	New businesses/th pop. 15–64	1.5	61	
6.2.3	Computer software spending, % GDP	0.0	118	○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.0	106	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**14.1**	**81**	
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	2.2	52	●
6.3.3	ICT services exports, % total trade	0.7	87	
6.3.4	FDI net outflows, % GDP	0.1	101	
	CREATIVE OUTPUTS	**22.9**	**81**	
7.1	**Intangible assets**	**36.4**	**88**	
7.1.1	Trademarks by origin/bn PPP$ GDP	46.8	53	●
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.2	101	
7.1.3	ICTs & business model creation†	59.3	68	
7.1.4	ICTs & organizational model creation†	48.9	84	
7.2	**Creative goods & services**	**16.9**	**[63]**	
7.2.1	Cultural & creative services exports, % total trade	0.2	74	
7.2.2	National feature films/mn pop. 15–69	3.5	52	
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	2.2	25	●
7.3	**Online creativity**	**1.9**	**86**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.5	71	
7.3.2	Country-code TLDs/th pop. 15–69	1.1	78	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	5.7	78	
7.3.4	Mobile app creation/bn PPP$ GDP	0.0	92	○

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.

ECUADOR

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
98	98	Upper middle	LCN	16.9	199.7	11,718.1	97

		Score/Value	Rank	
	INSTITUTIONS	**44.7**	**125**	○ ◇
1.1	**Political environment**	**43.4**	**95**	◇
1.1.1	Political and operational stability*	52.6	118	○ ◇
1.1.2	Government effectiveness*	38.8	90	
1.2	**Regulatory environment**	**42.6**	**119**	◇
1.2.1	Regulatory quality*	15.1	123	○ ◇
1.2.2	Rule of law*	27.8	106	◇
1.2.3	Cost of redundancy dismissal, salary weeks	31.8	119	○ ◇
1.3	**Business environment**	**48.0**	**126**	○ ◇
1.3.1	Ease of starting a business*	70.6	121	○ ◇
1.3.2	Ease of resolving insolvency*	25.4	126	○ ◇
	HUMAN CAPITAL & RESEARCH	**21.1**	**91**	
2.1	**Education**	**37.3**	**92**	
2.1.1	Expenditure on education, % GDP	5.0	49	●
2.1.2	Government funding/pupil, secondary, % GDP/cap	5.3	104	○ ◇
2.1.3	School life expectancy, years ⊕	15.4	42	●
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ⊕	21.9	92	◇
2.2	**Tertiary education**	**19.1**	**97**	
2.2.1	Tertiary enrolment, % gross ⊕	45.5	64	
2.2.2	Graduates in science & engineering, %	15.8	83	
2.2.3	Tertiary inbound mobility, % ⊕	0.8	92	
2.3	**Research & development (R&D)**	**6.9**	**70**	
2.3.1	Researchers, FTE/mn pop. ⊕	400.7	71	
2.3.2	Gross expenditure on R&D, % GDP ⊕	0.4	68	
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*	13.6	59	●
	INFRASTRUCTURE	**43.4**	**78**	
3.1	**Information & communication technologies(ICTs)**	**58.4**	**80**	
3.1.1	ICT access*	51.0	86	◇
3.1.2	ICT use*	42.4	83	
3.1.3	Government's online service*	72.9	63	
3.1.4	E-participation*	67.4	79	
3.2	**General infrastructure**	**32.2**	**73**	
3.2.1	Electricity output, kWh/mn pop.	1,666.5	84	
3.2.2	Logistics performance*	38.3	61	
3.2.3	Gross capital formation, % GDP	25.3	44	●
3.3	**Ecological sustainability**	**39.6**	**57**	●
3.3.1	GDP/unit of energy use	11.6	34	●
3.3.2	Environmental performance*	57.4	76	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.0	64	
	MARKET SOPHISTICATION	**43.3**	**89**	
4.1	**Credit**	**24.7**	**109**	
4.1.1	Ease of getting credit*	45.0	94	◇
4.1.2	Domestic credit to private sector, % GDP	32.3	91	
4.1.3	Microfinance gross loans, % GDP	0.9	19	●
4.2	**Investment**	**46.7**	**[48]**	
4.2.1	Ease of protecting minority investors*	46.7	101	
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**	**58.5**	**73**	
4.3.1	Applied tariff rate, weighted avg., %	7.0	98	◇
4.3.2	Intensity of local competition†	69.8	62	
4.3.3	Domestic market scale, bn PPP$	199.7	60	●

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**24.6**	**102**	
5.1	**Knowledge workers**	**37.4**	**61**	
5.1.1	Knowledge-intensive employment, %	13.4	93	◇
5.1.2	Firms offering formal training, % firms	73.7	2	● ◆
5.1.3	GERD performed by business, % GDP ⊕	0.2	53	
5.1.4	GERD financed by business, % ⊕	0.1	96	○ ◇
5.1.5	Females employed w/advanced degrees, %	8.8	76	
5.2	**Innovation linkages**	**14.9**	**119**	◇
5.2.1	University/industry research collaboration†	34.5	95	
5.2.2	State of cluster development†	36.5	103	◇
5.2.3	GERD financed by abroad, % ⊕	2.5	74	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	97	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	83	
5.3	**Knowledge absorption**	**21.6**	**115**	◇
5.3.1	Intellectual property payments, % total trade	0.2	83	
5.3.2	High-tech imports, % total trade	8.1	55	●
5.3.3	ICT services imports, % total trade	0.0	127	○ ◇
5.3.4	FDI net inflows, % GDP	0.9	105	◇
5.3.5	Research talent, % in business enterprise ⊕	15.0	61	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**15.0**	**100**	
6.1	**Knowledge creation**	**5.8**	**93**	
6.1.1	Patents by origin/bn PPP$ GDP	0.1	114	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.2	56	
6.1.3	Utility models by origin/bn PPP$ GDP	0.2	45	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.9	70	
6.1.5	Citable documents H-index	8.0	79	
6.2	**Knowledge impact**	**29.7**	**95**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-2.0	108	○ ◇
6.2.2	New businesses/th pop. 15-64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.2	64	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.1	51	●
6.2.5	High- & medium-high-tech manufactures, %	0.1	74	
6.3	**Knowledge diffusion**	**9.5**	**104**	
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	0.4	84	
6.3.3	ICT services exports, % total trade	0.2	116	
6.3.4	FDI net outflows, % GDP	0.3	83	
	CREATIVE OUTPUTS	**20.4**	**93**	
7.1	**Intangible assets**	**35.9**	**94**	
7.1.1	Trademarks by origin/bn PPP$ GDP	42.8	61	
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.0	67	
7.1.3	ICTs & business model creation†	53.3	92	
7.1.4	ICTs & organizational model creation†	52.9	66	
7.2	**Creative goods & services**	**8.1**	**93**	
7.2.1	Cultural & creative services exports, % total trade	0.1	85	
7.2.2	National feature films/mn pop. 15-69 ⊕	2.1	62	
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	1.1	60	
7.2.5	Creative goods exports, % total trade	0.1	110	
7.3	**Online creativity**	**1.7**	**88**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	2.1	77	
7.3.2	Country-code TLDs/th pop. 15-69	1.1	79	
7.3.3	Wikipedia edits/mn pop. 15-69 ⊕	5.0	82	
7.3.4	Mobile app creation/bn PPP$ GDP	0.4	70	

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.

EGYPT

GII 2019 rank

92

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
74	106	Lower middle	NAWA	99.4	1,297.0	13,366.5	95

		Score/Value	Rank	
	INSTITUTIONS	**47.9**	**118**	○
1.1	**Political environment**	**39.7**	**106**	
1.1.1	Political and operational stability*	56.1	105	
1.1.2	Government effectiveness*	31.5	104	
1.2	**Regulatory environment**	**40.8**	**120**	○
1.2.1	Regulatory quality*	18.8	120	○ ◇
1.2.2	Rule of law*	32.2	95	
1.2.3	Cost of redundancy dismissal, salary weeks	36.8	121	○
1.3	**Business environment**	**63.2**	**90**	
1.3.1	Ease of starting a business*	84.1	84	
1.3.2	Ease of resolving insolvency*	42.3	89	
	HUMAN CAPITAL & RESEARCH	**19.7**	**96**	
2.1	**Education**	**37.0**	**94**	
2.1.1	Expenditure on education, % GDP ⊙	3.8	89	
2.1.2	Government funding/pupil, secondary, % GDP/cap	14.0	86	
2.1.3	School life expectancy, years	13.1	80	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	15.2	68	
2.2	**Tertiary education**	**11.4**	**108**	
2.2.1	Tertiary enrolment, % gross ⊙	34.4	77	
2.2.2	Graduates in science & engineering, %	11.2	99	○ ◇
2.2.3	Tertiary inbound mobility, %	1.8	77	
2.3	**Research & development (R&D)**	**10.7**	**55**	
2.3.1	Researchers, FTE/mn pop.	669.4	61	
2.3.2	Gross expenditure on R&D, % GDP	0.6	51	◆
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*	21.9	48	● ◆
	INFRASTRUCTURE	**36.8**	**94**	
3.1	**Information & communication technologies(ICTs)**	**49.4**	**96**	
3.1.1	ICT access*	55.6	78	
3.1.2	ICT use*	34.7	95	
3.1.3	Government's online service*	53.5	101	
3.1.4	E-participation*	53.9	100	
3.2	**General infrastructure**	**21.1**	**116**	○
3.2.1	Electricity output, kWh/mn pop.	2,030.8	76	◆
3.2.2	Logistics performance*	35.6	66	
3.2.3	Gross capital formation, % GDP	15.5	118	○ ◇
3.3	**Ecological sustainability**	**39.9**	**55**	◆
3.3.1	GDP/unit of energy use	11.2	39	●
3.3.2	Environmental performance*	61.2	59	◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.6	81	
	MARKET SOPHISTICATION	**41.0**	**97**	
4.1	**Credit**	**25.8**	**103**	
4.1.1	Ease of getting credit*	65.0	54	
4.1.2	Domestic credit to private sector, % GDP	28.5	99	
4.1.3	Microfinance gross loans, % GDP	0.1	58	
4.2	**Investment**	**30.8**	**119**	○
4.2.1	Ease of protecting minority investors*	58.3	68	
4.2.2	Market capitalization, % GDP	15.5	63	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	63	
4.3	**Trade, competition, & market scale**	**66.4**	**48**	●
4.3.1	Applied tariff rate, weighted avg., %	7.4	101	
4.3.2	Intensity of local competition†	65.7	77	
4.3.3	Domestic market scale, bn PPP$	1,297.0	21	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**21.2**	**116**	○ ◇
5.1	**Knowledge workers**	**21.1**	**106**	
5.1.1	Knowledge-intensive employment, %	30.3	43	● ◆
5.1.2	Firms offering formal training, % firms	10.0	89	○ ◇
5.1.3	GERD performed by business, % GDP	0.0	76	
5.1.4	GERD financed by business, %	5.4	79	
5.1.5	Females employed w/advanced degrees, %	5.5	89	
5.2	**Innovation linkages**	**17.5**	**110**	
5.2.1	University/industry research collaboration†	30.0	106	
5.2.2	State of cluster development†	53.9	38	● ◆
5.2.3	GERD financed by abroad, %	0.0	101	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	98	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	88	
5.3	**Knowledge absorption**	**24.9**	**103**	
5.3.1	Intellectual property payments, % total trade	0.4	71	
5.3.2	High-tech imports, % total trade	6.8	73	
5.3.3	ICT services imports, % total trade	1.1	68	
5.3.4	FDI net inflows, % GDP	2.6	69	
5.3.5	Research talent, % in business enterprise	6.5	69	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**22.1**	**64**	
6.1	**Knowledge creation**	**11.1**	**66**	
6.1.1	Patents by origin/bn PPP$ GDP ⊙	0.8	68	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	81	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	7.1	61	
6.1.5	Citable documents H-index	15.5	48	●
6.2	**Knowledge impact**	**43.7**	**32**	●
6.2.1	Growth rate of PPP$ GDP/worker, %	2.5	32	●
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.4	21	● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.8	89	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.2	52	
6.3	**Knowledge diffusion**	**11.6**	**94**	
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	0.1	113	
6.3.3	ICT services exports, % total trade	1.2	73	
6.3.4	FDI net outflows, % GDP	0.1	102	
	CREATIVE OUTPUTS	**21.1**	**89**	
7.1	**Intangible assets**	**35.8**	**95**	
7.1.1	Trademarks by origin/bn PPP$ GDP ⊙	11.2	104	
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.7	56	
7.1.3	ICTs & business model creation†	61.0	59	
7.1.4	ICTs & organizational model creation†	56.0	57	
7.2	**Creative goods & services**	**12.1**	**77**	
7.2.1	Cultural & creative services exports, % total trade	0.1	80	
7.2.2	National feature films/mn pop. 15–69 ⊙	0.6	93	
7.2.3	Entertainment & Media market/th pop. 15–69	0.5	61	○
7.2.4	Printing & other media, % manufacturing ⊙	1.4	35	●
7.2.5	Creative goods exports, % total trade	1.1	41	●
7.3	**Online creativity**	**0.7**	**103**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.2	91	
7.3.2	Country-code TLDs/th pop. 15–69	0.0	123	○
7.3.3	Wikipedia edits/mn pop. 15–69	2.5	97	
7.3.4	Mobile app creation/bn PPP$ GDP	0.1	82	

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.

EL SALVADOR

GII 2019 rank

108

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
116	97	Lower middle	LCN	6.4	53.7	8,041.2	104

		Score/Value	Rank	
	INSTITUTIONS	**53.9**	**95**	
1.1	**Political environment**	**45.6**	**92**	
1.1.1	Political and operational stability*	61.4	91	
1.1.2	Government effectiveness*	37.7	93	
1.2	**Regulatory environment**	**54.1**	**101**	
1.2.1	Regulatory quality*	37.9	83	
1.2.2	Rule of law*	23.7	114	
1.2.3	Cost of redundancy dismissal, salary weeks	22.9	95	
1.3	**Business environment**	**62.0**	**94**	
1.3.1	Ease of starting a business*	78.4	111	
1.3.2	Ease of resolving insolvency*	45.6	80	
	HUMAN CAPITAL & RESEARCH	**18.3**	**99**	
2.1	**Education**	**29.7**	**108**	
2.1.1	Expenditure on education, % GDP	3.8	90	
2.1.2	Government funding/pupil, secondary, % GDP/cap	15.1	84	
2.1.3	School life expectancy, years	11.7	92	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	27.8	102	◇
2.2	**Tertiary education**	**24.4**	**82**	
2.2.1	Tertiary enrolment, % gross	28.7	84	
2.2.2	Graduates in science & engineering, %	22.3	48	
2.2.3	Tertiary inbound mobility, %	0.4	99	
2.3	**Research & development (R&D)**	**0.9**	**107**	
2.3.1	Researchers, FTE/mn pop. ⊙	65.9	89	
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.1	96	
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	**35.7**	**98**	
3.1	**Information & communication technologies(ICTs)**	**52.2**	**92**	
3.1.1	ICT access*	48.3	93	
3.1.2	ICT use*	33.0	97	
3.1.3	Government's online service*	62.5	89	
3.1.4	E-participation*	65.2	80	
3.2	**General infrastructure**	**17.9**	**121**	◇
3.2.1	Electricity output, kWh/mn pop.	942.4	95	
3.2.2	Logistics performance*	23.9	95	
3.2.3	Gross capital formation, % GDP	16.1	116	◇
3.3	**Ecological sustainability**	**36.8**	**70**	
3.3.1	GDP/unit of energy use	11.4	38	●
3.3.2	Environmental performance*	53.9	87	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	94	
	MARKET SOPHISTICATION	**44.8**	**81**	
4.1	**Credit**	**36.7**	**63**	
4.1.1	Ease of getting credit*	80.0	20	●
4.1.2	Domestic credit to private sector, % GDP	51.7	64	
4.1.3	Microfinance gross loans, % GDP	0.4	34	
4.2	**Investment**	**38.3**	**[85]**	
4.2.1	Ease of protecting minority investors*	38.3	122	○ ◇
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**	**59.2**	**72**	
4.3.1	Applied tariff rate, weighted avg., %	2.1	55	◆
4.3.2	Intensity of local competition†	72.8	40	● ◆
4.3.3	Domestic market scale, bn PPP$	53.7	95	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**25.5**	**97**	
5.1	**Knowledge workers**	**33.0**	**79**	
5.1.1	Knowledge-intensive employment, %	10.6	99	
5.1.2	Firms offering formal training, % firms	53.8	15	● ◆
5.1.3	GERD performed by business, % GDP ⊙	0.1	69	
5.1.4	GERD financed by business, %	40.2	44	◆
5.1.5	Females employed w/advanced degrees, %	3.5	95	
5.2	**Innovation linkages**	**12.4**	**124**	○ ◇
5.2.1	University/industry research collaboration†	27.6	113	
5.2.2	State of cluster development†	29.7	122	○ ◇
5.2.3	GERD financed by abroad, %	3.0	71	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	107	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**31.1**	**81**	
5.3.1	Intellectual property payments, % total trade	1.3	25	● ◆
5.3.2	High-tech imports, % total trade	8.7	47	●
5.3.3	ICT services imports, % total trade	0.6	100	
5.3.4	FDI net inflows, % GDP	1.8	84	
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**7.9**	**121**	◇
6.1	**Knowledge creation**	**0.9**	**128**	○
6.1.1	Patents by origin/bn PPP$ GDP	0.1	116	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	91	
6.1.3	Utility models by origin/bn PPP$ GDP	0.1	56	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.5	126	○
6.1.5	Citable documents H-index	1.4	123	○ ◇
6.2	**Knowledge impact**	**5.1**	**[121]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	0.5	86	
6.2.3	Computer software spending, % GDP	0.0	105	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4.0	64	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**17.9**	**60**	
6.3.1	Intellectual property receipts, % total trade	0.5	26	● ◆
6.3.2	High-tech net exports, % total trade	2.7	47	●
6.3.3	ICT services exports, % total trade	2.2	50	●
6.3.4	FDI net outflows, % GDP	-0.3	122	○ ◇
	CREATIVE OUTPUTS	**20.4**	**94**	
7.1	**Intangible assets**	**38.0**	**79**	
7.1.1	Trademarks by origin/bn PPP$ GDP	98.2	15	●
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.2	102	
7.1.3	ICTs & business model creation†	49.3	108	
7.1.4	ICTs & organizational model creation†	42.7	102	
7.2	**Creative goods & services**	**4.0**	**[107]**	
7.2.1	Cultural & creative services exports, % total trade	0.0	113	
7.2.2	National feature films/mn pop. 15–69 ⊙	0.3	102	○
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	0.7	53	
7.3	**Online creativity**	**1.6**	**92**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.5	73	◆
7.3.2	Country-code TLDs/th pop. 15–69	0.5	92	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	4.8	83	
7.3.4	Mobile app creation/bn PPP$ GDP	0.0	95	○

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.

ESTONIA

GII 2019 rank

24

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
19	27	High	EUR	1.3	44.2	34,095.8	24

		Score/Value	Rank	
	INSTITUTIONS	**81.7**	**23**	
1.1	**Political environment**	**78.3**	**25**	◇
1.1.1	Political and operational stability*	87.7	18	
1.1.2	Government effectiveness*	73.6	27	◇
1.2	**Regulatory environment**	**87.8**	**18**	
1.2.1	Regulatory quality*	86.0	14	
1.2.2	Rule of law*	80.3	22	
1.2.3	Cost of redundancy dismissal, salary weeks	12.9	39	
1.3	**Business environment**	**78.9**	**36**	◇
1.3.1	Ease of starting a business*	95.3	13	
1.3.2	Ease of resolving insolvency*	62.5	44	◇
	HUMAN CAPITAL & RESEARCH	**42.1**	**36**	◇
2.1	**Education**	**56.9**	**40**	
2.1.1	Expenditure on education, % GDP	5.2	41	
2.1.2	Government funding/pupil, secondary, % GDP/cap	18.1	60	◇
2.1.3	School life expectancy, years	16.1	34	
2.1.4	PISA scales in reading, maths, & science	524.3	4	●
2.1.5	Pupil-teacher ratio, secondary ⊙	8.8	16	◆
2.2	**Tertiary education**	**46.0**	**20**	
2.2.1	Tertiary enrolment, % gross ⊙	71.4	25	
2.2.2	Graduates in science & engineering, %	27.5	21	
2.2.3	Tertiary inbound mobility, %	6.8	33	
2.3	**Research & development (R&D)**	**23.4**	**44**	◇
2.3.1	Researchers, FTE/mn pop.	3,568.9	26	◇
2.3.2	Gross expenditure on R&D, % GDP	1.3	27	◇
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*	21.6	49	◇
	INFRASTRUCTURE	**61.5**	**16**	
3.1	**Information & communication technologies(ICTs)**	**85.7**	**20**	
3.1.1	ICT access*	81.6	20	
3.1.2	ICT use*	79.9	16	
3.1.3	Government's online service*	90.3	26	
3.1.4	E-participation*	91.0	27	
3.2	**General infrastructure**	**45.8**	**30**	
3.2.1	Electricity output, kWh/mn pop.	9,962.1	15	
3.2.2	Logistics performance*	58.4	35	◇
3.2.3	Gross capital formation, % GDP	26.4	38	
3.3	**Ecological sustainability**	**53.1**	**18**	
3.3.1	GDP/unit of energy use	6.8	90	○
3.3.2	Environmental performance*	64.3	44	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	13.5	1	● ◆
	MARKET SOPHISTICATION	**52.6**	**45**	◇
4.1	**Credit**	**50.3**	**31**	
4.1.1	Ease of getting credit*	70.0	40	
4.1.2	Domestic credit to private sector, % GDP	66.4	45	◇
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**47.3**	**44**	
4.2.1	Ease of protecting minority investors*	56.7	79	○ ◇
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	16	
4.3	**Trade, competition, & market scale**	**60.2**	**67**	◇
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	79.7	10	
4.3.3	Domestic market scale, bn PPP$	44.2	100	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**42.6**	**28**	◇
5.1	**Knowledge workers**	**57.4**	**26**	◇
5.1.1	Knowledge-intensive employment, %	45.5	15	
5.1.2	Firms offering formal training, % firms	35.2	40	
5.1.3	GERD performed by business, % GDP	0.6	34	◇
5.1.4	GERD financed by business, %	48.2	31	
5.1.5	Females employed w/advanced degrees, %	25.9	8	● ◆
5.2	**Innovation linkages**	**30.3**	**46**	◇
5.2.1	University/industry research collaboration†	46.4	48	◇
5.2.2	State of cluster development†	45.6	73	○ ◇
5.2.3	GERD financed by abroad, %	13.6	31	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	24	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.8	29	◇
5.3	**Knowledge absorption**	**40.0**	**40**	◇
5.3.1	Intellectual property payments, % total trade	0.3	81	○ ◇
5.3.2	High-tech imports, % total trade	9.6	36	
5.3.3	ICT services imports, % total trade	2.2	23	
5.3.4	FDI net inflows, % GDP	2.3	75	○
5.3.5	Research talent, % in business enterprise	33.9	39	◇
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**36.0**	**26**	◇
6.1	**Knowledge creation**	**26.0**	**33**	◇
6.1.1	Patents by origin/bn PPP$ GDP	2.2	40	◇
6.1.2	PCT patents by origin/bn PPP$ GDP	1.1	29	◇
6.1.3	Utility models by origin/bn PPP$ GDP	1.3	21	
6.1.4	Scientific & technical articles/bn PPP$ GDP	28.7	9	●
6.1.5	Citable documents H-index	15.8	47	◇
6.2	**Knowledge impact**	**53.7**	**12**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.6	30	
6.2.2	New businesses/th pop. 15–64	20.8	2	● ◆
6.2.3	Computer software spending, % GDP	0.1	79	○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	25.2	10	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.2	55	◇
6.3	**Knowledge diffusion**	**28.3**	**34**	
6.3.1	Intellectual property receipts, % total trade	0.1	64	○ ◇
6.3.2	High-tech net exports, % total trade	8.6	19	
6.3.3	ICT services exports, % total trade	3.6	22	
6.3.4	FDI net outflows, % GDP	0.4	72	○
	CREATIVE OUTPUTS	**51.7**	**8**	●
7.1	**Intangible assets**	**58.7**	**11**	
7.1.1	Trademarks by origin/bn PPP$ GDP	81.1	25	
7.1.2	Industrial designs by origin/bn PPP$ GDP	6.4	22	
7.1.3	ICTs & business model creation†	75.2	17	
7.1.4	ICTs & organizational model creation†	79.3	5	●
7.2	**Creative goods & services**	**38.6**	**10**	●
7.2.1	Cultural & creative services exports, % total trade	1.6	11	
7.2.2	National feature films/mn pop. 15–69	19.8	4	● ◆
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	2.1	16	
7.2.5	Creative goods exports, % total trade	1.4	38	
7.3	**Online creativity**	**50.6**	**12**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	9.8	40	◇
7.3.2	Country-code TLDs/th pop. 15–69	36.6	17	
7.3.3	Wikipedia edits/mn pop. 15–69	133.5	2	● ◆
7.3.4	Mobile app creation/bn PPP$ GDP	66.0	7	● ◆

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

ETHIOPIA

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
80	124	Low	SSF	105.0	195.8	2,160.8	n/a

		Score/Value	Rank	
	INSTITUTIONS	**47.5**	**119**	
1.1	**Political environment**	**37.9**	**114**	
1.1.1	Political and operational stability*	54.4	111	
1.1.2	Government effectiveness*	29.6	113	
1.2	**Regulatory environment**	**53.8**	**103**	
1.2.1	Regulatory quality*	15.0	124	
1.2.2	Rule of law*	34.4	93	
1.2.3	Cost of redundancy dismissal, salary weeks	19.1	79	●
1.3	**Business environment**	**50.7**	**124**	◇
1.3.1	Ease of starting a business*	70.8	120	◇
1.3.2	Ease of resolving insolvency*	30.5	118	◇
	HUMAN CAPITAL & RESEARCH	**10.6**	**124**	
2.1	**Education**	**22.7**	**121**	
2.1.1	Expenditure on education, % GDP	4.7	57	●
2.1.2	Government funding/pupil, secondary, % GDP/cap	16.6	74	
2.1.3	School life expectancy, years ⊙	8.4	115	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ⊙	40.4	113	○ ◇
2.2	**Tertiary education**	**5.8**	**[119]**	
2.2.1	Tertiary enrolment, % gross ⊙	8.1	112	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**3.3**	**86**	◆
2.3.1	Researchers, FTE/mn pop. ⊙	45.0	92	
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.6	52	● ◆
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	**35.6**	**99**	
3.1	**Information & communication technologies(ICTs)**	**38.5**	**108**	
3.1.1	ICT access*	22.5	124	◇
3.1.2	ICT use*	10.9	122	
3.1.3	Government's online service*	63.2	87	◆
3.1.4	E-participation*	57.3	95	
3.2	**General infrastructure**	**48.9**	**21**	● ◆
3.2.1	Electricity output, kWh/mn pop.	109.6	118	
3.2.2	Logistics performance*	n/a	n/a	
3.2.3	Gross capital formation, % GDP	39.5	7	● ◆
3.3	**Ecological sustainability**	**19.4**	**126**	
3.3.1	GDP/unit of energy use	3.1	116	
3.3.2	Environmental performance*	44.8	109	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.0	127	
	MARKET SOPHISTICATION	**27.3**	**128**	◇
4.1	**Credit**	**7.7**	**127**	◇
4.1.1	Ease of getting credit*	15.0	124	◇
4.1.2	Domestic credit to private sector, % GDP	n/a	n/a	
4.1.3	Microfinance gross loans, % GDP	0.0	62	
4.2	**Investment**	**28.3**	**[122]**	
4.2.1	Ease of protecting minority investors*	28.3	127	○ ◇
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**	**45.8**	**116**	
4.3.1	Applied tariff rate, weighted avg., % ⊙	12.1	120	
4.3.2	Intensity of local competition†	45.6	125	○ ◇
4.3.3	Domestic market scale, bn PPP$	220.7	59	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**20.2**	**118**	
5.1	**Knowledge workers**	**8.5**	**124**	
5.1.1	Knowledge-intensive employment, % ⊙	4.5	108	
5.1.2	Firms offering formal training, % firms	20.8	73	
5.1.3	GERD performed by business, % GDP ⊙	0.0	84	
5.1.4	GERD financed by business, % ⊙	0.7	92	
5.1.5	Females employed w/advanced degrees, % ⊙	0.3	115	
5.2	**Innovation linkages**	**17.4**	**112**	●
5.2.1	University/industry research collaboration†	43.9	54	●
5.2.2	State of cluster development†	42.7	83	
5.2.3	GERD financed by abroad, % ⊙	2.1	75	◇
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	99	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**34.7**	**58**	●
5.3.1	Intellectual property payments, % total trade	0.0	109	
5.3.2	High-tech imports, % total trade ⊙	21.8	6	● ◆
5.3.3	ICT services imports, % total trade	0.7	89	
5.3.4	FDI net inflows, % GDP	4.8	32	●
5.3.5	Research talent, % in business enterprise ⊙	0.5	81	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**17.0**	**88**	
6.1	**Knowledge creation**	**9.0**	**[73]**	
6.1.1	Patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.9	82	
6.1.5	Citable documents H-index	7.0	83	◆
6.2	**Knowledge impact**	**39.8**	**49**	● ◆
6.2.1	Growth rate of PPP$ GDP/worker, %	5.5	5	● ◆
6.2.2	New businesses/th pop. 15-64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.0	127	○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.3	125	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.1	70	
6.3	**Knowledge diffusion**	**2.1**	**129**	○ ◇
6.3.1	Intellectual property receipts, % total trade	0.0	105	
6.3.2	High-tech net exports, % total trade ⊙	0.1	114	
6.3.3	ICT services exports, % total trade	0.6	97	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
	CREATIVE OUTPUTS	**23.2**	**[80]**	
7.1	**Intangible assets**	**39.4**	**[70]**	
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†	40.6	119	
7.1.4	ICTs & organizational model creation†	38.2	116	
7.2	**Creative goods & services**	**14.2**	**[71]**	
7.2.1	Cultural & creative services exports, % total trade ⊙	0.0	100	
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 ⊙	1.8	21	●
7.2.5	Creative goods exports, % total trade ⊙	0.0	115	
7.3	**Online creativity**	**0.0**	**129**	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.0	129	○ ◇
7.3.2	Country-code TLDs/th pop. 15-69	0.0	129	○ ◇
7.3.3	Wikipedia edits/mn pop. 15-69 ⊙	0.0	123	
7.3.4	Mobile app creation/bn PPP$ GDP	0.0	98	○ ◇

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.

FINLAND

GII 2019 rank

6

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
7	7	High	EUR	5.5	257.2	46,429.5	7

		Score/Value	Rank	
INSTITUTIONS		**93.6**	**3**	● ◆
1.1	**Political environment**	**92.2**	**5**	
1.1.1	Political and operational stability*	89.5	15	
1.1.2	Government effectiveness*	93.5	4	●
1.2	**Regulatory environment**	**96.1**	**5**	
1.2.1	Regulatory quality*	90.8	8	
1.2.2	Rule of law*	100.0	1	●
1.2.3	Cost of redundancy dismissal, salary weeks	10.1	31	
1.3	**Business environment**	**92.6**	**1**	● ◆
1.3.1	Ease of starting a business*	92.4	39	
1.3.2	Ease of resolving insolvency*	92.8	2	● ◆
HUMAN CAPITAL & RESEARCH		**63.4**	**2**	● ◆
2.1	**Education**	**69.9**	**4**	● ◆
2.1.1	Expenditure on education, % GDP	7.1	10	◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	25.8	22	
2.1.3	School life expectancy, years	19.3	3	● ◆
2.1.4	PISA scales in reading, maths, & science	522.7	6	
2.1.5	Pupil-teacher ratio, secondary ⊕	13.2	58	○
2.2	**Tertiary education**	**53.0**	**10**	
2.2.1	Tertiary enrolment, % gross ⊕	87.0	10	
2.2.2	Graduates in science & engineering, %	29.5	15	
2.2.3	Tertiary inbound mobility, %	7.8	29	
2.3	**Research & development (R&D)**	**67.3**	**10**	
2.3.1	Researchers, FTE/mn pop.	6,707.5	6	
2.3.2	Gross expenditure on R&D, % GDP	2.8	10	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	79.7	11	
2.3.4	QS university ranking, average score top 3*	48.0	19	
INFRASTRUCTURE		**62.1**	**12**	
3.1	**Information & communication technologies(ICTs)**	**87.5**	**16**	
3.1.1	ICT access*	73.9	52	◇
3.1.2	ICT use*	79.7	17	
3.1.3	Government's online service*	96.5	8	
3.1.4	E-participation*	100.0	1	●
3.2	**General infrastructure**	**51.7**	**13**	
3.2.1	Electricity output, kWh/mn pop.	12,236.8	10	
3.2.2	Logistics performance*	89.1	10	
3.2.3	Gross capital formation, % GDP	22.9	66	○
3.3	**Ecological sustainability**	**47.0**	**42**	
3.3.1	GDP/unit of energy use	6.3	96	○
3.3.2	Environmental performance*	78.6	10	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.0	18	
MARKET SOPHISTICATION		**57.3**	**27**	
4.1	**Credit**	**54.9**	**25**	
4.1.1	Ease of getting credit*	65.0	54	○
4.1.2	Domestic credit to private sector, % GDP	94.5	29	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**51.7**	**34**	
4.2.1	Ease of protecting minority investors*	58.3	68	○
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital deals/bn PPP$ GDP	0.2	11	
4.3	**Trade, competition, & market scale**	**65.2**	**52**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	61.7	99	○ ◇
4.3.3	Domestic market scale, bn PPP$	257.2	58	

		Score/Value	Rank	
BUSINESS SOPHISTICATION		**63.9**	**5**	◆
5.1	**Knowledge workers**	**74.0**	**6**	
5.1.1	Knowledge-intensive employment, %	47.4	10	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	1.8	10	
5.1.4	GERD financed by business, %	57.0	15	
5.1.5	Females employed w/advanced degrees, %	27.2	5	◆
5.2	**Innovation linkages**	**62.6**	**4**	● ◆
5.2.1	University/industry research collaboration†	74.7	5	
5.2.2	State of cluster development†	64.9	17	
5.2.3	GERD financed by abroad, %	12.1	35	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	10	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	6.5	3	● ◆
5.3	**Knowledge absorption**	**54.9**	**12**	
5.3.1	Intellectual property payments, % total trade	1.0	37	
5.3.2	High-tech imports, % total trade	7.7	60	○
5.3.3	ICT services imports, % total trade	3.7	4	● ◆
5.3.4	FDI net inflows, % GDP	4.9	31	
5.3.5	Research talent, % in business enterprise	55.5	20	
KNOWLEDGE & TECHNOLOGY OUTPUTS		**55.1**	**9**	
6.1	**Knowledge creation**	**58.5**	**9**	
6.1.1	Patents by origin/bn PPP$ GDP	13.1	7	
6.1.2	PCT patents by origin/bn PPP$ GDP	7.1	1	● ◆
6.1.3	Utility models by origin/bn PPP$ GDP	2.0	11	
6.1.4	Scientific & technical articles/bn PPP$ GDP	30.9	6	◆
6.1.5	Citable documents H-index	42.9	19	
6.2	**Knowledge impact**	**44.9**	**28**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.3	57	○
6.2.2	New businesses/th pop. 15–64	4.0	32	
6.2.3	Computer software spending, % GDP	0.6	17	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	10.8	29	
6.2.5	High- & medium-high-tech manufactures, %	0.3	34	
6.3	**Knowledge diffusion**	**61.9**	**7**	
6.3.1	Intellectual property receipts, % total trade	3.3	6	◆
6.3.2	High-tech net exports, % total trade	4.4	34	
6.3.3	ICT services exports, % total trade	8.1	5	◆
6.3.4	FDI net outflows, % GDP	4.0	14	
CREATIVE OUTPUTS		**48.1**	**13**	
7.1	**Intangible assets**	**55.3**	**19**	
7.1.1	Trademarks by origin/bn PPP$ GDP	44.7	58	○
7.1.2	Industrial designs by origin/bn PPP$ GDP	3.9	32	
7.1.3	ICTs & business model creation†	84.4	2	● ◆
7.1.4	ICTs & organizational model creation†	80.4	3	● ◆
7.2	**Creative goods & services**	**24.7**	**44**	
7.2.1	Cultural & creative services exports, % total trade	1.0	29	
7.2.2	National feature films/mn pop. 15–69	10.7	15	
7.2.3	Entertainment & Media market/th pop. 15–69	57.5	13	
7.2.4	Printing & other media, % manufacturing	1.1	58	○
7.2.5	Creative goods exports, % total trade	0.5	56	
7.3	**Online creativity**	**57.3**	**6**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	29.2	21	
7.3.2	Country-code TLDs/th pop. 15–69	34.0	18	
7.3.3	Wikipedia edits/mn pop. 15–69	98.1	8	
7.3.4	Mobile app creation/bn PPP$ GDP	100.0	1	● ◆

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

FRANCE

GII 2019 rank

16

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
14	16	High	EUR	65.2	2,968.5	45,775.1	16

		Score/Value	Rank	
	INSTITUTIONS	**83.2**	**19**	
1.1	**Political environment**	**80.4**	**22**	
1.1.1	Political and operational stability*	82.5	32	◇
1.1.2	Government effectiveness*	79.3	21	
1.2	**Regulatory environment**	**85.5**	**20**	
1.2.1	Regulatory quality*	73.0	26	
1.2.2	Rule of law*	84.4	19	
1.2.3	Cost of redundancy dismissal, salary weeks	13.0	41	
1.3	**Business environment**	**83.7**	**21**	
1.3.1	Ease of starting a business*	93.3	27	
1.3.2	Ease of resolving insolvency*	74.1	26	
	HUMAN CAPITAL & RESEARCH	**55.8**	**11**	
2.1	**Education**	**57.8**	**32**	
2.1.1	Expenditure on education, % GDP	5.5	27	
2.1.2	Government funding/pupil, secondary, % GDP/cap	26.5	19	◆
2.1.3	School life expectancy, years	15.5	38	
2.1.4	PISA scales in reading, maths, & science	495.7	24	
2.1.5	Pupil-teacher ratio, secondary ◷	12.9	57	○
2.2	**Tertiary education**	**44.8**	**25**	
2.2.1	Tertiary enrolment, % gross ◷	64.4	37	
2.2.2	Graduates in science & engineering, %	25.6	26	
2.2.3	Tertiary inbound mobility, %	9.9	20	
2.3	**Research & development (R&D)**	**64.6**	**11**	
2.3.1	Researchers, FTE/mn pop.	4,441.1	18	
2.3.2	Gross expenditure on R&D, % GDP	2.2	12	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	87.8	7	●
2.3.4	QS university ranking, average score top 3*	69.3	10	●
	INFRASTRUCTURE	**62.3**	**11**	
3.1	**Information & communication technologies(ICTs)**	**89.6**	**10**	●
3.1.1	ICT access*	83.4	16	
3.1.2	ICT use*	80.3	14	
3.1.3	Government's online service*	97.9	4	●
3.1.4	E-participation*	96.6	13	
3.2	**General infrastructure**	**47.5**	**29**	
3.2.1	Electricity output, kWh/mn pop.	8,177.3	20	
3.2.2	Logistics performance*	83.3	16	
3.2.3	Gross capital formation, % GDP	23.7	59	○
3.3	**Ecological sustainability**	**49.9**	**31**	
3.3.1	GDP/unit of energy use	10.3	46	
3.3.2	Environmental performance*	84.0	2	● ◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.2	46	
	MARKET SOPHISTICATION	**62.9**	**12**	
4.1	**Credit**	**49.2**	**33**	
4.1.1	Ease of getting credit*	50.0	87	○
4.1.2	Domestic credit to private sector, % GDP	101.6	26	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**57.5**	**25**	
4.2.1	Ease of protecting minority investors*	66.7	35	
4.2.2	Market capitalization, % GDP	93.2	14	
4.2.3	Venture capital deals/bn PPP$ GDP	0.2	5	●
4.3	**Trade, competition, & market scale**	**81.9**	**6**	●
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	80.0	8	●
4.3.3	Domestic market scale, bn PPP$	2,968.5	10	●

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**53.3**	**19**	
5.1	**Knowledge workers**	**66.2**	**15**	
5.1.1	Knowledge-intensive employment, %	45.1	16	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	1.4	13	
5.1.4	GERD financed by business, % ◷	54.0	20	
5.1.5	Females employed w/advanced degrees, %	21.6	21	
5.2	**Innovation linkages**	**41.6**	**26**	
5.2.1	University/industry research collaboration†	54.6	30	◇
5.2.2	State of cluster development†	63.2	20	
5.2.3	GERD financed by abroad, % ◷	7.6	51	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	30	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	3.5	14	
5.3	**Knowledge absorption**	**52.1**	**17**	
5.3.1	Intellectual property payments, % total trade	1.9	14	
5.3.2	High-tech imports, % total trade	10.8	23	
5.3.3	ICT services imports, % total trade	2.2	22	
5.3.4	FDI net inflows, % GDP	1.8	85	○
5.3.5	Research talent, % in business enterprise	60.3	14	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**45.0**	**15**	
6.1	**Knowledge creation**	**42.7**	**16**	
6.1.1	Patents by origin/bn PPP$ GDP	8.8	15	
6.1.2	PCT patents by origin/bn PPP$ GDP	2.7	13	
6.1.3	Utility models by origin/bn PPP$ GDP	0.1	57	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	15.8	33	
6.1.5	Citable documents H-index	79.2	5	● ◆
6.2	**Knowledge impact**	**44.7**	**29**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.7	69	○
6.2.2	New businesses/th pop. 15–64	1.8	52	○
6.2.3	Computer software spending, % GDP	0.6	10	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.6	41	
6.2.5	High- & medium-high-tech manufactures, %	0.5	13	
6.3	**Knowledge diffusion**	**47.7**	**13**	
6.3.1	Intellectual property receipts, % total trade	2.0	12	
6.3.2	High-tech net exports, % total trade	12.8	10	●
6.3.3	ICT services exports, % total trade	2.2	51	○
6.3.4	FDI net outflows, % GDP	2.4	27	
	CREATIVE OUTPUTS	**45.0**	**16**	
7.1	**Intangible assets**	**58.8**	**10**	●
7.1.1	Trademarks by origin/bn PPP$ GDP	97.9	16	
7.1.2	Industrial designs by origin/bn PPP$ GDP	6.3	24	
7.1.3	ICTs & business model creation†	77.2	13	
7.1.4	ICTs & organizational model creation†	70.9	19	
7.2	**Creative goods & services**	**26.6**	**39**	
7.2.1	Cultural & creative services exports, % total trade	1.3	20	
7.2.2	National feature films/mn pop. 15–69	6.8	31	
7.2.3	Entertainment & Media market/th pop. 15–69	52.3	15	
7.2.4	Printing & other media, % manufacturing	1.0	61	○
7.2.5	Creative goods exports, % total trade	1.7	32	
7.3	**Online creativity**	**35.7**	**23**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	40.9	18	
7.3.2	Country-code TLDs/th pop. 15–69	20.7	28	
7.3.3	Wikipedia edits/mn pop. 15–69	64.7	15	
7.3.4	Mobile app creation/bn PPP$ GDP	37.7	14	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

GEORGIA

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
60	44	Lower middle	NAWA	3.9	43.0	11,485.4	59

		Score/Value	Rank	
	INSTITUTIONS	**74.3**	**36**	◆
1.1	**Political environment**	**64.2**	**45**	◆
1.1.1	Political and operational stability*	71.9	58	◆
1.1.2	Government effectiveness*	60.4	42	◆
1.2	**Regulatory environment**	**80.8**	**28**	◆
1.2.1	Regulatory quality*	70.2	30	◆
1.2.2	Rule of law*	55.1	49	◆
1.2.3	Cost of redundancy dismissal, salary weeks	8.6	17	● ◆
1.3	**Business environment**	**77.7**	**38**	◆
1.3.1	Ease of starting a business*	99.3	2	● ◆
1.3.2	Ease of resolving insolvency*	56.0	55	◆

	HUMAN CAPITAL & RESEARCH	**30.5**	**63**	
2.1	**Education**	**51.5**	**55**	
2.1.1	Expenditure on education, % GDP	3.8	85	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	15.4	39	◆
2.1.4	PISA scales in reading, maths, & science	405.4	61	○
2.1.5	Pupil-teacher ratio, secondary	7.4	5	● ◆
2.2	**Tertiary education**	**34.3**	**57**	
2.2.1	Tertiary enrolment, % gross	57.5	50	◆
2.2.2	Graduates in science & engineering, %	21.9	52	
2.2.3	Tertiary inbound mobility, %	5.6	38	◆
2.3	**Research & development (R&D)**	**5.6**	**75**	
2.3.1	Researchers, FTE/mn pop. ⊙	1,336.6	45	◆
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.3	79	
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	**44.7**	**72**	◆
3.1	**Information & communication technologies(ICTs)**	**64.3**	**71**	◆
3.1.1	ICT access*	72.1	59	◆
3.1.2	ICT use*	53.3	67	◆
3.1.3	Government's online service*	69.4	70	
3.1.4	E-participation*	62.4	84	
3.2	**General infrastructure**	**39.2**	**46**	
3.2.1	Electricity output, kWh/mn pop.	3,111.3	61	◆
3.2.2	Logistics performance*	17.7	109	○
3.2.3	Gross capital formation, % GDP	35.2	11	● ◆
3.3	**Ecological sustainability**	**30.5**	**91**	
3.3.1	GDP/unit of energy use	7.0	86	
3.3.2	Environmental performance*	55.7	80	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	98	

	MARKET SOPHISTICATION	**62.1**	**15**	● ◆
4.1	**Credit**	**47.1**	**40**	
4.1.1	Ease of getting credit*	85.0	11	●
4.1.2	Domestic credit to private sector, % GDP	62.5	52	
4.1.3	Microfinance gross loans, % GDP	1.6	15	
4.2	**Investment**	**81.7**	**[1]**	
4.2.1	Ease of protecting minority investors*	81.7	2	● ◆
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**	**57.4**	**79**	
4.3.1	Applied tariff rate, weighted avg., % ⊙	0.7	5	● ◆
4.3.2	Intensity of local competition†	62.7	94	
4.3.3	Domestic market scale, bn PPP$	43.0	102	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**29.5**	**70**	
5.1	**Knowledge workers**	**32.1**	**[81]**	
5.1.1	Knowledge-intensive employment, %	25.3	54	
5.1.2	Firms offering formal training, % firms	10.5	88	○ ◇
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, %	17.6	32	◆
5.2	**Innovation linkages**	**25.0**	**65**	
5.2.1	University/industry research collaboration†	32.0	98	
5.2.2	State of cluster development†	34.8	107	○
5.2.3	GERD financed by abroad, % ⊙	14.7	28	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	19	◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.2	48	◆
5.3	**Knowledge absorption**	**31.4**	**78**	
5.3.1	Intellectual property payments, % total trade	0.2	88	
5.3.2	High-tech imports, % total trade	7.5	63	
5.3.3	ICT services imports, % total trade	0.7	90	
5.3.4	FDI net inflows, % GDP	11.6	11	● ◆
5.3.5	Research talent, % in business enterprise	n/a	n/a	

	KNOWLEDGE & TECHNOLOGY OUTPUTS	**22.5**	**62**	
6.1	**Knowledge creation**	**16.1**	**55**	
6.1.1	Patents by origin/bn PPP$ GDP	1.9	48	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	59	
6.1.3	Utility models by origin/bn PPP$ GDP	1.4	19	
6.1.4	Scientific & technical articles/bn PPP$ GDP	14.1	37	◆
6.1.5	Citable documents H-index	9.4	73	
6.2	**Knowledge impact**	**38.3**	**55**	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.0	8	● ◆
6.2.2	New businesses/th pop. 15–64	8.4	17	◆
6.2.3	Computer software spending, % GDP	0.1	89	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.3	74	
6.2.5	High- & medium-high-tech manufactures, %	0.1	91	○
6.3	**Knowledge diffusion**	**12.9**	**86**	
6.3.1	Intellectual property receipts, % total trade	0.0	90	○
6.3.2	High-tech net exports, % total trade	0.3	90	
6.3.3	ICT services exports, % total trade	1.1	80	
6.3.4	FDI net outflows, % GDP	2.2	28	◆

	CREATIVE OUTPUTS	**29.1**	**58**	
7.1	**Intangible assets**	**44.7**	**50**	
7.1.1	Trademarks by origin/bn PPP$ GDP	68.8	29	
7.1.2	Industrial designs by origin/bn PPP$ GDP	11.8	12	● ◆
7.1.3	ICTs & business model creation†	52.1	97	
7.1.4	ICTs & organizational model creation†	43.6	99	○
7.2	**Creative goods & services**	**16.9**	**62**	
7.2.1	Cultural & creative services exports, % total trade	0.5	51	◆
7.2.2	National feature films/mn pop. 15–69	6.6	33	
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	1.6	29	
7.2.5	Creative goods exports, % total trade	0.1	97	
7.3	**Online creativity**	**9.9**	**53**	◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.8	82	
7.3.2	Country-code TLDs/th pop. 15–69	3.4	57	◆
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	44.5	31	◆
7.3.4	Mobile app creation/bn PPP$ GDP	4.3	52	

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.

GERMANY

GII 2019 rank

9

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
9	**12**	**High**	**EUR**	**82.3**	**4,379.1**	**52,558.7**	**9**

		Score/Value	Rank	
	INSTITUTIONS	**86.4**	**16**	
1.1	**Political environment**	**88.1**	**13**	
1.1.1	Political and operational stability*	87.7	18	
1.1.2	Government effectiveness*	88.2	11	
1.2	**Regulatory environment**	**84.4**	**23**	
1.2.1	Regulatory quality*	89.8	11	
1.2.2	Rule of law*	88.9	16	
1.2.3	Cost of redundancy dismissal, salary weeks	21.6	89	○ ◇
1.3	**Business environment**	**86.9**	**15**	
1.3.1	Ease of starting a business*	83.6	88	○ ◇
1.3.2	Ease of resolving insolvency*	90.1	4	● ◆

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**63.2**	**3**	**● ◆**
2.1	**Education**	**57.8**	**33**	
2.1.1	Expenditure on education, % GDP	4.8	55	○
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.0	34	
2.1.3	School life expectancy, years	17.1	17	
2.1.4	PISA scales in reading, maths, & science	508.1	11	
2.1.5	Pupil-teacher ratio, secondary ⊙	12.0	48	
2.2	**Tertiary education**	**58.6**	**5**	**● ◆**
2.2.1	Tertiary enrolment, % gross ⊙	68.3	31	
2.2.2	Graduates in science & engineering, %	36.0	4	● ◆
2.2.3	Tertiary inbound mobility, %	8.0	28	
2.3	**Research & development (R&D)**	**73.4**	**7**	
2.3.1	Researchers, FTE/mn pop.	5,036.2	12	
2.3.2	Gross expenditure on R&D, % GDP	3.0	8	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	97.2	2	● ◆
2.3.4	QS university ranking, average score top 3*	69.1	11	

		Score/Value	Rank	
	INFRASTRUCTURE	**62.0**	**13**	
3.1	**Information & communication technologies(ICTs)**	**88.2**	**15**	
3.1.1	ICT access*	90.3	6	●
3.1.2	ICT use*	77.2	22	
3.1.3	Government's online service*	93.1	17	
3.1.4	E-participation*	92.1	23	
3.2	**General infrastructure**	**47.8**	**26**	
3.2.1	Electricity output, kWh/mn pop.	7,849.4	22	
3.2.2	Logistics performance*	100.0	1	● ◆
3.2.3	Gross capital formation, % GDP	20.4	91	○
3.3	**Ecological sustainability**	**50.1**	**29**	
3.3.1	GDP/unit of energy use	11.6	34	
3.3.2	Environmental performance*	78.4	13	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.4	41	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**58.6**	**20**	
4.1	**Credit**	**53.2**	**28**	
4.1.1	Ease of getting credit*	70.0	40	
4.1.2	Domestic credit to private sector, % GDP	77.7	39	◇
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**39.7**	**79**	**○ ◇**
4.2.1	Ease of protecting minority investors*	58.3	68	○
4.2.2	Market capitalization, % GDP	53.9	31	
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	20	
4.3	**Trade, competition, & market scale**	**82.9**	**4**	**●**
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	76.3	18	
4.3.3	Domestic market scale, bn PPP$	4,379.1	5	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**56.1**	**12**	
5.1	**Knowledge workers**	**67.1**	**13**	
5.1.1	Knowledge-intensive employment, %	44.7	17	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	2.1	7	
5.1.4	GERD financed by business, %	65.2	7	
5.1.5	Females employed w/advanced degrees, %	13.2	51	◇
5.2	**Innovation linkages**	**53.9**	**10**	
5.2.1	University/industry research collaboration†	72.8	6	
5.2.2	State of cluster development†	75.4	2	● ◆
5.2.3	GERD financed by abroad, %	5.9	60	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	32	◇
5.2.5	Patent families 2+ offices/bn PPP$ GDP	5.9	9	
5.3	**Knowledge absorption**	**47.5**	**22**	
5.3.1	Intellectual property payments, % total trade	0.8	51	
5.3.2	High-tech imports, % total trade	9.6	37	
5.3.3	ICT services imports, % total trade	2.1	25	
5.3.4	FDI net inflows, % GDP	1.8	86	○
5.3.5	Research talent, % in business enterprise	59.7	15	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**52.7**	**10**	
6.1	**Knowledge creation**	**66.6**	**6**	**●**
6.1.1	Patents by origin/bn PPP$ GDP	17.5	1	● ◆
6.1.2	PCT patents by origin/bn PPP$ GDP	4.5	9	
6.1.3	Utility models by origin/bn PPP$ GDP	2.3	9	
6.1.4	Scientific & technical articles/bn PPP$ GDP	15.7	35	
6.1.5	Citable documents H-index	87.9	3	● ◆
6.2	**Knowledge impact**	**48.7**	**17**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.6	73	○
6.2.2	New businesses/th pop. 15–64	1.3	64	○
6.2.3	Computer software spending, % GDP	0.6	18	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	15.4	22	
6.2.5	High- & medium-high-tech manufactures, %	0.6	6	
6.3	**Knowledge diffusion**	**42.7**	**17**	
6.3.1	Intellectual property receipts, % total trade	1.2	17	
6.3.2	High-tech net exports, % total trade	11.5	14	
6.3.3	ICT services exports, % total trade	2.3	46	
6.3.4	FDI net outflows, % GDP	3.3	22	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**49.6**	**10**	
7.1	**Intangible assets**	**63.8**	**5**	**● ◆**
7.1.1	Trademarks by origin/bn PPP$ GDP	65.2	30	
7.1.2	Industrial designs by origin/bn PPP$ GDP	14.5	6	◆
7.1.3	ICTs & business model creation†	78.4	12	
7.1.4	ICTs & organizational model creation†	78.0	8	
7.2	**Creative goods & services**	**26.3**	**41**	
7.2.1	Cultural & creative services exports, % total trade	0.9	33	
7.2.2	National feature films/mn pop. 15–69	4.1	47	
7.2.3	Entertainment & Media market/th pop. 15–69	58.7	12	
7.2.4	Printing & other media, % manufacturing	1.0	63	○
7.2.5	Creative goods exports, % total trade	2.2	26	
7.3	**Online creativity**	**44.4**	**14**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	52.9	14	
7.3.2	Country-code TLDs/th pop. 15–69	77.6	6	● ◆
7.3.3	Wikipedia edits/mn pop. 15–69	52.1	22	
7.3.4	Mobile app creation/bn PPP$ GDP	11.9	40	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

GHANA

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
97	109	Lower middle	SSF	29.5	145.8	6,451.7	107

		Score/Value	Rank	
	INSTITUTIONS	**48.9**	**115**	
1.1	**Political environment**	**52.0**	**74**	
1.1.1	Political and operational stability*	68.4	71	
1.1.2	Government effectiveness*	43.8	78	
1.2	**Regulatory environment**	**40.2**	**121**	
1.2.1	Regulatory quality*	38.3	79	
1.2.2	Rule of law*	49.8	53	◆
1.2.3	Cost of redundancy dismissal, salary weeks	49.8	123	○ ◇
1.3	**Business environment**	**54.6**	**117**	◇
1.3.1	Ease of starting a business*	84.3	83	
1.3.2	Ease of resolving insolvency*	24.9	128	○ ◇
	HUMAN CAPITAL & RESEARCH	**19.2**	**97**	
2.1	**Education**	**43.6**	**75**	
2.1.1	Expenditure on education, % GDP	4.5	62	
2.1.2	Government funding/pupil, secondary, % GDP/cap	26.2	21	●
2.1.3	School life expectancy, years	11.5	94	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	16.0	72	
2.2	**Tertiary education**	**11.8**	**107**	
2.2.1	Tertiary enrolment, % gross	16.2	99	
2.2.2	Graduates in science & engineering, %	13.4	93	◇
2.2.3	Tertiary inbound mobility, %	2.9	64	
2.3	**Research & development (R&D)**	**2.1**	**93**	
2.3.1	Researchers, FTE/mn pop.	38.4	96	
2.3.2	Gross expenditure on R&D, % GDP	0.4	70	
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	**35.0**	**103**	
3.1	**Information & communication technologies(ICTs)**	**54.5**	**86**	
3.1.1	ICT access*	45.6	97	
3.1.2	ICT use*	40.0	89	
3.1.3	Government's online service*	69.4	70	
3.1.4	E-participation*	62.9	82	
3.2	**General infrastructure**	**14.9**	**125**	○ ◇
3.2.1	Electricity output, kWh/mn pop.	461.6	106	
3.2.2	Logistics performance*	23.5	99	
3.2.3	Gross capital formation, % GDP	13.8	119	○ ◇
3.3	**Ecological sustainability**	**35.7**	**75**	
3.3.1	GDP/unit of energy use	11.8	33	●
3.3.2	Environmental performance*	49.7	99	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	102	
	MARKET SOPHISTICATION	**34.3**	**121**	◇
4.1	**Credit**	**25.8**	**104**	
4.1.1	Ease of getting credit*	60.0	66	
4.1.2	Domestic credit to private sector, % GDP	13.9	120	○ ◇
4.1.3	Microfinance gross loans, % GDP	0.8	24	●
4.2	**Investment**	**26.7**	**127**	○ ◇
4.2.1	Ease of protecting minority investors*	51.7	89	
4.2.2	Market capitalization, % GDP	8.8	71	○
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	64	
4.3	**Trade, competition, & market scale**	**50.3**	**107**	
4.3.1	Applied tariff rate, weighted avg., %	10.6	115	◇
4.3.2	Intensity of local competition†	63.4	87	
4.3.3	Domestic market scale, bn PPP$	145.8	70	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**26.6**	**86**	
5.1	**Knowledge workers**	**20.7**	**108**	
5.1.1	Knowledge-intensive employment, %	11.6	95	
5.1.2	Firms offering formal training, % firms	40.1	35	
5.1.3	GERD performed by business, % GDP	0.0	91	○
5.1.4	GERD financed by business, %	0.1	97	○ ◇
5.1.5	Females employed w/advanced degrees, %	3.4	97	
5.2	**Innovation linkages**	**36.1**	**38**	● ◆
5.2.1	University/industry research collaboration†	47.3	44	● ◆
5.2.2	State of cluster development†	52.9	42	● ◆
5.2.3	GERD financed by abroad, %	31.2	11	● ◆
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	42	●
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	82	
5.3	**Knowledge absorption**	**23.0**	**[112]**	
5.3.1	Intellectual property payments, % total trade	n/a	n/a	
5.3.2	High-tech imports, % total trade	3.7	119	
5.3.3	ICT services imports, % total trade	n/a	n/a	
5.3.4	FDI net inflows, % GDP	6.1	25	●
5.3.5	Research talent, % in business enterprise	1.0	77	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**16.6**	**89**	
6.1	**Knowledge creation**	**4.4**	**103**	
6.1.1	Patents by origin/bn PPP$ GDP	0.1	110	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	99	○ ◇
6.1.3	Utility models by origin/bn PPP$ GDP	0.1	58	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.2	79	
6.1.5	Citable documents H-index	7.3	82	
6.2	**Knowledge impact**	**33.2**	**81**	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.6	17	●
6.2.2	New businesses/th pop. 15-64	0.9	73	
6.2.3	Computer software spending, % GDP	0.0	124	○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.5	119	◇
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**12.3**	**[92]**	
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	0.2	97	
6.3.3	ICT services exports, % total trade	n/a	n/a	
6.3.4	FDI net outflows, % GDP	0.2	91	
	CREATIVE OUTPUTS	**18.9**	**[100]**	
7.1	**Intangible assets**	**35.0**	**96**	
7.1.1	Trademarks by origin/bn PPP$ GDP	6.9	110	
7.1.2	Industrial designs by origin/bn PPP$ GDP	5.5	25	●
7.1.3	ICTs & business model creation†	56.0	84	
7.1.4	ICTs & organizational model creation†	49.7	83	
7.2	**Creative goods & services**	**5.1**	**[100]**	
7.2.1	Cultural & creative services exports, % total trade	n/a	n/a	
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	0.6	85	
7.2.5	Creative goods exports, % total trade	0.0	117	
7.3	**Online creativity**	**0.3**	**[114]**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.6	102	
7.3.2	Country-code TLDs/th pop. 15-69	0.0	122	
7.3.3	Wikipedia edits/mn pop. 15-69	n/a	n/a	
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.

GREECE

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
54	40	High	EUR	11.1	312.5	29,123.0	42

		Score/Value	Rank	
	INSTITUTIONS	**67.2**	**51**	◇
1.1	**Political environment**	**59.5**	**53**	◇
1.1.1	Political and operational stability*	70.2	61	◇
1.1.2	Government effectiveness*	54.1	50	◇
1.2	**Regulatory environment**	**68.2**	**60**	◇
1.2.1	Regulatory quality*	48.3	58	◇
1.2.2	Rule of law*	48.6	57	◇
1.2.3	Cost of redundancy dismissal, salary weeks	15.9	67	
1.3	**Business environment**	**73.9**	**53**	
1.3.1	Ease of starting a business*	92.4	40	
1.3.2	Ease of resolving insolvency*	55.4	57	
	HUMAN CAPITAL & RESEARCH	**49.5**	**20**	●
2.1	**Education**	**61.9**	**16**	●
2.1.1	Expenditure on education, % GDP	n/a	n/a	
2.1.2	Government funding/pupil, secondary, % GDP/cap	22.6	38	
2.1.3	School life expectancy, years	17.9	12	●
2.1.4	PISA scales in reading, maths, & science	458.5	42	
2.1.5	Pupil-teacher ratio, secondary ⓘ	8.4	12	●
2.2	**Tertiary education**	**54.8**	**8**	● ◆
2.2.1	Tertiary enrolment, % gross ⓘ	126.4	1	● ◆
2.2.2	Graduates in science & engineering, %	28.2	19	●
2.2.3	Tertiary inbound mobility, %	3.3	60	
2.3	**Research & development (R&D)**	**31.7**	**36**	
2.3.1	Researchers, FTE/mn pop.	3,152.8	28	
2.3.2	Gross expenditure on R&D, % GDP	1.1	32	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	41.8	41	
2.3.4	QS university ranking, average score top 3*	21.9	47	
	INFRASTRUCTURE	**51.7**	**43**	
3.1	**Information & communication technologies(ICTs)**	**78.2**	**35**	
3.1.1	ICT access*	79.8	30	
3.1.2	ICT use*	63.2	50	◇
3.1.3	Government's online service*	81.9	41	
3.1.4	E-participation*	87.6	34	
3.2	**General infrastructure**	**25.5**	**100**	○ ◇
3.2.1	Electricity output, kWh/mn pop.	5,479.7	38	
3.2.2	Logistics performance*	53.4	41	
3.2.3	Gross capital formation, % GDP	12.6	121	○ ◇
3.3	**Ecological sustainability**	**51.5**	**25**	
3.3.1	GDP/unit of energy use	11.2	39	
3.3.2	Environmental performance*	73.6	22	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	5.1	22	●
	MARKET SOPHISTICATION	**50.3**	**54**	
4.1	**Credit**	**48.9**	**34**	
4.1.1	Ease of getting credit*	50.0	87	
4.1.2	Domestic credit to private sector, % GDP	100.4	27	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**34.2**	**103**	○ ◇
4.2.1	Ease of protecting minority investors*	63.3	48	
4.2.2	Market capitalization, % GDP	22.0	59	○
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	57	
4.3	**Trade, competition, & market scale**	**67.7**	**43**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	67.9	69	
4.3.3	Domestic market scale, bn PPP$	312.5	53	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**32.4**	**59**	◇
5.1	**Knowledge workers**	**46.1**	**43**	
5.1.1	Knowledge-intensive employment, %	29.8	45	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.6	36	
5.1.4	GERD financed by business, %	44.8	36	
5.1.5	Females employed w/advanced degrees, %	17.9	29	
5.2	**Innovation linkages**	**21.5**	**77**	◇
5.2.1	University/industry research collaboration†	25.6	122	○ ◇
5.2.2	State of cluster development†	32.3	117	○ ◇
5.2.3	GERD financed by abroad, %	14.9	27	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	37	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.3	39	
5.3	**Knowledge absorption**	**29.5**	**86**	◇
5.3.1	Intellectual property payments, % total trade	0.5	67	
5.3.2	High-tech imports, % total trade	5.4	100	○
5.3.3	ICT services imports, % total trade	1.1	69	
5.3.4	FDI net inflows, % GDP	1.3	101	○
5.3.5	Research talent, % in business enterprise	30.3	41	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**25.1**	**53**	
6.1	**Knowledge creation**	**19.9**	**46**	
6.1.1	Patents by origin/bn PPP$ GDP	2.0	44	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.4	42	
6.1.3	Utility models by origin/bn PPP$ GDP	0.0	61	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	20.5	23	●
6.1.5	Citable documents H-index	31.9	29	
6.2	**Knowledge impact**	**42.3**	**40**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.2	93	○
6.2.2	New businesses/th pop. 15-64 ⓘ	0.8	77	
6.2.3	Computer software spending, % GDP	0.6	14	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	25.7	7	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.1	69	
6.3	**Knowledge diffusion**	**13.2**	**84**	◇
6.3.1	Intellectual property receipts, % total trade	0.1	54	
6.3.2	High-tech net exports, % total trade	2.0	54	
6.3.3	ICT services exports, % total trade	1.6	64	
6.3.4	FDI net outflows, % GDP	0.1	104	○
	CREATIVE OUTPUTS	**30.1**	**53**	
7.1	**Intangible assets**	**42.9**	**57**	
7.1.1	Trademarks by origin/bn PPP$ GDP	n/a	n/a	
7.1.2	Industrial designs by origin/bn PPP$ GDP	3.6	34	
7.1.3	ICTs & business model creation†	52.7	96	○ ◇
7.1.4	ICTs & organizational model creation†	44.6	96	○ ◇
7.2	**Creative goods & services**	**22.5**	**48**	
7.2.1	Cultural & creative services exports, % total trade	0.7	38	
7.2.2	National feature films/mn pop. 15-69	11.2	13	●
7.2.3	Entertainment & Media market/th pop. 15-69	19.7	27	
7.2.4	Printing & other media, % manufacturing	1.4	36	
7.2.5	Creative goods exports, % total trade	1.1	42	
7.3	**Online creativity**	**12.0**	**48**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	12.0	35	
7.3.2	Country-code TLDs/th pop. 15-69	16.3	31	
7.3.3	Wikipedia edits/mn pop. 15-69	24.3	43	
7.3.4	Mobile app creation/bn PPP$ GDP	3.4	57	

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.

GUATEMALA

GII 2019 rank

107

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
102	105	Upper middle	LCN	17.2	145.2	8,436.4	102

		Score/Value	Rank	
	INSTITUTIONS	**48.1**	**117**	◇
1.1	**Political environment**	**38.2**	**113**	◇
1.1.1	Political and operational stability*	52.6	118	◇
1.1.2	Government effectiveness*	31.0	108	◇
1.2	**Regulatory environment**	**48.9**	**112**	◇
1.2.1	Regulatory quality*	35.1	91	
1.2.2	Rule of law*	18.3	123	◇
1.2.3	Cost of redundancy dismissal, salary weeks	27.0	104	
1.3	**Business environment**	**57.2**	**112**	◇
1.3.1	Ease of starting a business*	86.7	71	
1.3.2	Ease of resolving insolvency*	27.6	124	◇
	HUMAN CAPITAL & RESEARCH	**11.1**	**121**	◇
2.1	**Education**	**26.2**	**115**	◇
2.1.1	Expenditure on education, % GDP	2.8	108	◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	5.1	105	○ ◇
2.1.3	School life expectancy, years	10.8	100	◇
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	10.5	36	●
2.2	**Tertiary education**	**6.9**	**117**	◇
2.2.1	Tertiary enrolment, % gross	21.8	90	◇
2.2.2	Graduates in science & engineering, %	9.8	100	○ ◇
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**0.1**	**117**	
2.3.1	Researchers, FTE/mn pop.	22.2	103	◇
2.3.2	Gross expenditure on R&D, % GDP	0.0	112	◇
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	**30.6**	**112**	◇
3.1	**Information & communication technologies(ICTs)**	**49.0**	**98**	◇
3.1.1	ICT access*	48.7	91	◇
3.1.2	ICT use*	20.8	107	◇
3.1.3	Government's online service*	64.6	83	
3.1.4	E-participation*	61.8	88	
3.2	**General infrastructure**	**11.6**	**127**	○ ◇
3.2.1	Electricity output, kWh/mn pop.	750.9	99	◇
3.2.2	Logistics performance*	16.4	112	◇
3.2.3	Gross capital formation, % GDP	12.1	122	◇
3.3	**Ecological sustainability**	**31.2**	**89**	◇
3.3.1	GDP/unit of energy use	8.5	69	
3.3.2	Environmental performance*	52.3	90	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	121	
	MARKET SOPHISTICATION	**43.2**	**93**	
4.1	**Credit**	**32.3**	**82**	
4.1.1	Ease of getting credit*	80.0	20	●
4.1.2	Domestic credit to private sector, % GDP	33.3	90	
4.1.3	Microfinance gross loans, % GDP	0.2	45	
4.2	**Investment**	**31.7**	**[113]**	
4.2.1	Ease of protecting minority investors*	31.7	126	○ ◇
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**	**65.5**	**50**	●
4.3.1	Applied tariff rate, weighted avg., %	1.4	14	●
4.3.2	Intensity of local competition†	72.8	41	●
4.3.3	Domestic market scale, bn PPP$	145.2	71	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**33.7**	**50**	●
5.1	**Knowledge workers**	**27.2**	**88**	
5.1.1	Knowledge-intensive employment, %	9.1	101	◇
5.1.2	Firms offering formal training, % firms	51.9	17	●
5.1.3	GERD performed by business, % GDP	0.0	93	○ ◇
5.1.4	GERD financed by business, %	n/a	n/a	
5.1.5	Females employed w/advanced degrees, %	2.2	99	◇
5.2	**Innovation linkages**	**39.4**	**29**	● ◆
5.2.1	University/industry research collaboration†	41.6	62	
5.2.2	State of cluster development†	42.9	82	
5.2.3	GERD financed by abroad, %	49.0	4	● ◆
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	101	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**34.4**	**59**	
5.3.1	Intellectual property payments, % total trade	1.2	27	●
5.3.2	High-tech imports, % total trade	9.9	31	●
5.3.3	ICT services imports, % total trade	0.9	75	
5.3.4	FDI net inflows, % GDP	1.6	91	
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**12.5**	**111**	
6.1	**Knowledge creation**	**1.3**	**126**	
6.1.1	Patents by origin/bn PPP$ GDP	0.0	125	○
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	96	
6.1.3	Utility models by origin/bn PPP$ GDP	0.1	60	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.5	127	○ ◇
6.1.5	Citable documents H-index	3.6	108	
6.2	**Knowledge impact**	**24.7**	**106**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.5	99	
6.2.2	New businesses/th pop. 15–64	0.5	83	
6.2.3	Computer software spending, % GDP	0.0	122	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.5	96	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**11.6**	**95**	
6.3.1	Intellectual property receipts, % total trade	0.0	70	
6.3.2	High-tech net exports, % total trade	1.4	62	
6.3.3	ICT services exports, % total trade	1.5	70	
6.3.4	FDI net outflows, % GDP	0.1	100	
	CREATIVE OUTPUTS	**21.1**	**90**	
7.1	**Intangible assets**	**39.8**	**69**	
7.1.1	Trademarks by origin/bn PPP$ GDP	45.0	56	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.1	112	
7.1.3	ICTs & business model creation†	64.4	52	●
7.1.4	ICTs & organizational model creation†	57.0	56	●
7.2	**Creative goods & services**	**2.9**	**[110]**	
7.2.1	Cultural & creative services exports, % total trade	0.0	94	
7.2.2	National feature films/mn pop. 15–69	1.2	77	
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	0.3	74	
7.3	**Online creativity**	**1.8**	**87**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.1	59	
7.3.2	Country-code TLDs/th pop. 15–69	0.5	93	
7.3.3	Wikipedia edits/mn pop. 15–69	3.9	88	
7.3.4	Mobile app creation/bn PPP$ GDP	0.0	97	○

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.

GUINEA

GII 2019 rank

125

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
124	127	Low	SSF	13.1	30.3	2,309.6	n/a

		Score/Value	Rank	
	INSTITUTIONS	**50.6**	**108**	
1.1	**Political environment**	**33.4**	**122**	
1.1.1	Political and operational stability*	57.9	101	
1.1.2	Government effectiveness*	21.2	123	
1.2	**Regulatory environment**	**56.8**	**93**	
1.2.1	Regulatory quality*	19.5	119	
1.2.2	Rule of law*	13.9	125	
1.2.3	Cost of redundancy dismissal, salary weeks	10.1	30	●
1.3	**Business environment**	**61.5**	**96**	
1.3.1	Ease of starting a business*	83.9	86	●
1.3.2	Ease of resolving insolvency*	39.1	102	
	HUMAN CAPITAL & RESEARCH	**6.5**	**128**	○ ◇
2.1	**Education**	**13.8**	**128**	○ ◇
2.1.1	Expenditure on education, % GDP	2.2	116	◇
2.1.2	Government funding/pupil, secondary, % GDP/cap ⊙	8.7	100	◇
2.1.3	School life expectancy, years ⊙	9.1	109	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ⊙	33.1	108	
2.2	**Tertiary education**	**5.8**	**120**	
2.2.1	Tertiary enrolment, % gross ⊙	11.3	105	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, % ⊙	0.9	88	
2.3	**Research & development (R&D)**	**0.0**	**[120]**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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	**27.0**	**121**	
3.1	**Information & communication technologies(ICTs)**	**27.1**	**123**	
3.1.1	ICT access*	29.8	118	
3.1.2	ICT use*	12.0	121	
3.1.3	Government's online service*	31.3	118	
3.1.4	E-participation*	35.4	115	
3.2	**General infrastructure**	**22.4**	**111**	
3.2.1	Electricity output, kWh/mn pop.	n/a	n/a	
3.2.2	Logistics performance*	6.4	119	
3.2.3	Gross capital formation, % GDP	19.8	94	
3.3	**Ecological sustainability**	**31.4**	**88**	
3.3.1	GDP/unit of energy use	n/a	n/a	
3.3.2	Environmental performance*	46.6	106	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	119	
	MARKET SOPHISTICATION	**31.4**	**125**	
4.1	**Credit**	**11.8**	**123**	
4.1.1	Ease of getting credit*	30.0	115	
4.1.2	Domestic credit to private sector, % GDP ⊙	9.6	125	○
4.1.3	Microfinance gross loans, % GDP ⊙	0.2	43	●
4.2	**Investment**	**40.0**	**[72]**	
4.2.1	Ease of protecting minority investors*	40.0	114	
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**	**42.3**	**125**	
4.3.1	Applied tariff rate, weighted avg., %	12.3	121	
4.3.2	Intensity of local competition†	75.9	21	● ◆
4.3.3	Domestic market scale, bn PPP$	30.3	115	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**23.3**	**[110]**	
5.1	**Knowledge workers**	**16.6**	**[114]**	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	16.0	83	◇
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, %	n/a	n/a	
5.2	**Innovation linkages**	**33.5**	**[42]**	
5.2.1	University/industry research collaboration†	67.2	14	● ◆
5.2.2	State of cluster development†	50.3	47	● ◆
5.2.3	GERD financed by abroad, %	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	93	○ ◇
5.3	**Knowledge absorption**	**19.8**	**124**	◇
5.3.1	Intellectual property payments, % total trade ⊙	0.0	115	
5.3.2	High-tech imports, % total trade ⊙	2.0	126	○ ◇
5.3.3	ICT services imports, % total trade	0.2	119	◇
5.3.4	FDI net inflows, % GDP	8.2	18	●
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**2.9**	**129**	○ ◇
6.1	**Knowledge creation**	**1.1**	**127**	○ ◇
6.1.1	Patents by origin/bn PPP$ GDP	0.0	122	◇
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	99	○ ◇
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.1	121	◇
6.1.5	Citable documents H-index	1.4	123	◇
6.2	**Knowledge impact**	**1.6**	**[128]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15-64 ⊙	0.1	98	
6.2.3	Computer software spending, % GDP	0.0	106	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.4	123	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**5.9**	**128**	○
6.3.1	Intellectual property receipts, % total trade ⊙	-0.1	109	○ ◇
6.3.2	High-tech net exports, % total trade ⊙	0.1	108	
6.3.3	ICT services exports, % total trade	0.0	127	○
6.3.4	FDI net outflows, % GDP	0.1	99	
	CREATIVE OUTPUTS	**19.6**	**98**	
7.1	**Intangible assets**	**38.6**	**77**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP	8.4	108	
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.7	55	●
7.1.3	ICTs & business model creation†	68.2	35	● ◆
7.1.4	ICTs & organizational model creation†	60.0	45	● ◆
7.2	**Creative goods & services**	**1.2**	**[123]**	
7.2.1	Cultural & creative services exports, % total trade	0.1	90	
7.2.2	National feature films/mn pop. 15-69 ⊙	0.8	85	
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	120	
7.3	**Online creativity**	**0.0**	**128**	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.0	126	
7.3.2	Country-code TLDs/th pop. 15-69	0.0	128	○
7.3.3	Wikipedia edits/mn pop. 15-69 ⊙	0.0	126	○
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.

HONDURAS

GII 2019 rank

104

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
104	**101**	**Lower middle**	**LCN**	**9.4**	**49.0**	**5,212.0**	**105**

		Score/Value	Rank	
	INSTITUTIONS	**46.9**	**121**	○
1.1	**Political environment**	**40.9**	**101**	
1.1.1	Political and operational stability*	54.4	111	
1.1.2	Government effectiveness*	34.1	98	
1.2	**Regulatory environment**	**45.2**	**117**	
1.2.1	Regulatory quality*	30.2	99	
1.2.2	Rule of law*	18.7	121	○ ◇
1.2.3	Cost of redundancy dismissal, salary weeks	30.3	116	
1.3	**Business environment**	**54.6**	**118**	◇
1.3.1	Ease of starting a business*	77.1	115	
1.3.2	Ease of resolving insolvency*	32.1	114	◇
	HUMAN CAPITAL & RESEARCH	**18.3**	**100**	
2.1	**Education**	**42.1**	**78**	
2.1.1	Expenditure on education, % GDP	6.0	21	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap. ◷	20.0	50	
2.1.3	School life expectancy, years ◷	10.2	105	◇
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	16.7	74	
2.2	**Tertiary education**	**12.6**	**106**	
2.2.1	Tertiary enrolment, % gross ◷	20.8	91	
2.2.2	Graduates in science & engineering, % ◷	14.7	89	
2.2.3	Tertiary inbound mobility, % ◷	0.8	93	
2.3	**Research & development (R&D)**	**0.0**	**119**	
2.3.1	Researchers, FTE/mn pop. ◷	22.8	102	○
2.3.2	Gross expenditure on R&D, % GDP ◷	0.0	113	○ ◇
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	**32.5**	**109**	
3.1	**Information & communication technologies(ICTs)**	**41.7**	**101**	
3.1.1	ICT access*	40.7	103	
3.1.2	ICT use*	20.3	108	◇
3.1.3	Government's online service*	51.4	104	
3.1.4	E-participation*	54.5	98	
3.2	**General infrastructure**	**27.0**	**91**	
3.2.1	Electricity output, kWh/mn pop.	964.1	93	
3.2.2	Logistics performance*	25.3	88	
3.2.3	Gross capital formation, % GDP	24.1	53	●
3.3	**Ecological sustainability**	**28.8**	**105**	
3.3.1	GDP/unit of energy use	6.7	91	
3.3.2	Environmental performance*	51.5	93	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.6	79	
	MARKET SOPHISTICATION	**45.7**	**75**	
4.1	**Credit**	**38.7**	**58**	●
4.1.1	Ease of getting credit*	85.0	11	●
4.1.2	Domestic credit to private sector, % GDP	57.4	57	●
4.1.3	Microfinance gross loans, % GDP	0.3	40	
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**	**56.9**	**81**	
4.3.1	Applied tariff rate, weighted avg., % ◷	2.8	62	
4.3.2	Intensity of local competition†	69.5	63	
4.3.3	Domestic market scale, bn PPP$	49.0	96	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**28.9**	**76**	
5.1	**Knowledge workers**	**33.5**	**[77]**	
5.1.1	Knowledge-intensive employment, %	12.2	94	
5.1.2	Firms offering formal training, % firms	47.7	24	●
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, %	3.5	96	
5.2	**Innovation linkages**	**21.8**	**74**	
5.2.1	University/industry research collaboration†	37.9	81	
5.2.2	State of cluster development†	46.0	68	
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	106	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**31.5**	**76**	
5.3.1	Intellectual property payments, % total trade	0.7	56	●
5.3.2	High-tech imports, % total trade	7.5	64	
5.3.3	ICT services imports, % total trade	0.8	82	
5.3.4	FDI net inflows, % GDP	5.7	27	●
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**12.9**	**110**	
6.1	**Knowledge creation**	**1.8**	**124**	○
6.1.1	Patents by origin/bn PPP$ GDP	0.1	112	
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	46	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.5	120	○
6.1.5	Citable documents H-index	1.6	121	○ ◇
6.2	**Knowledge impact**	**15.1**	**[114]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.3	60	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.7	66	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**21.6**	**45**	●
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	0.5	78	
6.3.3	ICT services exports, % total trade	3.0	29	●
6.3.4	FDI net outflows, % GDP	1.3	47	● ◆
	CREATIVE OUTPUTS	**20.2**	**96**	
7.1	**Intangible assets**	**38.7**	**75**	
7.1.1	Trademarks by origin/bn PPP$ GDP	49.5	49	●
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.1	111	○
7.1.3	ICTs & business model creation†	60.3	64	
7.1.4	ICTs & organizational model creation†	55.3	59	
7.2	**Creative goods & services**	**2.4**	**[114]**	
7.2.1	Cultural & creative services exports, % total trade	0.0	107	
7.2.2	National feature films/mn pop. 15–69	2.2	61	
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	0.1	108	
7.3	**Online creativity**	**0.7**	**104**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.6	106	
7.3.2	Country-code TLDs/th pop. 15–69	0.4	98	
7.3.3	Wikipedia edits/mn pop. 15–69 ◷	2.9	95	
7.3.4	Mobile app creation/bn PPP$ GDP	0.1	86	

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.

HONG KONG, CHINA

GII 2019 rank

13

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
16	8	High	SEAO	7.4	484.0	64,215.7	14

	INSTITUTIONS	Score/Value	Rank	
	INSTITUTIONS	**91.1**	**7**	
1.1	**Political environment**	**93.4**	**4**	
1.1.1	Political and operational stability*	94.7	4	
1.1.2	Government effectiveness*	92.7	5	
1.2	**Regulatory environment**	**98.0**	**3**	●
1.2.1	Regulatory quality*	100.0	1	● ◆
1.2.2	Rule of law*	91.8	12	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	**Business environment**	**81.9**	**28**	
1.3.1	Ease of starting a business*	98.2	5	◆
1.3.2	Ease of resolving insolvency*	65.7	41	◇

	HUMAN CAPITAL & RESEARCH	Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**46.1**	**28**	◇
2.1	**Education**	**53.6**	**48**	
2.1.1	Expenditure on education, % GDP	3.3	96	○ ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	22.2	40	
2.1.3	School life expectancy, years	16.5	21	
2.1.4	PISA scales in reading, maths, & science	532.6	2	● ◆
2.1.5	Pupil-teacher ratio, secondary	11.5	43	
2.2	**Tertiary education**	**50.0**	**15**	
2.2.1	Tertiary enrolment, % gross	73.8	23	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	11.4	16	
2.3	**Research & development (R&D)**	**34.7**	**33**	◇
2.3.1	Researchers, FTE/mn pop	3,411.7	27	◇
2.3.2	Gross expenditure on R&D, % GDP	0.8	43	◇
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*	80.1	7	

	INFRASTRUCTURE	Score/Value	Rank	
	INFRASTRUCTURE	**67.9**	**4**	◆
3.1	**Information & communication technologies(ICTs)**	**87.3**	**[18]**	
3.1.1	ICT access*	91.4	4	◆
3.1.2	ICT use*	83.2	8	
3.1.3	Government's online service*	n/a	n/a	
3.1.4	E-participation*	n/a	n/a	
3.2	**General infrastructure**	**44.1**	**34**	
3.2.1	Electricity output, kWh/mn pop	5,205.2	41	
3.2.2	Logistics performance*	86.8	12	
3.2.3	Gross capital formation, % GDP	22.2	74	○
3.3	**Ecological sustainability**	**72.2**	**2**	● ◆
3.3.1	GDP/unit of energy use	27.0	1	● ◆
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.2	44	

	MARKET SOPHISTICATION	Score/Value	Rank	
	MARKET SOPHISTICATION	**77.3**	**3**	● ◆
4.1	**Credit**	**87.5**	**2**	● ◆
4.1.1	Ease of getting credit*	75.0	29	
4.1.2	Domestic credit to private sector, % GDP ⊙	203.8	1	● ◆
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**67.7**	**11**	◆
4.2.1	Ease of protecting minority investors*	78.3	10	◆
4.2.2	Market capitalization, % GDP	1,099.6	1	● ◆
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	26	
4.3	**Trade, competition, & market scale**	**76.8**	**16**	
4.3.1	Applied tariff rate, weighted avg., %	0.0	1	● ◆
4.3.2	Intensity of local competition†	85.6	2	● ◆
4.3.3	Domestic market scale, bn PPP$	484.0	41	

	BUSINESS SOPHISTICATION	Score/Value	Rank	
	BUSINESS SOPHISTICATION	**51.1**	**20**	
5.1	**Knowledge workers**	**51.9**	**35**	◇
5.1.1	Knowledge-intensive employment, % ⊙	39.0	29	◇
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.4	43	◇
5.1.4	GERD financed by business, %	50.0	26	
5.1.5	Females employed w/advanced degrees, % ⊙	15.9	41	◇
5.2	**Innovation linkages**	**44.7**	**21**	
5.2.1	University/industry research collaboration†	66.4	15	
5.2.2	State of cluster development†	72.6	6	◆
5.2.3	GERD financed by abroad, %	4.4	65	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.2	4	◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	1.1	25	◇
5.3	**Knowledge absorption**	**56.6**	**8**	
5.3.1	Intellectual property payments, % total trade	0.3	76	○ ◇
5.3.2	High-tech imports, % total trade	49.8	1	● ◆
5.3.3	ICT services imports, % total trade	0.3	112	○ ◇
5.3.4	FDI net inflows, % GDP	45.3	1	● ◆
5.3.5	Research talent, % in business enterprise	37.3	34	◇

	KNOWLEDGE & TECHNOLOGY OUTPUTS	Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**32.9**	**33**	◇
6.1	**Knowledge creation**	**21.5**	**[39]**	
6.1.1	Patents by origin/bn PPP$ GDP	0.7	70	◇
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	1.1	22	
6.1.4	Scientific & technical articles/bn PPP$ GDP	n/a	n/a	
6.1.5	Citable documents H-index	35.5	25	
6.2	**Knowledge impact**	**50.1**	**14**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.1	41	
6.2.2	New businesses/th pop. 15-64	27.3	1	● ◆
6.2.3	Computer software spending, % GDP	0.4	27	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.7	55	
6.2.5	High- & medium-high-tech manufactures, %	0.1	82	○ ◇
6.3	**Knowledge diffusion**	**27.0**	**36**	
6.3.1	Intellectual property receipts, % total trade	0.1	52	◇
6.3.2	High-tech net exports, % total trade ⊙	0.1	104	○ ◇
6.3.3	ICT services exports, % total trade	0.4	103	○ ◇
6.3.4	FDI net outflows, % GDP	26.2	1	● ◆

	CREATIVE OUTPUTS	Score/Value	Rank	
	CREATIVE OUTPUTS	**55.9**	**3**	● ◆
7.1	**Intangible assets**	**50.2**	**35**	
7.1.1	Trademarks by origin/bn PPP$ GDP	64.8	31	
7.1.2	Industrial designs by origin/bn PPP$ GDP	2.7	44	
7.1.3	ICTs & business model creation†	74.6	19	
7.1.4	ICTs & organizational model creation†	67.6	23	◇
7.2	**Creative goods & services**	**70.5**	**1**	● ◆
7.2.1	Cultural & creative services exports, % total trade	0.1	76	○ ◇
7.2.2	National feature films/mn pop. 15-69 ⊙	10.4	17	
7.2.3	Entertainment & Media market/th pop. 15-69	50.9	16	
7.2.4	Printing & other media, % manufacturing	4.8	1	● ◆
7.2.5	Creative goods exports, % total trade	9.9	1	● ◆
7.3	**Online creativity**	**52.8**	**10**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	71.9	8	
7.3.2	Country-code TLDs/th pop. 15-69	12.3	36	◇
7.3.3	Wikipedia edits/mn pop. 15-69	84.1	11	
7.3.4	Mobile app creation/bn PPP$ GDP	70.2	5	◆

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

HUNGARY

GII 2019 rank

33

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
26	39	High	EUR	9.7	308.2	31,902.7	33

		Score/Value	Rank	
	INSTITUTIONS	**71.6**	**41**	
1.1	**Political environment**	**67.4**	**41**	
1.1.1	Political and operational stability*	84.2	25	
1.1.2	Government effectiveness*	59.0	43	◇
1.2	**Regulatory environment**	**75.8**	**36**	
1.2.1	Regulatory quality*	59.4	42	
1.2.2	Rule of law*	60.4	40	
1.2.3	Cost of redundancy dismissal, salary weeks	13.4	50	
1.3	**Business environment**	**71.5**	**59**	
1.3.1	Ease of starting a business*	87.9	66	
1.3.2	Ease of resolving insolvency*	55.0	60	
	HUMAN CAPITAL & RESEARCH	**41.0**	**41**	
2.1	**Education**	**51.8**	**52**	
2.1.1	Expenditure on education, % GDP	4.6	59	
2.1.2	Government funding/pupil, secondary, % GDP/cap	21.2	45	
2.1.3	School life expectancy, years	15.1	49	
2.1.4	PISA scales in reading, maths, & science	474.4	36	
2.1.5	Pupil-teacher ratio, secondary ⊙	10.0	30	
2.2	**Tertiary education**	**36.8**	**47**	
2.2.1	Tertiary enrolment, % gross ⊙	48.0	59	
2.2.2	Graduates in science & engineering, %	22.8	45	
2.2.3	Tertiary inbound mobility, %	8.9	22	
2.3	**Research & development (R&D)**	**34.4**	**34**	
2.3.1	Researchers, FTE/mn pop.	2,924.0	31	
2.3.2	Gross expenditure on R&D, % GDP	1.4	25	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	52.5	27	
2.3.4	QS university ranking, average score top 3*	20.5	50	
	INFRASTRUCTURE	**52.7**	**40**	
3.1	**Information & communication technologies(ICTs)**	**71.5**	**54**	◇
3.1.1	ICT access*	77.9	34	
3.1.2	ICT use*	63.6	48	◇
3.1.3	Government's online service*	73.6	57	◇
3.1.4	E-participation*	70.8	67	○ ◇
3.2	**General infrastructure**	**37.8**	**52**	
3.2.1	Electricity output, kWh/mn pop.	3,354.0	58	
3.2.2	Logistics performance*	63.4	30	
3.2.3	Gross capital formation, % GDP	23.3	62	
3.3	**Ecological sustainability**	**48.9**	**35**	
3.3.1	GDP/unit of energy use	9.4	61	
3.3.2	Environmental performance*	65.0	39	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	7.6	11	● ◆
	MARKET SOPHISTICATION	**45.7**	**76**	○
4.1	**Credit**	**44.5**	**46**	
4.1.1	Ease of getting credit*	75.0	29	
4.1.2	Domestic credit to private sector, % GDP	33.4	89	○ ◇
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**27.1**	**124**	○ ◇
4.2.1	Ease of protecting minority investors*	50.0	93	○ ◇
4.2.2	Market capitalization, % GDP	18.3	62	○
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	56	○
4.3	**Trade, competition, & market scale**	**65.5**	**51**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	59.3	110	○ ◇
4.3.3	Domestic market scale, bn PPP$	308.2	54	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**40.8**	**33**	
5.1	**Knowledge workers**	**42.1**	**51**	
5.1.1	Knowledge-intensive employment, %	34.3	38	
5.1.2	Firms offering formal training, % firms	15.8	84	○ ◇
5.1.3	GERD performed by business, % GDP	1.0	22	
5.1.4	GERD financed by business, %	56.4	17	
5.1.5	Females employed w/advanced degrees, %	14.4	43	
5.2	**Innovation linkages**	**27.3**	**57**	
5.2.1	University/industry research collaboration†	44.4	53	
5.2.2	State of cluster development†	46.8	62	
5.2.3	GERD financed by abroad, %	16.6	21	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	73	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.4	35	
5.3	**Knowledge absorption**	**53.0**	**16**	●
5.3.1	Intellectual property payments, % total trade	1.5	22	
5.3.2	High-tech imports, % total trade	13.2	17	●
5.3.3	ICT services imports, % total trade	1.3	58	
5.3.4	FDI net inflows, % GDP	13.6	9	●
5.3.5	Research talent, % in business enterprise	61.7	11	●
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**42.8**	**17**	●
6.1	**Knowledge creation**	**20.3**	**43**	
6.1.1	Patents by origin/bn PPP$ GDP	2.0	42	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.5	36	
6.1.3	Utility models by origin/bn PPP$ GDP	0.7	31	
6.1.4	Scientific & technical articles/bn PPP$ GDP	15.8	34	
6.1.5	Citable documents H-index	28.3	33	
6.2	**Knowledge impact**	**49.6**	**15**	●
6.2.1	Growth rate of PPP$ GDP/worker, %	1.4	54	
6.2.2	New businesses/th pop. 15–64	3.4	37	
6.2.3	Computer software spending, % GDP	0.3	36	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	20.5	16	●
6.2.5	High- & medium-high-tech manufactures, %	0.6	8	● ◆
6.3	**Knowledge diffusion**	**58.4**	**8**	● ◆
6.3.1	Intellectual property receipts, % total trade	1.6	16	●
6.3.2	High-tech net exports, % total trade	12.5	11	● ◆
6.3.3	ICT services exports, % total trade	1.9	58	
6.3.4	FDI net outflows, % GDP	11.6	1	● ◆
	CREATIVE OUTPUTS	**34.6**	**38**	
7.1	**Intangible assets**	**43.0**	**56**	
7.1.1	Trademarks by origin/bn PPP$ GDP	40.5	64	○
7.1.2	Industrial designs by origin/bn PPP$ GDP	3.2	40	
7.1.3	ICTs & business model creation†	65.5	50	
7.1.4	ICTs & organizational model creation†	60.3	42	
7.2	**Creative goods & services**	**31.6**	**24**	
7.2.1	Cultural & creative services exports, % total trade	0.8	36	
7.2.2	National feature films/mn pop. 15–69	5.2	42	
7.2.3	Entertainment & Media market/th pop. 15–69	14.1	29	◇
7.2.4	Printing & other media, % manufacturing	0.8	75	○
7.2.5	Creative goods exports, % total trade	6.1	9	● ◆
7.3	**Online creativity**	**20.6**	**32**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	10.4	39	
7.3.2	Country-code TLDs/th pop. 15–69	29.1	20	
7.3.3	Wikipedia edits/mn pop. 15–69	53.7	21	
7.3.4	Mobile app creation/bn PPP$ GDP	6.7	46	

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.

ICELAND

GII 2019 rank

20

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
18	22	High	EUR	0.3	19.3	55,917.3	23

		Score/Value	Rank	
1	**INSTITUTIONS**	**86.8**	**15**	
1.1	**Political environment**	**85.5**	**15**	
1.1.1	Political and operational stability*	93.0	7	
1.1.2	Government effectiveness*	81.7	17	
1.2	**Regulatory environment**	**88.5**	**16**	
1.2.1	Regulatory quality*	80.4	19	
1.2.2	Rule of law*	88.9	17	
1.2.3	Cost of redundancy dismissal, salary weeks	13.0	42	
1.3	**Business environment**	**86.3**	**16**	
1.3.1	Ease of starting a business*	90.7	50	
1.3.2	Ease of resolving insolvency*	81.9	11	

		Score/Value	Rank	
2	**HUMAN CAPITAL & RESEARCH**	**45.4**	**30**	◇
2.1	**Education**	**64.4**	**9**	
2.1.1	Expenditure on education, % GDP	7.7	2	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	20.8	46	
2.1.3	School life expectancy, years	19.2	4	●
2.1.4	PISA scales in reading, maths, & science	480.9	33	◇
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**30.0**	**68**	◇
2.2.1	Tertiary enrolment, % gross ⊙	73.6	24	
2.2.2	Graduates in science & engineering, % ⊙	15.7	84	○ ◇
2.2.3	Tertiary inbound mobility, %	6.8	34	
2.3	**Research & development (R&D)**	**41.7**	**24**	◇
2.3.1	Researchers, FTE/mn pop.	6,118.9	8	
2.3.2	Gross expenditure on R&D, % GDP	2.2	14	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	45.8	36	
2.3.4	QS university ranking, average score top 3*	0.0	78	○ ◇

		Score/Value	Rank	
3	**INFRASTRUCTURE**	**59.2**	**24**	
3.1	**Information & communication technologies(ICTs)**	**80.7**	**30**	◇
3.1.1	ICT access*	92.9	2	● ◆
3.1.2	ICT use*	88.2	3	● ◆
3.1.3	Government's online service*	72.9	63	◇
3.1.4	E-participation*	68.5	73	◇
3.2	**General infrastructure**	**57.3**	**6**	
3.2.1	Electricity output, kWh/mn pop.	56,585.3	1	● ◆
3.2.2	Logistics performance*	54.3	39	◇
3.2.3	Gross capital formation, % GDP	23.1	64	
3.3	**Ecological sustainability**	**39.5**	**58**	◇
3.3.1	GDP/unit of energy use	2.7	118	○ ◇
3.3.2	Environmental performance*	78.6	11	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	5.0	23	

		Score/Value	Rank	
4	**MARKET SOPHISTICATION**	**56.0**	**35**	
4.1	**Credit**	**51.2**	**29**	
4.1.1	Ease of getting credit*	60.0	66	
4.1.2	Domestic credit to private sector, % GDP	89.8	30	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**64.2**	**16**	
4.2.1	Ease of protecting minority investors*	70.0	27	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital deals/bn PPP$ GDP	0.2	6	
4.3	**Trade, competition, & market scale**	**52.6**	**98**	○ ◇
4.3.1	Applied tariff rate, weighted avg., %	1.6	17	
4.3.2	Intensity of local competition†	70.0	61	◇
4.3.3	Domestic market scale, bn PPP$	19.3	126	○ ◇

		Score/Value	Rank	
5	**BUSINESS SOPHISTICATION**	**48.0**	**23**	◇
5.1	**Knowledge workers**	**66.8**	**14**	
5.1.1	Knowledge-intensive employment, %	50.0	6	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	1.4	14	
5.1.4	GERD financed by business, %	36.4	51	◇
5.1.5	Females employed w/advanced degrees, %	24.4	15	
5.2	**Innovation linkages**	**47.7**	**16**	
5.2.1	University/industry research collaboration†	59.7	24	
5.2.2	State of cluster development†	52.6	43	◇
5.2.3	GERD financed by abroad, %	24.5	14	◆
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	41	◇
5.2.5	Patent families 2+ offices/bn PPP$ GDP	3.9	13	
5.3	**Knowledge absorption**	**29.5**	**84**	○ ◇
5.3.1	Intellectual property payments, % total trade	1.1	33	
5.3.2	High-tech imports, % total trade	5.1	105	○ ◇
5.3.3	ICT services imports, % total trade	2.3	19	
5.3.4	FDI net inflows, % GDP	-9.3	129	○ ◇
5.3.5	Research talent, % in business enterprise	42.7	30	

		Score/Value	Rank	
6	**KNOWLEDGE & TECHNOLOGY OUTPUTS**	**37.6**	**23**	
6.1	**Knowledge creation**	**40.0**	**19**	
6.1.1	Patents by origin/bn PPP$ GDP	5.1	24	
6.1.2	PCT patents by origin/bn PPP$ GDP	2.5	14	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	32.6	5	● ◆
6.1.5	Citable documents H-index	18.6	40	◇
6.2	**Knowledge impact**	**39.6**	**51**	◇
6.2.1	Growth rate of PPP$ GDP/worker, %	1.3	56	
6.2.2	New businesses/th pop. 15–64	12.1	10	
6.2.3	Computer software spending, % GDP	0.3	44	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.3	43	
6.2.5	High- & medium-high-tech manufactures, %	0.1	73	○ ◇
6.3	**Knowledge diffusion**	**33.2**	**26**	
6.3.1	Intellectual property receipts, % total trade	2.4	10	
6.3.2	High-tech net exports, % total trade	1.5	60	◇
6.3.3	ICT services exports, % total trade	2.7	37	
6.3.4	FDI net outflows, % GDP	n/a	n/a	

		Score/Value	Rank	
7	**CREATIVE OUTPUTS**	**50.4**	**9**	
7.1	**Intangible assets**	**54.0**	**24**	
7.1.1	Trademarks by origin/bn PPP$ GDP	93.8	20	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.8	74	○
7.1.3	ICTs & business model creation†	72.8	26	
7.1.4	ICTs & organizational model creation†	75.5	13	
7.2	**Creative goods & services**	**30.9**	**25**	
7.2.1	Cultural & creative services exports, % total trade	0.6	40	
7.2.2	National feature films/mn pop. 15–69 ⊙	98.5	1	● ◆
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	1.7	24	
7.2.5	Creative goods exports, % total trade	0.1	105	○ ◇
7.3	**Online creativity**	**62.5**	**4**	● ◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	100.0	1	● ◆
7.3.2	Country-code TLDs/th pop. 15–69	78.2	5	● ◆
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	104.8	4	● ◆
7.3.4	Mobile app creation/bn PPP$ GDP	1.2	64	○ ◇

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

INDIA

GII 2019 rank

52

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
51	**61**	**Lower middle**	**CSA**	**1,354.1**	**10,401.4**	**7,873.7**	**57**

		Score/Value	Rank	
	INSTITUTIONS	**59.5**	**77**	
1.1	**Political environment**	**53.0**	**71**	
1.1.1	Political and operational stability*	61.4	91	
1.1.2	Government effectiveness*	48.8	65	◆
1.2	**Regulatory environment**	**64.5**	**69**	
1.2.1	Regulatory quality*	35.1	90	
1.2.2	Rule of law*	46.5	64	◆
1.2.3	Cost of redundancy dismissal, salary weeks	15.8	63	
1.3	**Business environment**	**60.9**	**101**	
1.3.1	Ease of starting a business*	81.0	104	
1.3.2	Ease of resolving insolvency*	40.8	95	
	HUMAN CAPITAL & RESEARCH	**33.5**	**53**	◆
2.1	**Education**	**28.0**	**110**	○
2.1.1	Expenditure on education, % GDP ⊙	3.8	84	
2.1.2	Government funding/pupil, secondary, % GDP/cap ⊙	16.8	72	
2.1.3	School life expectancy, years	12.3	87	
2.1.4	PISA scales in reading, maths, & science ⊙	336.0	71	○ ◇
2.1.5	Pupil-teacher ratio, secondary ⊙	28.5	104	○ ◇
2.2	**Tertiary education**	**38.4**	**40**	◆
2.2.1	Tertiary enrolment, % gross	27.5	86	
2.2.2	Graduates in science & engineering, %	32.6	7	● ◆
2.2.3	Tertiary inbound mobility, %	0.1	107	○
2.3	**Research & development (R&D)**	**34.2**	**35**	◆
2.3.1	Researchers, FTE/mn pop. ⊙	216.2	77	
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.6	50	◆
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	73.9	15	● ◆
2.3.4	QS university ranking, average score top 3*	47.3	21	● ◆
	INFRASTRUCTURE	**43.0**	**79**	
3.1	**Information & communication technologies(ICTs)**	**62.5**	**75**	
3.1.1	ICT access*	38.5	105	○
3.1.2	ICT use*	20.8	106	○
3.1.3	Government's online service*	95.1	9	● ◆
3.1.4	E-participation*	95.5	15	● ◆
3.2	**General infrastructure**	**41.9**	**42**	◆
3.2.1	Electricity output, kWh/mn pop.	1,115.8	92	
3.2.2	Logistics performance*	52.1	43	◆
3.2.3	Gross capital formation, % GDP	31.5	17	●
3.3	**Ecological sustainability**	**24.7**	**117**	○
3.3.1	GDP/unit of energy use	9.2	62	
3.3.2	Environmental performance*	30.6	125	○ ◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.8	70	
	MARKET SOPHISTICATION	**56.3**	**33**	◆
4.1	**Credit**	**38.7**	**57**	
4.1.1	Ease of getting credit*	80.0	20	
4.1.2	Domestic credit to private sector, % GDP	49.7	69	
4.1.3	Microfinance gross loans, % GDP	0.8	23	
4.2	**Investment**	**50.8**	**37**	
4.2.1	Ease of protecting minority investors*	80.0	6	● ◆
4.2.2	Market capitalization, % GDP	76.9	20	◆
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	30	◆
4.3	**Trade, competition, & market scale**	**79.4**	**9**	● ◆
4.3.1	Applied tariff rate, weighted avg., %	5.8	93	
4.3.2	Intensity of local competition†	67.6	70	
4.3.3	Domestic market scale, bn PPP$	10,401.4	3	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**31.0**	**65**	
5.1	**Knowledge workers**	**24.1**	**99**	
5.1.1	Knowledge-intensive employment, % ⊙	14.2	91	
5.1.2	Firms offering formal training, % firms	35.9	38	
5.1.3	GERD performed by business, % GDP ⊙	0.3	49	◆
5.1.4	GERD financed by business, %	n/a	n/a	
5.1.5	Females employed w/advanced degrees, % ⊙	1.6	103	○
5.2	**Innovation linkages**	**33.6**	**41**	◆
5.2.1	University/industry research collaboration†	60.1	23	◆
5.2.2	State of cluster development†	60.4	25	◆
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	48	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.2	46	◆
5.3	**Knowledge absorption**	**35.4**	**56**	
5.3.1	Intellectual property payments, % total trade	1.2	29	◆
5.3.2	High-tech imports, % total trade	10.3	27	
5.3.3	ICT services imports, % total trade	1.2	62	
5.3.4	FDI net inflows, % GDP	1.9	83	
5.3.5	Research talent, % in business enterprise ⊙	26.4	46	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**33.5**	**32**	◆
6.1	**Knowledge creation**	**20.9**	**42**	
6.1.1	Patents by origin/bn PPP$ GDP	1.6	52	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.2	51	◆
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.3	77	
6.1.5	Citable documents H-index	38.9	21	● ◆
6.2	**Knowledge impact**	**43.4**	**35**	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.9	4	● ◆
6.2.2	New businesses/th pop. 15–64	0.1	100	○
6.2.3	Computer software spending, % GDP	0.2	65	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.8	65	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.3	33	◆
6.3	**Knowledge diffusion**	**36.1**	**23**	◆
6.3.1	Intellectual property receipts, % total trade	0.1	50	
6.3.2	High-tech net exports, % total trade	2.8	46	
6.3.3	ICT services exports, % total trade	10.4	1	● ◆
6.3.4	FDI net outflows, % GDP	0.3	76	
	CREATIVE OUTPUTS	**23.5**	**78**	
7.1	**Intangible assets**	**37.8**	**81**	
7.1.1	Trademarks by origin/bn PPP$ GDP	25.6	79	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.8	77	
7.1.3	ICTs & business model creation†	61.1	58	
7.1.4	ICTs & organizational model creation†	59.6	47	◆
7.2	**Creative goods & services**	**15.2**	**66**	
7.2.1	Cultural & creative services exports, % total trade	0.7	39	◆
7.2.2	National feature films/mn pop. 15–69 ⊙	2.2	60	
7.2.3	Entertainment & Media market/th pop. 15–69	0.5	60	○
7.2.4	Printing & other media, % manufacturing ⊙	0.6	88	○
7.2.5	Creative goods exports, % total trade	2.7	22	
7.3	**Online creativity**	**3.2**	**76**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.9	98	
7.3.2	Country-code TLDs/th pop. 15–69	0.6	91	
7.3.3	Wikipedia edits/mn pop. 15–69	1.0	105	
7.3.4	Mobile app creation/bn PPP$ GDP	10.7	42	

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.

INDONESIA

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
78	87	Lower middle	SEAO	266.8	3,495.9	13,229.5	85

		Score/Value	Rank	
	INSTITUTIONS	**53.2**	**99**	
1.1	**Political environment**	**53.9**	**68**	◆
1.1.1	Political and operational stability*	66.7	74	
1.1.2	Government effectiveness*	47.5	68	◆
1.2	**Regulatory environment**	**31.1**	**128**	○ ◇
1.2.1	Regulatory quality*	39.1	75	
1.2.2	Rule of law*	37.2	82	
1.2.3	Cost of redundancy dismissal, salary weeks	57.8	125	○ ◇
1.3	**Business environment**	**74.6**	**49**	◆
1.3.1	Ease of starting a business*	81.2	102	
1.3.2	Ease of resolving insolvency*	67.9	33	● ◆

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**21.3**	**90**	
2.1	**Education**	**33.9**	**99**	
2.1.1	Expenditure on education, % GDP	3.6	92	
2.1.2	Government funding/pupil, secondary, % GDP/cap	10.5	94	○
2.1.3	School life expectancy, years	13.4	78	
2.1.4	PISA scales in reading, maths, & science	395.5	63	
2.1.5	Pupil-teacher ratio, secondary	15.3	69	
2.2	**Tertiary education**	**21.5**	**89**	
2.2.1	Tertiary enrolment, % gross	36.3	74	
2.2.2	Graduates in science & engineering, %	19.4	68	
2.2.3	Tertiary inbound mobility, %	0.1	110	○
2.3	**Research & development (R&D)**	**8.4**	**63**	
2.3.1	Researchers, FTE/mn pop. ◷	89.2	86	
2.3.2	Gross expenditure on R&D, % GDP ◷	0.1	109	○ ◇
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*	31.3	36	● ◆

		Score/Value	Rank	
	INFRASTRUCTURE	**44.2**	**75**	◆
3.1	**Information & communication technologies(ICTs)**	**53.7**	**88**	
3.1.1	ICT access*	51.4	85	
3.1.2	ICT use*	44.8	77	◆
3.1.3	Government's online service*	56.9	92	
3.1.4	E-participation*	61.8	88	
3.2	**General infrastructure**	**43.5**	**35**	● ◆
3.2.1	Electricity output, kWh/mn pop.	952.1	94	
3.2.2	Logistics performance*	50.8	45	◆
3.2.3	Gross capital formation, % GDP	33.4	15	●
3.3	**Ecological sustainability**	**35.4**	**76**	
3.3.1	GDP/unit of energy use	11.9	30	●
3.3.2	Environmental performance*	46.9	105	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.7	75	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**48.8**	**64**	
4.1	**Credit**	**29.0**	**96**	
4.1.1	Ease of getting credit*	70.0	40	
4.1.2	Domestic credit to private sector, % GDP	38.7	85	
4.1.3	Microfinance gross loans, % GDP	0.0	61	
4.2	**Investment**	**36.8**	**90**	
4.2.1	Ease of protecting minority investors*	63.3	48	
4.2.2	Market capitalization, % GDP	46.0	32	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	60	
4.3	**Trade, competition, & market scale**	**80.6**	**7**	● ◆
4.3.1	Applied tariff rate, weighted avg., %	2.1	54	◆
4.3.2	Intensity of local competition†	73.2	37	◆
4.3.3	Domestic market scale, bn PPP$	3,495.9	7	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**25.7**	**95**	
5.1	**Knowledge workers**	**10.9**	**122**	○ ◇
5.1.1	Knowledge-intensive employment, %	10.9	97	
5.1.2	Firms offering formal training, % firms	7.7	90	○ ◇
5.1.3	GERD performed by business, % GDP ◷	0.0	78	
5.1.4	GERD financed by business, %	n/a	n/a	
5.1.5	Females employed w/advanced degrees, %	6.0	85	
5.2	**Innovation linkages**	**29.4**	**50**	
5.2.1	University/industry research collaboration†	53.8	34	● ◆
5.2.2	State of cluster development†	60.0	27	● ◆
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	92	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	91	
5.3	**Knowledge absorption**	**36.7**	**48**	
5.3.1	Intellectual property payments, % total trade	1.0	35	◆
5.3.2	High-tech imports, % total trade	8.5	49	
5.3.3	ICT services imports, % total trade	1.3	54	
5.3.4	FDI net inflows, % GDP	1.6	90	
5.3.5	Research talent, % in business enterprise ◷	35.5	37	◆

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**17.6**	**82**	
6.1	**Knowledge creation**	**4.6**	**101**	
6.1.1	Patents by origin/bn PPP$ GDP	0.7	72	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	97	○
6.1.3	Utility models by origin/bn PPP$ GDP	0.1	54	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.6	125	○
6.1.5	Citable documents H-index	12.7	55	
6.2	**Knowledge impact**	**36.7**	**64**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.3	37	
6.2.2	New businesses/th pop. 15–64	0.3	91	
6.2.3	Computer software spending, % GDP	0.3	33	● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.2	85	
6.2.5	High- & medium-high-tech manufactures, % ◷	0.3	37	◆
6.3	**Knowledge diffusion**	**11.5**	**96**	
6.3.1	Intellectual property receipts, % total trade	0.0	76	
6.3.2	High-tech net exports, % total trade	3.1	43	
6.3.3	ICT services exports, % total trade	0.5	101	
6.3.4	FDI net outflows, % GDP	0.0	112	○

		Score/Value	Rank	
	CREATIVE OUTPUTS	**24.0**	**76**	
7.1	**Intangible assets**	**40.0**	**68**	
7.1.1	Trademarks by origin/bn PPP$ GDP	16.0	93	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.7	80	
7.1.3	ICTs & business model creation†	67.1	40	◆
7.1.4	ICTs & organizational model creation†	65.4	27	● ◆
7.2	**Creative goods & services**	**13.9**	**73**	
7.2.1	Cultural & creative services exports, % total trade	0.0	99	
7.2.2	National feature films/mn pop. 15–69 ◷	0.5	96	○
7.2.3	Entertainment & Media market/th pop. 15–69	2.2	52	◆
7.2.4	Printing & other media, % manufacturing ◷	0.8	77	
7.2.5	Creative goods exports, % total trade	2.9	19	● ◆
7.3	**Online creativity**	**2.0**	**83**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.5	88	
7.3.2	Country-code TLDs/th pop. 15–69	0.4	97	
7.3.3	Wikipedia edits/mn pop. 15–69	2.0	99	
7.3.4	Mobile app creation/bn PPP$ GDP	4.8	49	

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.

IRAN (ISLAMIC REPUBLIC OF)

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
47	86	Upper middle	CSA	82.0	1,652.9	19,556.6	65

		Score/Value	Rank	
	INSTITUTIONS	**48.8**	**116**	○ ◇
1.1	**Political environment**	**46.7**	**90**	
1.1.1	Political and operational stability*	56.1	105	◇
1.1.2	Government effectiveness*	41.9	85	
1.2	**Regulatory environment**	**48.0**	**115**	○ ◇
1.2.1	Regulatory quality*	9.8	127	○ ◇
1.2.2	Rule of law*	28.3	105	
1.2.3	Cost of redundancy dismissal, salary weeks	23.1	96	
1.3	**Business environment**	**51.7**	**123**	○ ◇
1.3.1	Ease of starting a business*	67.8	123	○ ◇
1.3.2	Ease of resolving insolvency*	35.6	109	◇
	HUMAN CAPITAL & RESEARCH	**37.6**	**43**	
2.1	**Education**	**41.0**	**80**	
2.1.1	Expenditure on education, % GDP	3.8	87	
2.1.2	Government funding/pupil, secondary, % GDP/cap	17.7	63	
2.1.3	School life expectancy, years	14.9	55	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	19.0	84	
2.2	**Tertiary education**	**62.6**	**2**	● ◆
2.2.1	Tertiary enrolment, % gross ◷	68.8	30	●
2.2.2	Graduates in science & engineering, %	43.9	3	● ◆
2.2.3	Tertiary inbound mobility, %	0.4	97	○
2.3	**Research & development (R&D)**	**9.1**	**59**	
2.3.1	Researchers, FTE/mn pop. ◷	671.0	60	
2.3.2	Gross expenditure on R&D, % GDP ◷	0.3	83	
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*	23.4	45	
	INFRASTRUCTURE	**46.0**	**68**	
3.1	**Information & communication technologies(ICTs)**	**59.6**	**79**	
3.1.1	ICT access*	72.7	58	
3.1.2	ICT use*	49.8	71	
3.1.3	Government's online service*	63.2	87	
3.1.4	E-participation*	52.8	102	
3.2	**General infrastructure**	**48.6**	**23**	● ◆
3.2.1	Electricity output, kWh/mn pop.	3,601.1	56	
3.2.2	Logistics performance*	36.9	63	
3.2.3	Gross capital formation, % GDP	39.1	8	● ◆
3.3	**Ecological sustainability**	**29.8**	**97**	◇
3.3.1	GDP/unit of energy use	5.9	101	◇
3.3.2	Environmental performance*	58.2	70	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	88	
	MARKET SOPHISTICATION	**40.0**	**100**	◇
4.1	**Credit**	**40.2**	**54**	
4.1.1	Ease of getting credit*	50.0	87	
4.1.2	Domestic credit to private sector, % GDP ◷	66.1	47	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**25.2**	**128**	○ ◇
4.2.1	Ease of protecting minority investors*	33.3	125	○ ◇
4.2.2	Market capitalization, % GDP	24.6	53	
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	n/a	
4.3	**Trade, competition, & market scale**	**54.7**	**90**	
4.3.1	Applied tariff rate, weighted avg., % ◷	15.2	127	○ ◇
4.3.2	Intensity of local competition†	58.0	113	○ ◇
4.3.3	Domestic market scale, bn PPP$	1,652.9	18	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**22.6**	**113**	○ ◇
5.1	**Knowledge workers**	**26.3**	**[93]**	
5.1.1	Knowledge-intensive employment, %	18.7	76	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP ◷	0.1	65	
5.1.4	GERD financed by business, % ◷	30.9	57	
5.1.5	Females employed w/advanced degrees, %	n/a	n/a	
5.2	**Innovation linkages**	**20.3**	**84**	
5.2.1	University/industry research collaboration†	33.6	97	
5.2.2	State of cluster development†	43.9	78	
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	110	○ ◇
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	78	
5.3	**Knowledge absorption**	**21.1**	**120**	○ ◇
5.3.1	Intellectual property payments, % total trade ◷	0.2	92	
5.3.2	High-tech imports, % total trade	4.9	107	
5.3.3	ICT services imports, % total trade ◷	0.5	104	
5.3.4	FDI net inflows, % GDP	0.8	108	◇
5.3.5	Research talent, % in business enterprise ◷	15.0	60	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**27.2**	**46**	
6.1	**Knowledge creation**	**27.9**	**32**	● ◆
6.1.1	Patents by origin/bn PPP$ GDP	9.3	14	● ◆
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	64	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	17.6	27	● ◆
6.1.5	Citable documents H-index	17.6	41	
6.2	**Knowledge impact**	**46.3**	**23**	● ◆
6.2.1	Growth rate of PPP$ GDP/worker, %	3.4	18	●
6.2.2	New businesses/th pop. 15-64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.3	59	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.5	100	
6.2.5	High- & medium-high-tech manufactures, % ◷	0.4	30	●
6.3	**Knowledge diffusion**	**7.5**	**116**	○ ◇
6.3.1	Intellectual property receipts, % total trade ◷	0.0	86	
6.3.2	High-tech net exports, % total trade	0.3	91	
6.3.3	ICT services exports, % total trade ◷	0.6	95	
6.3.4	FDI net outflows, % GDP ◷	0.0	108	
	CREATIVE OUTPUTS	**32.5**	**45**	
7.1	**Intangible assets**	**62.6**	**6**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP	200.7	4	● ◆
7.1.2	Industrial designs by origin/bn PPP$ GDP	10.9	13	● ◆
7.1.3	ICTs & business model creation†	57.6	78	
7.1.4	ICTs & organizational model creation†	47.4	91	
7.2	**Creative goods & services**	**1.4**	**120**	○ ◇
7.2.1	Cultural & creative services exports, % total trade	n/a	n/a	
7.2.2	National feature films/mn pop. 15-69	1.7	71	
7.2.3	Entertainment & Media market/th pop. 15-69	1.7	54	◇
7.2.4	Printing & other media, % manufacturing ◷	0.2	102	○ ◇
7.2.5	Creative goods exports, % total trade	0.1	111	
7.3	**Online creativity**	**3.2**	**77**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1.8	79	
7.3.2	Country-code TLDs/th pop. 15-69	4.7	50	
7.3.3	Wikipedia edits/mn pop. 15-69	9.4	64	
7.3.4	Mobile app creation/bn PPP$ GDP	0.0	96	○

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.

IRELAND

GII 2019 rank

12

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
10	**20**	**High**	**EUR**	**4.8**	**378.5**	**78,784.8**	**10**

		Score/Value	Rank	
	INSTITUTIONS	**85.5**	**18**	
1.1	**Political environment**	**81.7**	**18**	
1.1.1	Political and operational stability*	89.5	15	
1.1.2	Government effectiveness*	77.8	23	
1.2	**Regulatory environment**	**87.3**	**19**	
1.2.1	Regulatory quality*	84.5	17	
1.2.2	Rule of law*	84.2	20	
1.2.3	Cost of redundancy dismissal, salary weeks	14.3	56	○
1.3	**Business environment**	**87.5**	**12**	
1.3.1	Ease of starting a business*	95.9	10	
1.3.2	Ease of resolving insolvency*	79.1	17	
	HUMAN CAPITAL & RESEARCH	**48.4**	**22**	
2.1	**Education**	**49.7**	**61**	○ ◇
2.1.1	Expenditure on education, % GDP	3.8	88	○ ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	16.5	75	○ ◇
2.1.3	School life expectancy, years	18.8	9	●
2.1.4	PISA scales in reading, maths, & science	509.0	10	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**45.4**	**23**	
2.2.1	Tertiary enrolment, % gross ◷	77.6	21	
2.2.2	Graduates in science & engineering, %	25.2	29	
2.2.3	Tertiary inbound mobility, %	8.2	26	
2.3	**Research & development (R&D)**	**50.0**	**20**	
2.3.1	Researchers, FTE/mn pop.	4,288.6	21	
2.3.2	Gross expenditure on R&D, % GDP	1.0	34	◇
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	78.4	12	
2.3.4	QS university ranking, average score top 3*	47.0	22	
	INFRASTRUCTURE	**66.3**	**5**	● ◆
3.1	**Information & communication technologies(ICTs)**	**83.8**	**23**	
3.1.1	ICT access*	81.3	22	
3.1.2	ICT use*	77.9	20	
3.1.3	Government's online service*	82.6	39	◇
3.1.4	E-participation*	93.3	22	
3.2	**General infrastructure**	**45.7**	**32**	
3.2.1	Electricity output, kWh/mn pop.	6,394.0	32	
3.2.2	Logistics performance*	67.7	28	◇
3.2.3	Gross capital formation, % GDP	27.1	34	
3.3	**Ecological sustainability**	**69.6**	**4**	● ◆
3.3.1	GDP/unit of energy use	23.3	3	● ◆
3.3.2	Environmental performance*	78.8	9	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.8	34	
	MARKET SOPHISTICATION	**54.6**	**39**	
4.1	**Credit**	**44.8**	**44**	◇
4.1.1	Ease of getting credit*	70.0	40	
4.1.2	Domestic credit to private sector, % GDP	44.4	76	○ ◇
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**50.1**	**38**	
4.2.1	Ease of protecting minority investors*	75.0	14	
4.2.2	Market capitalization, % GDP	42.4	34	○ ◇
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	14	
4.3	**Trade, competition, & market scale**	**69.0**	**37**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	69.4	64	○ ◇
4.3.3	Domestic market scale, bn PPP$	378.5	48	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**55.8**	**13**	
5.1	**Knowledge workers**	**62.1**	**22**	
5.1.1	Knowledge-intensive employment, %	42.5	21	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.7	27	◇
5.1.4	GERD financed by business, %	49.0	30	
5.1.5	Females employed w/advanced degrees, %	25.6	9	● ◆
5.2	**Innovation linkages**	**46.2**	**17**	
5.2.1	University/industry research collaboration†	69.9	11	
5.2.2	State of cluster development†	60.8	23	
5.2.3	GERD financed by abroad, %	23.6	16	◆
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	18	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	1.8	22	
5.3	**Knowledge absorption**	**59.1**	**5**	●
5.3.1	Intellectual property payments, % total trade	22.2	1	● ◆
5.3.2	High-tech imports, % total trade	8.1	56	○
5.3.3	ICT services imports, % total trade	1.5	46	
5.3.4	FDI net inflows, % GDP	35.3	4	● ◆
5.3.5	Research talent, % in business enterprise	53.3	22	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**56.9**	**6**	●
6.1	**Knowledge creation**	**28.7**	**31**	◇
6.1.1	Patents by origin/bn PPP$ GDP	2.2	39	◇
6.1.2	PCT patents by origin/bn PPP$ GDP	1.6	22	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	13.2	39	◇
6.1.5	Citable documents H-index	33.2	28	
6.2	**Knowledge impact**	**58.6**	**3**	● ◆
6.2.1	Growth rate of PPP$ GDP/worker, %	2.8	28	◆
6.2.2	New businesses/th pop. 15–64	6.7	21	
6.2.3	Computer software spending, % GDP	0.8	2	● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.3	44	
6.2.5	High- & medium-high-tech manufactures, % ◷	0.7	2	● ◆
6.3	**Knowledge diffusion**	**83.4**	**1**	● ◆
6.3.1	Intellectual property receipts, % total trade	2.8	7	●
6.3.2	High-tech net exports, % total trade	9.9	16	
6.3.3	ICT services exports, % total trade	22.7	1	● ◆
6.3.4	FDI net outflows, % GDP	28.7	1	● ◆
	CREATIVE OUTPUTS	**43.3**	**19**	
7.1	**Intangible assets**	**60.5**	**8**	●
7.1.1	Trademarks by origin/bn PPP$ GDP	n/a	n/a	
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.4	59	○
7.1.3	ICTs & business model creation†	76.5	14	
7.1.4	ICTs & organizational model creation†	70.8	20	
7.2	**Creative goods & services**	**18.4**	**59**	○ ◇
7.2.1	Cultural & creative services exports, % total trade	0.2	72	○ ◇
7.2.2	National feature films/mn pop. 15–69 ◷	8.9	21	
7.2.3	Entertainment & Media market/th pop. 15–69	49.6	18	
7.2.4	Printing & other media, % manufacturing	0.5	94	○ ◇
7.2.5	Creative goods exports, % total trade	1.3	40	
7.3	**Online creativity**	**33.7**	**24**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	61.0	11	
7.3.2	Country-code TLDs/th pop. 15–69	22.1	26	
7.3.3	Wikipedia edits/mn pop. 15–69	49.5	24	
7.3.4	Mobile app creation/bn PPP$ GDP	18.3	25	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

ISRAEL

GII 2019 rank

10

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
8	17	High	NAWA	8.5	336.1	37,972.0	11

		Score/Value	Rank	
	INSTITUTIONS	**77.9**	**31**	◇
1.1	**Political environment**	**78.6**	**24**	
1.1.1	Political and operational stability*	75.4	46	◇
1.1.2	Government effectiveness*	80.1	20	
1.2	**Regulatory environment**	**72.6**	**44**	◇
1.2.1	Regulatory quality*	76.1	23	
1.2.2	Rule of law*	73.4	28	◇
1.2.3	Cost of redundancy dismissal, salary weeks	27.4	111	○ ◇
1.3	**Business environment**	**82.5**	**26**	
1.3.1	Ease of starting a business*	92.4	41	
1.3.2	Ease of resolving insolvency*	72.7	27	
	HUMAN CAPITAL & RESEARCH	**54.5**	**14**	
2.1	**Education**	**55.6**	**42**	
2.1.1	Expenditure on education, % GDP	5.9	22	
2.1.2	Government funding/pupil, secondary, % GDP/cap	18.7	56	○
2.1.3	School life expectancy, years	16.0	35	
2.1.4	PISA scales in reading, maths, & science	471.7	38	○ ◇
2.1.5	Pupil-teacher ratio, secondary 🕒	9.8	26	
2.2	**Tertiary education**	**29.7**	**72**	○ ◇
2.2.1	Tertiary enrolment, % gross	62.7	42	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, % 🕒	2.8	67	○ ◇
2.3	**Research & development (R&D)**	**78.2**	**2**	● ◆
2.3.1	Researchers, FTE/mn pop. 🕒	8,250.5	1	● ◆
2.3.2	Gross expenditure on R&D, % GDP	4.6	1	● ◆
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	70.0	17	
2.3.4	QS university ranking, average score top 3*	42.6	27	
	INFRASTRUCTURE	**56.1**	**33**	◇
3.1	**Information & communication technologies(ICTs)**	**80.6**	**31**	◇
3.1.1	ICT access*	80.3	27	
3.1.2	ICT use*	76.2	24	
3.1.3	Government's online service*	82.6	39	◇
3.1.4	E-participation*	83.2	43	◇
3.2	**General infrastructure**	**37.9**	**51**	◇
3.2.1	Electricity output, kWh/mn pop.	7,791.4	24	
3.2.2	Logistics performance*	58.2	36	◇
3.2.3	Gross capital formation, % GDP	20.9	89	○
3.3	**Ecological sustainability**	**50.0**	**30**	
3.3.1	GDP/unit of energy use	12.0	29	
3.3.2	Environmental performance*	75.0	19	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.8	35	
	MARKET SOPHISTICATION	**61.4**	**16**	
4.1	**Credit**	**47.7**	**37**	
4.1.1	Ease of getting credit*	65.0	54	
4.1.2	Domestic credit to private sector, % GDP	66.0	48	◇
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**66.5**	**14**	
4.2.1	Ease of protecting minority investors*	73.3	21	
4.2.2	Market capitalization, % GDP	71.6	21	
4.2.3	Venture capital deals/bn PPP$ GDP	0.4	3	● ◆
4.3	**Trade, competition, & market scale**	**69.8**	**34**	
4.3.1	Applied tariff rate, weighted avg., %	1.9	50	
4.3.2	Intensity of local competition†	75.4	24	
4.3.3	Domestic market scale, bn PPP$	336.1	50	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**66.5**	**3**	● ◆
5.1	**Knowledge workers**	**63.4**	**19**	
5.1.1	Knowledge-intensive employment, %	48.4	8	
5.1.2	Firms offering formal training, % firms	18.6	76	○ ◇
5.1.3	GERD performed by business, % GDP	3.9	1	● ◆
5.1.4	GERD financed by business, %	34.7	54	○ ◇
5.1.5	Females employed w/advanced degrees, % 🕒	28.4	3	● ◆
5.2	**Innovation linkages**	**82.5**	**1**	● ◆
5.2.1	University/industry research collaboration†	79.4	2	● ◆
5.2.2	State of cluster development†	58.5	30	
5.2.3	GERD financed by abroad, %	49.8	3	● ◆
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	8	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	6.9	2	● ◆
5.3	**Knowledge absorption**	**53.7**	**15**	
5.3.1	Intellectual property payments, % total trade	0.5	65	○ ◇
5.3.2	High-tech imports, % total trade	9.0	45	
5.3.3	ICT services imports, % total trade	2.1	24	
5.3.4	FDI net inflows, % GDP	4.2	40	
5.3.5	Research talent, % in business enterprise 🕒	83.7	1	● ◆
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**56.9**	**7**	
6.1	**Knowledge creation**	**56.7**	**10**	
6.1.1	Patents by origin/bn PPP$ GDP	4.5	25	
6.1.2	PCT patents by origin/bn PPP$ GDP	5.7	7	◆
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	24.2	14	
6.1.5	Citable documents H-index	47.1	16	
6.2	**Knowledge impact**	**48.0**	**21**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.2	59	
6.2.2	New businesses/th pop. 15–64	3.4	36	
6.2.3	Computer software spending, % GDP	0.3	57	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	27.1	5	◆
6.2.5	High- & medium-high-tech manufactures, % 🕒	0.4	19	
6.3	**Knowledge diffusion**	**65.9**	**4**	◆
6.3.1	Intellectual property receipts, % total trade	1.7	14	
6.3.2	High-tech net exports, % total trade	11.9	13	
6.3.3	ICT services exports, % total trade	12.2	1	● ◆
6.3.4	FDI net outflows, % GDP	3.3	21	
	CREATIVE OUTPUTS	**46.3**	**14**	
7.1	**Intangible assets**	**49.1**	**39**	
7.1.1	Trademarks by origin/bn PPP$ GDP	11.8	101	○ ◇
7.1.2	Industrial designs by origin/bn PPP$ GDP	3.4	38	
7.1.3	ICTs & business model creation†	81.5	5	
7.1.4	ICTs & organizational model creation†	77.0	12	
7.2	**Creative goods & services**	**28.4**	**34**	
7.2.1	Cultural & creative services exports, % total trade	2.5	4	◆
7.2.2	National feature films/mn pop. 15–69 🕒	5.7	38	
7.2.3	Entertainment & Media market/th pop. 15–69	35.8	21	◇
7.2.4	Printing & other media, % manufacturing 🕒	1.1	57	○
7.2.5	Creative goods exports, % total trade	1.7	31	
7.3	**Online creativity**	**58.8**	**5**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	22.4	26	
7.3.2	Country-code TLDs/th pop. 15–69	12.7	35	◇
7.3.3	Wikipedia edits/mn pop. 15–69	148.4	1	● ◆
7.3.4	Mobile app creation/bn PPP$ GDP	100.0	1	● ◆

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

ITALY

GII 2019 rank

30

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
29	**30**	**High**	**EUR**	**59.3**	**2,398.2**	**39,637.0**	**31**

		Score/Value	Rank	
	INSTITUTIONS	**75.3**	**34**	
1.1	**Political environment**	**63.7**	**46**	◇
1.1.1	Political and operational stability*	73.7	50	◇
1.1.2	Government effectiveness*	58.7	44	◇
1.2	**Regulatory environment**	**79.0**	**31**	
1.2.1	Regulatory quality*	60.8	39	
1.2.2	Rule of law*	55.0	50	◇
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	● ◆
1.3	**Business environment**	**83.4**	**23**	
1.3.1	Ease of starting a business*	89.5	57	
1.3.2	Ease of resolving insolvency*	77.3	21	
	HUMAN CAPITAL & RESEARCH	**45.4**	**31**	
2.1	**Education**	**53.6**	**49**	
2.1.1	Expenditure on education, % GDP	4.1	75	○
2.1.2	Government funding/pupil, secondary, % GDP/cap	22.9	37	
2.1.3	School life expectancy, years	16.2	30	
2.1.4	PISA scales in reading, maths, & science	485.0	31	
2.1.5	Pupil-teacher ratio, secondary ⊙	10.0	31	
2.2	**Tertiary education**	**37.0**	**46**	
2.2.1	Tertiary enrolment, % gross ⊙	63.0	40	
2.2.2	Graduates in science & engineering, %	23.3	42	
2.2.3	Tertiary inbound mobility, %	5.1	39	
2.3	**Research & development (R&D)**	**45.5**	**22**	
2.3.1	Researchers, FTE/mn pop	2,294.5	37	
2.3.2	Gross expenditure on R&D, % GDP	1.4	24	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	77.2	13	●
2.3.4	QS university ranking, average score top 3*	47.6	20	
	INFRASTRUCTURE	**59.4**	**22**	
3.1	**Information & communication technologies(ICTs)**	**82.6**	**24**	
3.1.1	ICT access*	74.3	48	◇
3.1.2	ICT use*	65.3	44	
3.1.3	Government's online service*	95.1	9	●
3.1.4	E-participation*	95.5	15	●
3.2	**General infrastructure**	**37.2**	**55**	
3.2.1	Electricity output, kWh/mn pop	4,845.3	46	
3.2.2	Logistics performance*	78.4	19	
3.2.3	Gross capital formation, % GDP	18.1	103	○ ◇
3.3	**Ecological sustainability**	**58.3**	**9**	●
3.3.1	GDP/unit of energy use	13.5	18	
3.3.2	Environmental performance*	77.0	16	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.3	17	
	MARKET SOPHISTICATION	**51.4**	**50**	
4.1	**Credit**	**41.7**	**50**	
4.1.1	Ease of getting credit*	45.0	94	○
4.1.2	Domestic credit to private sector, % GDP	81.7	35	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**34.0**	**104**	○ ◇
4.2.1	Ease of protecting minority investors*	58.3	68	○
4.2.2	Market capitalization, % GDP ⊙	26.5	51	○
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	33	
4.3	**Trade, competition, & market scale**	**78.7**	**12**	● ◆
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	71.4	47	
4.3.3	Domestic market scale, bn PPP$	2,398.2	12	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**42.2**	**29**	
5.1	**Knowledge workers**	**50.7**	**36**	
5.1.1	Knowledge-intensive employment, %	36.1	36	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.8	23	
5.1.4	GERD financed by business, %	52.1	23	
5.1.5	Females employed w/advanced degrees, %	12.6	54	
5.2	**Innovation linkages**	**37.6**	**34**	
5.2.1	University/industry research collaboration†	49.5	41	
5.2.2	State of cluster development†	74.5	4	● ◆
5.2.3	GERD financed by abroad, %	9.8	44	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	61	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	2.0	21	
5.3	**Knowledge absorption**	**38.2**	**43**	
5.3.1	Intellectual property payments, % total trade	0.9	45	
5.3.2	High-tech imports, % total trade	6.7	77	○
5.3.3	ICT services imports, % total trade	1.7	32	
5.3.4	FDI net inflows, % GDP	0.8	114	○
5.3.5	Research talent, % in business enterprise	42.6	31	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**38.9**	**22**	
6.1	**Knowledge creation**	**38.0**	**23**	
6.1.1	Patents by origin/bn PPP$ GDP	5.6	21	
6.1.2	PCT patents by origin/bn PPP$ GDP	1.4	25	
6.1.3	Utility models by origin/bn PPP$ GDP	0.8	30	
6.1.4	Scientific & technical articles/bn PPP$ GDP	16.9	30	
6.1.5	Citable documents H-index	69.2	7	● ◆
6.2	**Knowledge impact**	**55.7**	**6**	● ◆
6.2.1	Growth rate of PPP$ GDP/worker, %	0.1	85	○
6.2.2	New businesses/th pop. 15–64	2.7	41	
6.2.3	Computer software spending, % GDP	0.6	13	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	42.2	1	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.4	26	
6.3	**Knowledge diffusion**	**23.1**	**42**	
6.3.1	Intellectual property receipts, % total trade	0.7	22	
6.3.2	High-tech net exports, % total trade	5.3	29	
6.3.3	ICT services exports, % total trade	1.6	67	
6.3.4	FDI net outflows, % GDP	0.8	56	
	CREATIVE OUTPUTS	**36.8**	**37**	
7.1	**Intangible assets**	**53.0**	**28**	
7.1.1	Trademarks by origin/bn PPP$ GDP	47.3	52	
7.1.2	Industrial designs by origin/bn PPP$ GDP	16.6	5	● ◆
7.1.3	ICTs & business model creation†	66.0	47	
7.1.4	ICTs & organizational model creation†	54.6	61	◇
7.2	**Creative goods & services**	**21.7**	**51**	
7.2.1	Cultural & creative services exports, % total trade	0.4	60	
7.2.2	National feature films/mn pop. 15–69	4.2	46	
7.2.3	Entertainment & Media market/th pop. 15–69	29.4	23	
7.2.4	Printing & other media, % manufacturing	1.3	44	
7.2.5	Creative goods exports, % total trade	2.2	24	
7.3	**Online creativity**	**19.4**	**36**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	23.2	24	
7.3.2	Country-code TLDs/th pop. 15–69	21.5	27	
7.3.3	Wikipedia edits/mn pop. 15–69	44.1	32	
7.3.4	Mobile app creation/bn PPP$ GDP	3.4	58	○

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.

JAMAICA

GII 2019 rank

81

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
69	84	Upper middle	LCN	2.9	27.0	9,446.6	81

		Score/Value	Rank	
	INSTITUTIONS	**71.3**	**42**	◆
1.1	**Political environment**	**62.9**	**48**	◆
1.1.1	Political and operational stability*	71.9	58	
1.1.2	Government effectiveness*	58.4	45	◆
1.2	**Regulatory environment**	**67.4**	**63**	
1.2.1	Regulatory quality*	45.8	64	
1.2.2	Rule of law*	42.2	70	
1.2.3	Cost of redundancy dismissal, salary weeks	14.0	54	
1.3	**Business environment**	**83.6**	**22**	● ◆
1.3.1	Ease of starting a business*	97.4	6	● ◆
1.3.2	Ease of resolving insolvency*	69.8	31	◆
	HUMAN CAPITAL & RESEARCH	**24.4**	**86**	
2.1	**Education**	**52.4**	**[50]**	
2.1.1	Expenditure on education, % GDP	5.3	34	
2.1.2	Government funding/pupil, secondary, % GDP/cap	26.7	18	● ◆
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	15.5	71	
2.2	**Tertiary education**	**20.8**	**[93]**	
2.2.1	Tertiary enrolment, % gross ⏱	26.9	88	◇
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**0.0**	**[120]**	
2.3.1	Researchers, FTE/mn pop	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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	**33.7**	**105**	◇
3.1	**Information & communication technologies(ICTs)**	**38.5**	**107**	◇
3.1.1	ICT access*	53.6	81	
3.1.2	ICT use*	37.1	93	◇
3.1.3	Government's online service*	31.9	117	○ ◇
3.1.4	E-participation*	31.5	118	○ ◇
3.2	**General infrastructure**	**23.1**	**110**	○
3.2.1	Electricity output, kWh/mn pop	1,468.8	89	
3.2.2	Logistics performance*	21.3	104	○ ◇
3.2.3	Gross capital formation, % GDP	21.0	88	
3.3	**Ecological sustainability**	**39.4**	**59**	
3.3.1	GDP/unit of energy use	7.9	76	
3.3.2	Environmental performance*	58.6	68	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	4.6	25	●
	MARKET SOPHISTICATION	**36.4**	**114**	○ ◇
4.1	**Credit**	**33.8**	**74**	
4.1.1	Ease of getting credit*	85.0	11	● ◆
4.1.2	Domestic credit to private sector, % GDP ⏱	32.0	92	
4.1.3	Microfinance gross loans, % GDP	0.2	44	
4.2	**Investment**	**32.9**	**109**	
4.2.1	Ease of protecting minority investors*	55.0	84	
4.2.2	Market capitalization, % GDP ⏱	32.1	46	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	34	
4.3	**Trade, competition, & market scale**	**42.5**	**124**	○ ◇
4.3.1	Applied tariff rate, weighted avg., % ⏱	10.8	117	○ ◇
4.3.2	Intensity of local competition†	72.1	45	
4.3.3	Domestic market scale, bn PPP$	27.0	120	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**31.5**	**64**	
5.1	**Knowledge workers**	**33.6**	**[75]**	
5.1.1	Knowledge-intensive employment, %	21.7	70	
5.1.2	Firms offering formal training, % firms ⏱	25.9	61	
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, %	n/a	n/a	
5.2	**Innovation linkages**	**28.8**	**52**	◆
5.2.1	University/industry research collaboration†	47.1	45	
5.2.2	State of cluster development†	48.2	55	
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	25	● ◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	69	
5.3	**Knowledge absorption**	**32.2**	**71**	
5.3.1	Intellectual property payments, % total trade	0.9	43	
5.3.2	High-tech imports, % total trade	4.4	113	○
5.3.3	ICT services imports, % total trade	1.3	57	
5.3.4	FDI net inflows, % GDP	6.4	21	● ◆
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**15.7**	**94**	
6.1	**Knowledge creation**	**5.7**	**[94]**	
6.1.1	Patents by origin/bn PPP$ GDP	0.4	79	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.6	84	
6.1.5	Citable documents H-index	4.2	100	
6.2	**Knowledge impact**	**28.5**	**97**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-1.9	107	○ ◇
6.2.2	New businesses/th pop. 15–64	1.3	63	
6.2.3	Computer software spending, % GDP	0.4	25	● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.5	98	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**12.7**	**87**	
6.3.1	Intellectual property receipts, % total trade	0.1	58	
6.3.2	High-tech net exports, % total trade	0.0	124	○
6.3.3	ICT services exports, % total trade	2.1	53	
6.3.4	FDI net outflows, % GDP	0.8	57	
	CREATIVE OUTPUTS	**28.6**	**60**	
7.1	**Intangible assets**	**50.3**	**33**	
7.1.1	Trademarks by origin/bn PPP$ GDP	105.9	10	●
7.1.2	Industrial designs by origin/bn PPP$ GDP	4.9	26	●
7.1.3	ICTs & business model creation†	63.6	54	
7.1.4	ICTs & organizational model creation†	55.2	60	
7.2	**Creative goods & services**	**12.4**	**[76]**	
7.2.1	Cultural & creative services exports, % total trade	1.3	21	●
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	n/a	n/a	
7.2.5	Creative goods exports, % total trade	0.2	84	
7.3	**Online creativity**	**1.4**	**98**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.8	81	
7.3.2	Country-code TLDs/th pop. 15–69	1.0	81	
7.3.3	Wikipedia edits/mn pop. 15–69 ⏱	2.3	98	
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.

JAPAN

GII 2019 rank

15

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
17	14	High	SEAO	127.2	5,632.5	44,227.2	13

		Score/Value	Rank	
	INSTITUTIONS	**89.9**	**10**	
1.1	**Political environment**	**88.2**	**12**	
1.1.1	Political and operational stability*	93.0	7	
1.1.2	Government effectiveness*	85.7	13	
1.2	**Regulatory environment**	**91.7**	**15**	
1.2.1	Regulatory quality*	78.8	20	
1.2.2	Rule of law*	87.8	18	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	**Business environment**	**89.8**	**5**	●
1.3.1	Ease of starting a business*	86.1	74	○ ◇
1.3.2	Ease of resolving insolvency*	93.5	1	● ◆

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**49.1**	**21**	
2.1	**Education**	**57.3**	**37**	
2.1.1	Expenditure on education, % GDP	3.5	95	○ ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	15.2	47	◇
2.1.4	PISA scales in reading, maths, & science	528.9	3	● ◆
2.1.5	Pupil-teacher ratio, secondary ◷	11.2	40	
2.2	**Tertiary education**	**13.6**	**[103]**	
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	3.7	57	◇
2.3	**Research & development (R&D)**	**76.3**	**5**	●
2.3.1	Researchers, FTE/mn pop.	5,304.9	10	
2.3.2	Gross expenditure on R&D, % GDP	3.2	5	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	92.0	5	●
2.3.4	QS university ranking, average score top 3*	79.2	8	

		Score/Value	Rank	
	INFRASTRUCTURE	**64.0**	**9**	
3.1	**Information & communication technologies(ICTs)**	**90.3**	**7**	
3.1.1	ICT access*	86.3	11	
3.1.2	ICT use*	81.3	12	
3.1.3	Government's online service*	95.1	9	
3.1.4	E-participation*	98.3	5	
3.2	**General infrastructure**	**50.7**	**15**	
3.2.1	Electricity output, kWh/mn pop.	8,500.2	19	
3.2.2	Logistics performance*	91.8	5	
3.2.3	Gross capital formation, % GDP	24.5	48	
3.3	**Ecological sustainability**	**50.9**	**27**	
3.3.1	GDP/unit of energy use	11.2	39	
3.3.2	Environmental performance*	74.7	20	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	4.4	26	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**65.8**	**10**	
4.1	**Credit**	**68.5**	**12**	
4.1.1	Ease of getting credit*	55.0	77	○
4.1.2	Domestic credit to private sector, % GDP	168.2	5	● ◆
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**42.9**	**63**	◇
4.2.1	Ease of protecting minority investors*	60.0	61	○
4.2.2	Market capitalization, % GDP	113.1	8	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	51	○ ◇
4.3	**Trade, competition, & market scale**	**85.9**	**3**	● ◆
4.3.1	Applied tariff rate, weighted avg., %	2.5	59	
4.3.2	Intensity of local competition†	87.2	1	● ◆
4.3.3	Domestic market scale, bn PPP$	5,632.5	4	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**56.5**	**11**	
5.1	**Knowledge workers**	**63.1**	**21**	
5.1.1	Knowledge-intensive employment, %	25.2	56	◇
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	2.5	3	● ◆
5.1.4	GERD financed by business, %	78.3	1	● ◆
5.1.5	Females employed w/advanced degrees, % ◷	21.0	22	
5.2	**Innovation linkages**	**50.2**	**12**	
5.2.1	University/industry research collaboration†	64.5	18	
5.2.2	State of cluster development†	72.3	7	
5.2.3	GERD financed by abroad, %	0.6	94	○ ◇
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	36	◇
5.2.5	Patent families 2+ offices/bn PPP$ GDP	13.2	4	◆
5.3	**Knowledge absorption**	**56.2**	**10**	
5.3.1	Intellectual property payments, % total trade	2.4	9	
5.3.2	High-tech imports, % total trade	13.8	14	
5.3.3	ICT services imports, % total trade	1.7	34	
5.3.4	FDI net inflows, % GDP	0.4	121	○
5.3.5	Research talent, % in business enterprise	73.7	3	● ◆

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**50.8**	**12**	
6.1	**Knowledge creation**	**56.1**	**11**	
6.1.1	Patents by origin/bn PPP$ GDP	47.8	1	● ◆
6.1.2	PCT patents by origin/bn PPP$ GDP	8.8	1	● ◆
6.1.3	Utility models by origin/bn PPP$ GDP	0.8	28	
6.1.4	Scientific & technical articles/bn PPP$ GDP	9.2	53	◇
6.1.5	Citable documents H-index	71.0	6	
6.2	**Knowledge impact**	**39.7**	**50**	◇
6.2.1	Growth rate of PPP$ GDP/worker, %	0.0	89	○
6.2.2	New businesses/th pop. 15–64 ◷	0.2	95	○ ◇
6.2.3	Computer software spending, % GDP	0.3	47	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	8.9	35	
6.2.5	High- & medium-high-tech manufactures, % ◷	0.5	9	
6.3	**Knowledge diffusion**	**56.4**	**9**	
6.3.1	Intellectual property receipts, % total trade	4.8	1	● ◆
6.3.2	High-tech net exports, % total trade	12.1	12	
6.3.3	ICT services exports, % total trade	0.6	98	○
6.3.4	FDI net outflows, % GDP	3.4	20	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**37.9**	**35**	◇
7.1	**Intangible assets**	**54.5**	**22**	
7.1.1	Trademarks by origin/bn PPP$ GDP	91.1	21	
7.1.2	Industrial designs by origin/bn PPP$ GDP	4.5	29	
7.1.3	ICTs & business model creation†	73.2	25	
7.1.4	ICTs & organizational model creation†	67.8	22	◇
7.2	**Creative goods & services**	**30.9**	**26**	
7.2.1	Cultural & creative services exports, % total trade	0.4	55	
7.2.2	National feature films/mn pop. 15–69	7.0	30	
7.2.3	Entertainment & Media market/th pop. 15–69	67.1	6	
7.2.4	Printing & other media, % manufacturing ◷	1.7	26	
7.2.5	Creative goods exports, % total trade	2.0	27	
7.3	**Online creativity**	**11.6**	**49**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	15.4	31	◇
7.3.2	Country-code TLDs/th pop. 15–69	5.1	48	◇
7.3.3	Wikipedia edits/mn pop. 15–69	18.6	50	◇
7.3.4	Mobile app creation/bn PPP$ GDP	13.2	35	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

JORDAN

GII 2019 rank

86

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
71	91	Upper middle	NAWA	9.9	93.2	9,433.5	79

		Score/Value	Rank	
	INSTITUTIONS	**62.1**	**67**	
1.1	**Political environment**	**54.5**	**67**	
1.1.1	Political and operational stability*	64.9	79	
1.1.2	Government effectiveness*	49.4	64	
1.2	**Regulatory environment**	**74.5**	**38**	● ◆
1.2.1	Regulatory quality*	44.5	66	
1.2.2	Rule of law*	53.3	51	◆
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	**Business environment**	**57.4**	**109**	○ ◇
1.3.1	Ease of starting a business*	84.4	81	
1.3.2	Ease of resolving insolvency*	30.3	120	○ ◇
	HUMAN CAPITAL & RESEARCH	**29.4**	**68**	
2.1	**Education**	**37.3**	**93**	
2.1.1	Expenditure on education, % GDP	3.6	91	
2.1.2	Government funding/pupil, secondary, % GDP/cap	17.0	71	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	399.0	62	○
2.1.5	Pupil-teacher ratio, secondary	11.4	42	
2.2	**Tertiary education**	**43.2**	**27**	●
2.2.1	Tertiary enrolment, % gross	31.7	82	
2.2.2	Graduates in science & engineering, % ⊙	26.4	24	●
2.2.3	Tertiary inbound mobility, %	13.9	11	● ◆
2.3	**Research & development (R&D)**	**7.8**	**66**	
2.3.1	Researchers, FTE/mn pop.	601.1	64	
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.3	75	
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*	17.1	55	
	INFRASTRUCTURE	**38.2**	**91**	
3.1	**Information & communication technologies(ICTs)**	**54.2**	**87**	
3.1.1	ICT access*	61.5	73	
3.1.2	ICT use*	57.5	60	
3.1.3	Government's online service*	49.3	105	
3.1.4	E-participation*	48.3	105	
3.2	**General infrastructure**	**23.9**	**104**	
3.2.1	Electricity output, kWh/mn pop.	2,085.7	75	
3.2.2	Logistics performance*	29.2	82	
3.2.3	Gross capital formation, % GDP	19.4	96	
3.3	**Ecological sustainability**	**36.6**	**73**	
3.3.1	GDP/unit of energy use	8.7	66	
3.3.2	Environmental performance*	62.2	55	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.9	69	
	MARKET SOPHISTICATION	**38.9**	**106**	◇
4.1	**Credit**	**25.5**	**107**	
4.1.1	Ease of getting credit*	35.0	110	○ ◇
4.1.2	Domestic credit to private sector, % GDP ⊙	75.1	41	●
4.1.3	Microfinance gross loans, % GDP	0.4	36	
4.2	**Investment**	**31.3**	**116**	○ ◇
4.2.1	Ease of protecting minority investors*	46.7	101	
4.2.2	Market capitalization, % GDP	63.7	25	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	42	
4.3	**Trade, competition, & market scale**	**59.8**	**69**	
4.3.1	Applied tariff rate, weighted avg., %	4.4	79	
4.3.2	Intensity of local competition†	76.0	19	● ◆
4.3.3	Domestic market scale, bn PPP$	93.2	81	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**16.9**	**128**	○ ◇
5.1	**Knowledge workers**	**0.0**	**[129]**	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	3.4	91	○ ◇
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, %	n/a	n/a	
5.2	**Innovation linkages**	**26.7**	**59**	
5.2.1	University/industry research collaboration†	40.6	66	
5.2.2	State of cluster development†	57.7	31	● ◆
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	90	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	71	
5.3	**Knowledge absorption**	**23.9**	**106**	
5.3.1	Intellectual property payments, % total trade	0.1	98	
5.3.2	High-tech imports, % total trade	6.6	79	
5.3.3	ICT services imports, % total trade	0.2	118	○ ◇
5.3.4	FDI net inflows, % GDP	4.4	36	●
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**17.4**	**84**	
6.1	**Knowledge creation**	**14.4**	**[57]**	
6.1.1	Patents by origin/bn PPP$ GDP	0.3	88	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	14.1	36	●
6.1.5	Citable documents H-index	8.4	77	
6.2	**Knowledge impact**	**30.5**	**91**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.2	94	○
6.2.2	New businesses/th pop. 15–64	0.6	80	
6.2.3	Computer software spending, % GDP	0.3	49	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4.2	63	
6.2.5	High- & medium-high-tech manufactures, %	0.2	50	
6.3	**Knowledge diffusion**	**7.3**	**117**	○ ◇
6.3.1	Intellectual property receipts, % total trade	0.1	48	
6.3.2	High-tech net exports, % total trade	0.4	82	
6.3.3	ICT services exports, % total trade	0.1	123	○
6.3.4	FDI net outflows, % GDP	0.0	111	○
	CREATIVE OUTPUTS	**26.8**	**67**	
7.1	**Intangible assets**	**37.7**	**82**	
7.1.1	Trademarks by origin/bn PPP$ GDP	34.7	70	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.8	76	
7.1.3	ICTs & business model creation†	63.5	55	
7.1.4	ICTs & organizational model creation†	52.6	68	
7.2	**Creative goods & services**	**23.1**	**46**	
7.2.1	Cultural & creative services exports, % total trade	0.3	64	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Entertainment & Media market/th pop. 15–69	1.9	53	○ ◇
7.2.4	Printing & other media, % manufacturing	2.4	13	● ◆
7.2.5	Creative goods exports, % total trade ⊙	1.5	36	●
7.3	**Online creativity**	**8.9**	**54**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	5.2	54	
7.3.2	Country-code TLDs/th pop. 15–69	0.2	107	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	21.7	48	
7.3.4	Mobile app creation/bn PPP$ GDP	15.6	32	●

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.

KAZAKHSTAN

GII 2019 rank

79

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
92	64	Upper middle	CSA	18.4	507.6	27,549.8	74

		Score/Value	Rank	
	INSTITUTIONS	**68.3**	**49**	
1.1	**Political environment**	**54.6**	**66**	
1.1.1	Political and operational stability*	70.2	61	
1.1.2	Government effectiveness*	46.8	69	
1.2	**Regulatory environment**	**70.0**	**53**	
1.2.1	Regulatory quality*	46.5	62	
1.2.2	Rule of law*	35.5	87	
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	19	●
1.3	**Business environment**	**80.4**	**31**	● ◆
1.3.1	Ease of starting a business*	93.0	33	●
1.3.2	Ease of resolving insolvency*	67.8	34	● ◆

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**29.8**	**67**	
2.1	**Education**	**44.3**	**72**	
2.1.1	Expenditure on education, % GDP	2.9	105	◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	20.2	49	
2.1.3	School life expectancy, years	15.3	45	
2.1.4	PISA scales in reading, maths, & science	416.4	53	
2.1.5	Pupil-teacher ratio, secondary	7.0	2	● ◆
2.2	**Tertiary education**	**34.5**	**54**	
2.2.1	Tertiary enrolment, % gross	53.3	53	
2.2.2	Graduates in science & engineering, %	24.8	31	
2.2.3	Tertiary inbound mobility, %	2.2	72	
2.3	**Research & development (R&D)**	**10.7**	**56**	
2.3.1	Researchers, FTE/mn pop.	687.6	59	
2.3.2	Gross expenditure on R&D, % GDP	0.1	97	
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*	31.7	35	●

		Score/Value	Rank	
	INFRASTRUCTURE	**46.1**	**67**	
3.1	**Information & communication technologies(ICTs)**	**76.2**	**40**	◆
3.1.1	ICT access*	75.4	41	◆
3.1.2	ICT use*	58.9	58	
3.1.3	Government's online service*	86.8	32	● ◆
3.1.4	E-participation*	83.7	42	
3.2	**General infrastructure**	**35.4**	**63**	
3.2.1	Electricity output, kWh/mn pop.	5,990.3	34	◆
3.2.2	Logistics performance*	34.9	70	
3.2.3	Gross capital formation, % GDP	25.5	42	
3.3	**Ecological sustainability**	**26.7**	**109**	◇
3.3.1	GDP/unit of energy use	5.0	109	○ ◇
3.3.2	Environmental performance*	54.6	85	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	99	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**46.3**	**69**	
4.1	**Credit**	**26.8**	**102**	
4.1.1	Ease of getting credit*	65.0	54	
4.1.2	Domestic credit to private sector, % GDP	29.9	95	
4.1.3	Microfinance gross loans, % GDP	0.2	46	
4.2	**Investment**	**44.9**	**57**	
4.2.1	Ease of protecting minority investors*	85.0	1	● ◆
4.2.2	Market capitalization, % GDP	25.4	52	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	75	○
4.3	**Trade, competition, & market scale**	**67.3**	**45**	
4.3.1	Applied tariff rate, weighted avg., %	2.4	58	
4.3.2	Intensity of local competition†	60.0	107	◇
4.3.3	Domestic market scale, bn PPP$	507.6	40	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**28.1**	**78**	
5.1	**Knowledge workers**	**41.2**	**54**	
5.1.1	Knowledge-intensive employment, %	33.3	39	◆
5.1.2	Firms offering formal training, % firms	28.3	54	
5.1.3	GERD performed by business, % GDP	0.1	68	
5.1.4	GERD financed by business, %	39.6	45	
5.1.5	Females employed w/advanced degrees, %	17.5	33	
5.2	**Innovation linkages**	**15.6**	**118**	○ ◇
5.2.1	University/industry research collaboration†	40.5	67	
5.2.2	State of cluster development†	34.4	110	◇
5.2.3	GERD financed by abroad, %	1.5	85	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	74	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	54	
5.3	**Knowledge absorption**	**27.6**	**92**	
5.3.1	Intellectual property payments, % total trade	0.3	80	
5.3.2	High-tech imports, % total trade	6.5	84	
5.3.3	ICT services imports, % total trade	0.6	99	
5.3.4	FDI net inflows, % GDP	6.2	22	● ◆
5.3.5	Research talent, % in business enterprise	n/a	n/a	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**18.2**	**81**	
6.1	**Knowledge creation**	**10.6**	**68**	
6.1.1	Patents by origin/bn PPP$ GDP	2.4	36	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	80	
6.1.3	Utility models by origin/bn PPP$ GDP	1.6	16	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.8	116	○
6.1.5	Citable documents H-index	3.5	110	
6.2	**Knowledge impact**	**29.5**	**96**	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.1	23	●
6.2.2	New businesses/th pop. 15–64	2.2	47	
6.2.3	Computer software spending, % GDP	0.0	120	○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.8	113	
6.2.5	High- & medium-high-tech manufactures, %	0.1	84	
6.3	**Knowledge diffusion**	**14.7**	**78**	
6.3.1	Intellectual property receipts, % total trade	0.0	99	○ ◇
6.3.2	High-tech net exports, % total trade	3.6	41	
6.3.3	ICT services exports, % total trade	0.2	115	○
6.3.4	FDI net outflows, % GDP	1.6	38	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**18.4**	**102**	◇
7.1	**Intangible assets**	**31.5**	**103**	
7.1.1	Trademarks by origin/bn PPP$ GDP	18.8	90	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.2	98	
7.1.3	ICTs & business model creation†	54.7	87	
7.1.4	ICTs & organizational model creation†	48.2	87	
7.2	**Creative goods & services**	**6.8**	**96**	
7.2.1	Cultural & creative services exports, % total trade	0.1	91	
7.2.2	National feature films/mn pop. 15–69	6.0	37	
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	0.5	92	○
7.2.5	Creative goods exports, % total trade	0.1	93	
7.3	**Online creativity**	**3.8**	**71**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.3	114	○
7.3.2	Country-code TLDs/th pop. 15–69	3.2	60	
7.3.3	Wikipedia edits/mn pop. 15–69	17.3	52	
7.3.4	Mobile app creation/bn PPP$ GDP	0.0	90	○

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.

KENYA

GII 2019 rank

77

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
64	89	Lower middle	SSF	51.0	177.4	3,690.9	78

		Score/Value	Rank	
	INSTITUTIONS	**59.2**	**78**	
1.1	**Political environment**	**45.9**	**91**	
1.1.1	Political and operational stability*	59.6	98	
1.1.2	Government effectiveness*	39.0	88	
1.2	**Regulatory environment**	**61.9**	**76**	
1.2.1	Regulatory quality*	35.7	88	
1.2.2	Rule of law*	35.5	88	
1.2.3	Cost of redundancy dismissal, salary weeks	15.8	63	
1.3	**Business environment**	**69.9**	**67**	
1.3.1	Ease of starting a business*	82.4	97	
1.3.2	Ease of resolving insolvency*	57.4	52	◆

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**17.5**	**104**	
2.1	**Education**	**33.8**	**[100]**	
2.1.1	Expenditure on education, % GDP	5.2	39	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years ⊕	10.5	102	○
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ⊕	33.4	109	○ ◇
2.2	**Tertiary education**	**13.4**	**104**	
2.2.1	Tertiary enrolment, % gross ⊕	11.7	104	
2.2.2	Graduates in science & engineering, %	16.5	79	
2.2.3	Tertiary inbound mobility, %	0.9	89	
2.3	**Research & development (R&D)**	**5.5**	**76**	
2.3.1	Researchers, FTE/mn pop. ⊕	225.0	76	
2.3.2	Gross expenditure on R&D, % GDP ⊕	0.8	45	◆
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*	2.5	77	

		Score/Value	Rank	
	INFRASTRUCTURE	**29.6**	**116**	○ ◇
3.1	**Information & communication technologies(ICTs)**	**43.3**	**100**	
3.1.1	ICT access*	39.6	104	
3.1.2	ICT use*	17.6	112	○ ◇
3.1.3	Government's online service*	62.5	89	
3.1.4	E-participation*	53.4	101	
3.2	**General infrastructure**	**20.9**	**117**	○
3.2.1	Electricity output, kWh/mn pop.	201.2	113	○ ◇
3.2.2	Logistics performance*	35.1	67	
3.2.3	Gross capital formation, % GDP	16.8	112	○ ◇
3.3	**Ecological sustainability**	**24.5**	**118**	○
3.3.1	GDP/unit of energy use	5.3	104	
3.3.2	Environmental performance*	47.3	103	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	91	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**51.8**	**48**	
4.1	**Credit**	**58.1**	**21**	● ◆
4.1.1	Ease of getting credit*	90.0	7	● ◆
4.1.2	Domestic credit to private sector, % GDP	29.3	97	
4.1.3	Microfinance gross loans, % GDP	4.2	6	● ◆
4.2	**Investment**	**46.3**	**52**	
4.2.1	Ease of protecting minority investors*	78.3	10	● ◆
4.2.2	Market capitalization, % GDP ⊕	30.0	49	
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	23	◆
4.3	**Trade, competition, & market scale**	**51.2**	**103**	
4.3.1	Applied tariff rate, weighted avg., % ⊕	12.3	121	○ ◇
4.3.2	Intensity of local competition†	72.0	46	◆
4.3.3	Domestic market scale, bn PPP$	177.4	67	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**32.2**	**61**	◆
5.1	**Knowledge workers**	**26.3**	**[92]**	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	40.6	34	
5.1.3	GERD performed by business, % GDP ⊕	0.1	66	
5.1.4	GERD financed by business, % ⊕	4.3	83	
5.1.5	Females employed w/advanced degrees, %	n/a	n/a	
5.2	**Innovation linkages**	**45.0**	**20**	● ◆
5.2.1	University/industry research collaboration†	55.1	29	● ◆
5.2.2	State of cluster development†	55.4	34	◆
5.2.3	GERD financed by abroad, % ⊕	47.1	5	● ◆
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	50	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	77	
5.3	**Knowledge absorption**	**25.2**	**100**	
5.3.1	Intellectual property payments, % total trade	1.2	26	● ◆
5.3.2	High-tech imports, % total trade	9.1	42	
5.3.3	ICT services imports, % total trade	0.3	116	○ ◇
5.3.4	FDI net inflows, % GDP	0.8	111	○
5.3.5	Research talent, % in business enterprise ⊕	11.4	63	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**20.1**	**72**	
6.1	**Knowledge creation**	**11.3**	**65**	
6.1.1	Patents by origin/bn PPP$ GDP	0.8	67	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	76	
6.1.3	Utility models by origin/bn PPP$ GDP	0.9	24	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.0	68	
6.1.5	Citable documents H-index	14.3	52	
6.2	**Knowledge impact**	**30.4**	**92**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.1	43	
6.2.2	New businesses/th pop. 15–64 ⊕	0.8	75	
6.2.3	Computer software spending, % GDP	0.2	77	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.6	69	
6.2.5	High- & medium-high-tech manufactures, % ⊕	0.1	77	
6.3	**Knowledge diffusion**	**18.5**	**57**	
6.3.1	Intellectual property receipts, % total trade	0.6	25	● ◆
6.3.2	High-tech net exports, % total trade	0.3	88	
6.3.3	ICT services exports, % total trade	3.3	26	●
6.3.4	FDI net outflows, % GDP	0.3	80	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**28.3**	**61**	
7.1	**Intangible assets**	**41.1**	**64**	
7.1.1	Trademarks by origin/bn PPP$ GDP	32.5	74	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.9	70	
7.1.3	ICTs & business model creation†	68.9	33	● ◆
7.1.4	ICTs & organizational model creation†	60.0	44	◆
7.2	**Creative goods & services**	**30.6**	**30**	● ◆
7.2.1	Cultural & creative services exports, % total trade	0.0	98	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Entertainment & Media market/th pop. 15–69	2.4	51	◆
7.2.4	Printing & other media, % manufacturing ⊕	4.2	3	● ◆
7.2.5	Creative goods exports, % total trade ⊕	0.3	75	
7.3	**Online creativity**	**0.6**	**106**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.0	97	
7.3.2	Country-code TLDs/th pop. 15–69	0.8	84	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊕	1.0	103	
7.3.4	Mobile app creation/bn PPP$ GDP	0.0	89	○

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.

KUWAIT

GII 2019 rank

60

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
56	75	High	NAWA	4.2	303.3	67,000.2	60

		Score/Value	Rank	
	INSTITUTIONS	**55.6**	**90**	◇
1.1	**Political environment**	**49.4**	**85**	◇
1.1.1	Political and operational stability*	63.2	86	◇
1.1.2	Government effectiveness*	42.5	83	◇
1.2	**Regulatory environment**	**57.0**	**92**	◇
1.2.1	Regulatory quality*	40.3	73	◇
1.2.2	Rule of law*	49.1	55	◇
1.2.3	Cost of redundancy dismissal, salary weeks	28.1	113	○ ◇
1.3	**Business environment**	**60.3**	**105**	◇
1.3.1	Ease of starting a business*	81.4	101	◇
1.3.2	Ease of resolving insolvency*	39.3	101	◇

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**25.5**	**[81]**	
2.1	**Education**	**48.2**	**[67]**	
2.1.1	Expenditure on education, % GDP	n/a	n/a	
2.1.2	Government funding/pupil, secondary, % GDP/cap 🕓	17.6	64	
2.1.3	School life expectancy, years 🕓	13.6	73	◇
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary 🕓	7.6	6	● ◆
2.2	**Tertiary education**	**25.3**	**[79]**	
2.2.1	Tertiary enrolment, % gross 🕓	32.6	80	◇
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**2.9**	**87**	◇
2.3.1	Researchers, FTE/mn pop	491.8	68	◇
2.3.2	Gross expenditure on R&D, % GDP	0.1	110	○ ◇
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*	4.5	71	◇

		Score/Value	Rank	
	INFRASTRUCTURE	**50.2**	**53**	◇
3.1	**Information & communication technologies(ICTs)**	**73.7**	**48**	●
3.1.1	ICT access*	78.3	33	●
3.1.2	ICT use*	68.2	38	●
3.1.3	Government's online service*	79.2	48	●
3.1.4	E-participation*	69.1	70	◇
3.2	**General infrastructure**	**42.5**	**39**	●
3.2.1	Electricity output, kWh/mn pop	17,307.2	5	● ◆
3.2.2	Logistics performance*	37.3	62	◇
3.2.3	Gross capital formation, % GDP	22.2	75	
3.3	**Ecological sustainability**	**34.4**	**80**	◇
3.3.1	GDP/unit of energy use	7.6	82	
3.3.2	Environmental performance*	62.3	54	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	83	◇

		Score/Value	Rank	
	MARKET SOPHISTICATION	**53.5**	**41**	●
4.1	**Credit**	**41.1**	**52**	
4.1.1	Ease of getting credit*	35.0	110	○ ◇
4.1.2	Domestic credit to private sector, % GDP	99.2	28	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**58.3**	**[22]**	
4.2.1	Ease of protecting minority investors*	58.3	68	
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**	**61.0**	**64**	
4.3.1	Applied tariff rate, weighted avg., %	4.3	77	
4.3.2	Intensity of local competition†	56.0	119	○ ◇
4.3.3	Domestic market scale, bn PPP$	303.3	55	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**24.7**	**[100]**	
5.1	**Knowledge workers**	**26.6**	**[91]**	
5.1.1	Knowledge-intensive employment, % 🕓	22.7	66	◇
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	n/a	n/a	
5.1.4	GERD financed by business, % 🕓	1.0	90	○ ◇
5.1.5	Females employed w/advanced degrees, %	n/a	n/a	
5.2	**Innovation linkages**	**19.6**	**89**	◇
5.2.1	University/industry research collaboration†	40.2	68	
5.2.2	State of cluster development†	49.9	49	
5.2.3	GERD financed by abroad, % 🕓	1.2	90	◇
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	56	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	81	
5.3	**Knowledge absorption**	**28.1**	**[91]**	
5.3.1	Intellectual property payments, % total trade	n/a	n/a	
5.3.2	High-tech imports, % total trade	6.8	76	
5.3.3	ICT services imports, % total trade	0.7	92	◇
5.3.4	FDI net inflows, % GDP	0.2	122	○
5.3.5	Research talent, % in business enterprise	n/a	n/a	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**25.2**	**52**	
6.1	**Knowledge creation**	**6.8**	**[85]**	
6.1.1	Patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.1	112	◇
6.1.5	Citable documents H-index	7.6	81	◇
6.2	**Knowledge impact**	**33.4**	**79**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-1.5	103	○ ◇
6.2.2	New businesses/th pop. 15-64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.4	26	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.5	101	◇
6.2.5	High- & medium-high-tech manufactures, %	0.2	54	
6.3	**Knowledge diffusion**	**35.4**	**24**	●
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	0.3	87	◇
6.3.3	ICT services exports, % total trade	3.9	20	●
6.3.4	FDI net outflows, % GDP	5.5	11	●

		Score/Value	Rank	
	CREATIVE OUTPUTS	**29.2**	**56**	
7.1	**Intangible assets**	**53.7**	**[25]**	
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†	56.6	82	◇
7.1.4	ICTs & organizational model creation†	50.9	78	◇
7.2	**Creative goods & services**	**4.6**	**103**	◇
7.2.1	Cultural & creative services exports, % total trade	0.0	110	○ ◇
7.2.2	National feature films/mn pop. 15-69	1.9	67	◇
7.2.3	Entertainment & Media market/th pop. 15-69	11.3	34	◇
7.2.4	Printing & other media, % manufacturing	0.4	97	○ ◇
7.2.5	Creative goods exports, % total trade	0.2	78	
7.3	**Online creativity**	**4.9**	**67**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	7.6	44	●
7.3.2	Country-code TLDs/th pop. 15-69	0.3	100	◇
7.3.3	Wikipedia edits/mn pop. 15-69 🕓	16.3	54	
7.3.4	Mobile app creation/bn PPP$ GDP	0.7	67	

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.

KYRGYZSTAN

GII 2019 rank

90

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
111	78	Lower middle	CSA	6.1	24.4	3,843.6	94

		Score/Value	Rank	
	INSTITUTIONS	**54.6**	**92**	
1.1	**Political environment**	**37.0**	**117**	◇
1.1.1	Political and operational stability*	52.6	118	
1.1.2	Government effectiveness*	29.2	114	
1.2	**Regulatory environment**	**56.5**	**96**	
1.2.1	Regulatory quality*	32.6	95	
1.2.2	Rule of law*	21.9	118	◇
1.2.3	Cost of redundancy dismissal, salary weeks	17.3	71	
1.3	**Business environment**	**70.3**	**64**	
1.3.1	Ease of starting a business*	93.0	32	●
1.3.2	Ease of resolving insolvency*	47.6	74	

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**31.7**	**60**	◆
2.1	**Education**	**64.1**	**[11]**	
2.1.1	Expenditure on education, % GDP	7.2	9	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	13.4	77	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	10.4	35	● ◆
2.2	**Tertiary education**	**30.4**	**65**	
2.2.1	Tertiary enrolment, % gross	43.7	67	
2.2.2	Graduates in science & engineering, %	20.5	63	
2.2.3	Tertiary inbound mobility, %	6.4	36	◆
2.3	**Research & development (R&D)**	**0.7**	**111**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	0.1	104	
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	○ ◇

		Score/Value	Rank	
	INFRASTRUCTURE	**38.8**	**89**	
3.1	**Information & communication technologies(ICTs)**	**55.0**	**85**	
3.1.1	ICT access*	47.1	95	
3.1.2	ICT use*	39.7	91	
3.1.3	Government's online service*	64.6	83	
3.1.4	E-participation*	68.5	73	
3.2	**General infrastructure**	**34.6**	**66**	
3.2.1	Electricity output, kWh/mn pop.	2,181.3	74	◆
3.2.2	Logistics performance*	22.6	100	
3.2.3	Gross capital formation, % GDP	30.7	19	●
3.3	**Ecological sustainability**	**26.7**	**110**	
3.3.1	GDP/unit of energy use	5.1	108	◇
3.3.2	Environmental performance*	54.9	83	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	124	○ ◇

		Score/Value	Rank	
	MARKET SOPHISTICATION	**55.6**	**36**	● ◆
4.1	**Credit**	**51.2**	**30**	●
4.1.1	Ease of getting credit*	75.0	29	●
4.1.2	Domestic credit to private sector, % GDP	21.8	110	
4.1.3	Microfinance gross loans, % GDP	4.1	7	● ◆
4.2	**Investment**	**66.7**	**[12]**	
4.2.1	Ease of protecting minority investors*	66.7	35	
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**	**49.0**	**110**	
4.3.1	Applied tariff rate, weighted avg., %	2.9	63	
4.3.2	Intensity of local competition†	56.5	118	◇
4.3.3	Domestic market scale, bn PPP$	24.4	122	◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**26.7**	**84**	
5.1	**Knowledge workers**	**37.3**	**62**	
5.1.1	Knowledge-intensive employment, %	18.5	78	
5.1.2	Firms offering formal training, % firms	62.7	6	● ◆
5.1.3	GERD performed by business, % GDP	0.0	77	
5.1.4	GERD financed by business, %	6.4	78	
5.1.5	Females employed w/advanced degrees, % ⊙	10.8	61	
5.2	**Innovation linkages**	**13.9**	**121**	
5.2.1	University/industry research collaboration†	27.6	112	
5.2.2	State of cluster development†	29.1	123	○ ◇
5.2.3	GERD financed by abroad, %	3.1	70	
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	93	○ ◇
5.3	**Knowledge absorption**	**28.9**	**88**	
5.3.1	Intellectual property payments, % total trade	0.2	91	
5.3.2	High-tech imports, % total trade	7.1	70	
5.3.3	ICT services imports, % total trade	0.6	95	
5.3.4	FDI net inflows, % GDP	8.3	17	●
5.3.5	Research talent, % in business enterprise	n/a	n/a	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**17.3**	**85**	
6.1	**Knowledge creation**	**10.3**	**70**	
6.1.1	Patents by origin/bn PPP$ GDP	6.0	18	● ◆
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	99	○ ◇
6.1.3	Utility models by origin/bn PPP$ GDP	0.9	26	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.2	99	
6.1.5	Citable documents H-index	1.4	125	○ ◇
6.2	**Knowledge impact**	**28.3**	**98**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.9	25	●
6.2.2	New businesses/th pop. 15–64	1.3	65	
6.2.3	Computer software spending, % GDP	0.1	90	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.3	124	○ ◇
6.2.5	High- & medium-high-tech manufactures, %	0.0	100	○ ◇
6.3	**Knowledge diffusion**	**13.2**	**83**	
6.3.1	Intellectual property receipts, % total trade	0.0	66	
6.3.2	High-tech net exports, % total trade	2.3	51	
6.3.3	ICT services exports, % total trade	1.0	82	
6.3.4	FDI net outflows, % GDP	0.7	58	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**13.3**	**122**	◇
7.1	**Intangible assets**	**23.1**	**125**	○ ◇
7.1.1	Trademarks by origin/bn PPP$ GDP	22.4	84	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.5	85	
7.1.3	ICTs & business model creation†	36.5	124	○ ◇
7.1.4	ICTs & organizational model creation†	34.8	120	◇
7.2	**Creative goods & services**	**5.5**	**99**	
7.2.1	Cultural & creative services exports, % total trade	0.4	59	
7.2.2	National feature films/mn pop. 15–69	0.3	103	○
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	0.7	81	
7.2.5	Creative goods exports, % total trade	0.1	99	
7.3	**Online creativity**	**1.5**	**95**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.2	116	◇
7.3.2	Country-code TLDs/th pop. 15–69	0.8	86	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	7.3	69	
7.3.4	Mobile app creation/bn PPP$ GDP	0.1	85	

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.

LATVIA

GII 2019 rank

34

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
34	**36**	**High**	**EUR**	**1.9**	**57.3**	**29,901.3**	**34**

		Score/Value	Rank	
	INSTITUTIONS	**77.2**	**32**	
1.1	**Political environment**	**72.5**	**36**	
1.1.1	Political and operational stability*	80.7	35	
1.1.2	Government effectiveness*	68.5	34	
1.2	**Regulatory environment**	**82.2**	**26**	
1.2.1	Regulatory quality*	72.9	28	
1.2.2	Rule of law*	71.0	32	
1.2.3	Cost of redundancy dismissal, salary weeks	13.0	42	
1.3	**Business environment**	**76.9**	**39**	
1.3.1	Ease of starting a business*	94.1	21	
1.3.2	Ease of resolving insolvency*	59.6	49	
	HUMAN CAPITAL & RESEARCH	**36.9**	**44**	
2.1	**Education**	**59.0**	**29**	
2.1.1	Expenditure on education, % GDP	5.3	31	
2.1.2	Government funding/pupil, secondary, % GDP/cap	24.8	25	
2.1.3	School life expectancy, years	16.2	32	
2.1.4	PISA scales in reading, maths, & science	486.8	30	
2.1.5	Pupil-teacher ratio, secondary ◷	8.1	10	● ◆
2.2	**Tertiary education**	**40.4**	**38**	
2.2.1	Tertiary enrolment, % gross	88.1	9	●
2.2.2	Graduates in science & engineering, %	20.5	60	
2.2.3	Tertiary inbound mobility, %	7.7	30	
2.3	**Research & development (R&D)**	**11.4**	**53**	◇
2.3.1	Researchers, FTE/mn pop.	1,785.9	43	
2.3.2	Gross expenditure on R&D, % GDP	0.5	62	
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*	13.1	60	
	INFRASTRUCTURE	**50.5**	**51**	◇
3.1	**Information & communication technologies(ICTs)**	**71.3**	**56**	◇
3.1.1	ICT access*	74.5	46	
3.1.2	ICT use*	75.4	28	
3.1.3	Government's online service*	66.7	75	◇
3.1.4	E-participation*	68.5	73	◇
3.2	**General infrastructure**	**31.1**	**82**	○ ◇
3.2.1	Electricity output, kWh/mn pop.	3,882.0	52	
3.2.2	Logistics performance*	34.9	69	◇
3.2.3	Gross capital formation, % GDP	23.3	63	
3.3	**Ecological sustainability**	**49.1**	**33**	
3.3.1	GDP/unit of energy use	9.9	54	
3.3.2	Environmental performance*	66.1	35	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.9	15	●
	MARKET SOPHISTICATION	**54.4**	**40**	
4.1	**Credit**	**56.3**	**23**	
4.1.1	Ease of getting credit*	85.0	11	◆
4.1.2	Domestic credit to private sector, % GDP	60.2	54	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**46.6**	**49**	
4.2.1	Ease of protecting minority investors*	63.3	48	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	27	
4.3	**Trade, competition, & market scale**	**60.4**	**66**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	74.3	33	
4.3.3	Domestic market scale, bn PPP$	57.3	94	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**37.4**	**41**	
5.1	**Knowledge workers**	**44.8**	**46**	
5.1.1	Knowledge-intensive employment, %	42.1	23	
5.1.2	Firms offering formal training, % firms	25.2	64	○
5.1.3	GERD performed by business, % GDP	0.1	56	
5.1.4	GERD financed by business, %	21.6	65	○ ◇
5.1.5	Females employed w/advanced degrees, %	24.8	13	● ◆
5.2	**Innovation linkages**	**32.0**	**44**	
5.2.1	University/industry research collaboration†	38.3	78	○ ◇
5.2.2	State of cluster development†	46.0	70	
5.2.3	GERD financed by abroad, %	27.8	12	● ◆
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	65	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.4	36	
5.3	**Knowledge absorption**	**35.5**	**54**	
5.3.1	Intellectual property payments, % total trade	0.2	84	○ ◇
5.3.2	High-tech imports, % total trade	11.9	19	
5.3.3	ICT services imports, % total trade	1.7	33	
5.3.4	FDI net inflows, % GDP	2.6	68	
5.3.5	Research talent, % in business enterprise	18.6	58	○ ◇
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**27.5**	**45**	
6.1	**Knowledge creation**	**13.0**	**61**	
6.1.1	Patents by origin/bn PPP$ GDP	1.9	45	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.5	34	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	10.2	47	
6.1.5	Citable documents H-index	8.4	77	◇
6.2	**Knowledge impact**	**41.9**	**42**	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.4	20	◆
6.2.2	New businesses/th pop. 15–64	8.0	20	
6.2.3	Computer software spending, % GDP	0.1	86	○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	17.8	19	
6.2.5	High- & medium-high-tech manufactures, %	0.1	80	○ ◇
6.3	**Knowledge diffusion**	**27.8**	**35**	
6.3.1	Intellectual property receipts, % total trade	0.0	69	○
6.3.2	High-tech net exports, % total trade	7.4	22	
6.3.3	ICT services exports, % total trade	3.8	21	
6.3.4	FDI net outflows, % GDP	1.0	52	
	CREATIVE OUTPUTS	**42.8**	**22**	
7.1	**Intangible assets**	**48.0**	**44**	
7.1.1	Trademarks by origin/bn PPP$ GDP	72.3	27	
7.1.2	Industrial designs by origin/bn PPP$ GDP	3.5	35	
7.1.3	ICTs & business model creation†	66.1	46	
7.1.4	ICTs & organizational model creation†	62.7	37	
7.2	**Creative goods & services**	**46.9**	**3**	● ◆
7.2.1	Cultural & creative services exports, % total trade	1.5	13	●
7.2.2	National feature films/mn pop. 15–69	15.4	7	● ◆
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	2.8	8	● ◆
7.2.5	Creative goods exports, % total trade	3.1	18	●
7.3	**Online creativity**	**28.3**	**27**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	9.5	41	
7.3.2	Country-code TLDs/th pop. 15–69 ◷	25.6	24	
7.3.3	Wikipedia edits/mn pop. 15–69	99.7	7	● ◆
7.3.4	Mobile app creation/bn PPP$ GDP	10.9	41	

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.

LEBANON

GII 2019 rank

88

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
82	92	Upper middle	NAWA	6.1	91.2	14,684.1	90

		Score/Value	Rank	
	INSTITUTIONS	**51.8**	**102**	◇
1.1	**Political environment**	**37.3**	**115**	○ ◇
1.1.1	Political and operational stability*	43.9	127	○ ◇
1.1.2	Government effectiveness*	34.1	99	◇
1.2	**Regulatory environment**	**64.1**	**71**	
1.2.1	Regulatory quality*	33.7	93	
1.2.2	Rule of law*	24.6	113	○ ◇
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	21	●
1.3	**Business environment**	**54.1**	**120**	○ ◇
1.3.1	Ease of starting a business*	78.6	110	
1.3.2	Ease of resolving insolvency*	29.6	121	○ ◇
	HUMAN CAPITAL & RESEARCH	**25.3**	**82**	
2.1	**Education**	**26.5**	**113**	○ ◇
2.1.1	Expenditure on education, % GDP ⊙	2.5	114	○ ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap ⊙	5.8	103	○ ◇
2.1.3	School life expectancy, years	11.3	96	◇
2.1.4	PISA scales in reading, maths, & science	376.4	66	○
2.1.5	Pupil-teacher ratio, secondary	7.9	8	● ◆
2.2	**Tertiary education**	**35.7**	**51**	
2.2.1	Tertiary enrolment, % gross	38.1	73	
2.2.2	Graduates in science & engineering, % ⊙	23.4	40	
2.2.3	Tertiary inbound mobility, %	8.9	21	● ◆
2.3	**Research & development (R&D)**	**13.8**	**[48]**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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*	27.6	40	
	INFRASTRUCTURE	**37.1**	**93**	◇
3.1	**Information & communication technologies(ICTs)**	**53.0**	**91**	
3.1.1	ICT access*	65.3	68	
3.1.2	ICT use*	55.0	64	
3.1.3	Government's online service*	47.2	108	◇
3.1.4	E-participation*	44.4	107	◇
3.2	**General infrastructure**	**20.8**	**119**	○ ◇
3.2.1	Electricity output, kWh/mn pop.	3,109.8	62	
3.2.2	Logistics performance*	30.6	78	
3.2.3	Gross capital formation, % GDP	n/a	n/a	
3.3	**Ecological sustainability**	**37.6**	**68**	
3.3.1	GDP/unit of energy use	10.0	52	
3.3.2	Environmental performance*	61.1	60	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	87	
	MARKET SOPHISTICATION	**41.8**	**95**	
4.1	**Credit**	**30.9**	**90**	
4.1.1	Ease of getting credit*	40.0	104	◇
4.1.2	Domestic credit to private sector, % GDP	105.5	23	● ◆
4.1.3	Microfinance gross loans, % GDP	0.1	50	
4.2	**Investment**	**33.3**	**106**	
4.2.1	Ease of protecting minority investors*	41.7	108	○ ◇
4.2.2	Market capitalization, % GDP	22.6	57	
4.2.3	Venture capital deals/bn PPP$ GDP	0.2	9	● ◆
4.3	**Trade, competition, & market scale**	**61.3**	**62**	
4.3.1	Applied tariff rate, weighted avg., %	3.8	72	
4.3.2	Intensity of local competition†	79.0	12	● ◆
4.3.3	Domestic market scale, bn PPP$	91.2	82	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**29.3**	**75**	
5.1	**Knowledge workers**	**30.6**	**[82]**	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	26.6	58	
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, %	n/a	n/a	
5.2	**Innovation linkages**	**25.6**	**63**	
5.2.1	University/industry research collaboration†	41.1	65	
5.2.2	State of cluster development†	47.4	56	
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	44	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	61	
5.3	**Knowledge absorption**	**31.6**	**75**	
5.3.1	Intellectual property payments, % total trade	0.1	96	
5.3.2	High-tech imports, % total trade ⊙	3.8	118	○
5.3.3	ICT services imports, % total trade	1.8	31	● ◆
5.3.4	FDI net inflows, % GDP	4.7	33	
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**13.5**	**[109]**	
6.1	**Knowledge creation**	**14.3**	**[58]**	
6.1.1	Patents by origin/bn PPP$ GDP ⊙	1.3	55	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	10.3	46	
6.1.5	Citable documents H-index	10.6	61	
6.2	**Knowledge impact**	**9.2**	**[116]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15-64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.1	102	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.1	50	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**17.2**	**68**	
6.3.1	Intellectual property receipts, % total trade	0.1	63	
6.3.2	High-tech net exports, % total trade	1.0	68	
6.3.3	ICT services exports, % total trade	2.5	40	
6.3.4	FDI net outflows, % GDP	1.8	34	
	CREATIVE OUTPUTS	**26.5**	**68**	
7.1	**Intangible assets**	**30.3**	**106**	
7.1.1	Trademarks by origin/bn PPP$ GDP ⊙	15.1	96	
7.1.2	Industrial designs by origin/bn PPP$ GDP	n/a	n/a	
7.1.3	ICTs & business model creation†	43.2	117	○ ◇
7.1.4	ICTs & organizational model creation†	42.4	105	◇
7.2	**Creative goods & services**	**34.6**	**17**	● ◆
7.2.1	Cultural & creative services exports, % total trade	1.7	9	● ◆
7.2.2	National feature films/mn pop. 15-69 ⊙	3.6	51	
7.2.3	Entertainment & Media market/th pop. 15-69	3.3	49	
7.2.4	Printing & other media, % manufacturing ⊙	4.1	4	● ◆
7.2.5	Creative goods exports, % total trade	0.5	57	
7.3	**Online creativity**	**10.7**	**51**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	6.5	49	
7.3.2	Country-code TLDs/th pop. 15-69	0.3	105	
7.3.3	Wikipedia edits/mn pop. 15-69 ⊙	7.5	68	
7.3.4	Mobile app creation/bn PPP$ GDP	31.1	16	● ◆

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.

LITHUANIA

GII 2019 rank

38

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
40	38	High	EUR	2.9	96.9	34,825.8	40

		Score/Value	Rank	
	INSTITUTIONS	**76.0**	**33**	
1.1	**Political environment**	**75.5**	**32**	
1.1.1	Political and operational stability*	86.0	21	●
1.1.2	Government effectiveness*	70.3	32	
1.2	**Regulatory environment**	**82.6**	**25**	
1.2.1	Regulatory quality*	73.0	27	
1.2.2	Rule of law*	72.6	31	
1.2.3	Cost of redundancy dismissal, salary weeks	13.0	42	
1.3	**Business environment**	**70.0**	**66**	
1.3.1	Ease of starting a business*	93.2	28	
1.3.2	Ease of resolving insolvency*	46.9	77	◇
	HUMAN CAPITAL & RESEARCH	**36.3**	**47**	
2.1	**Education**	**51.7**	**53**	
2.1.1	Expenditure on education, % GDP	4.2	72	
2.1.2	Government funding/pupil, secondary, % GDP/cap	17.1	70	○
2.1.3	School life expectancy, years	16.5	22	●
2.1.4	PISA scales in reading, maths, & science	475.4	35	
2.1.5	Pupil-teacher ratio, secondary ◷	7.7	7	● ◆
2.2	**Tertiary education**	**38.4**	**41**	
2.2.1	Tertiary enrolment, % gross ◷	71.1	27	
2.2.2	Graduates in science & engineering, %	23.8	35	
2.2.3	Tertiary inbound mobility, %	4.1	53	
2.3	**Research & development (R&D)**	**18.9**	**46**	
2.3.1	Researchers, FTE/mn pop	3,013.2	29	
2.3.2	Gross expenditure on R&D, % GDP	0.9	39	
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*	19.8	52	
	INFRASTRUCTURE	**51.7**	**44**	
3.1	**Information & communication technologies(ICTs)**	**75.4**	**43**	
3.1.1	ICT access*	73.7	54	◇
3.1.2	ICT use*	67.8	39	
3.1.3	Government's online service*	79.9	45	
3.1.4	E-participation*	80.3	51	
3.2	**General infrastructure**	**25.8**	**97**	○ ◇
3.2.1	Electricity output, kWh/mn pop	1,280.8	90	○ ◇
3.2.2	Logistics performance*	44.6	53	◇
3.2.3	Gross capital formation, % GDP	18.3	101	○ ◇
3.3	**Ecological sustainability**	**53.7**	**14**	●
3.3.1	GDP/unit of energy use	10.5	45	
3.3.2	Environmental performance*	69.3	28	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	8.5	10	● ◆
	MARKET SOPHISTICATION	**50.9**	**51**	
4.1	**Credit**	**44.0**	**47**	
4.1.1	Ease of getting credit*	70.0	40	
4.1.2	Domestic credit to private sector, % GDP	41.4	80	◇
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**45.3**	**55**	
4.2.1	Ease of protecting minority investors*	66.7	35	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	55	○
4.3	**Trade, competition, & market scale**	**63.4**	**57**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	75.1	26	
4.3.3	Domestic market scale, bn PPP$	96.9	77	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**38.0**	**39**	
5.1	**Knowledge workers**	**56.2**	**29**	
5.1.1	Knowledge-intensive employment, %	41.8	24	
5.1.2	Firms offering formal training, % firms	42.0	31	
5.1.3	GERD performed by business, % GDP	0.3	47	
5.1.4	GERD financed by business, %	39.0	47	
5.1.5	Females employed w/advanced degrees, %	27.9	4	● ◆
5.2	**Innovation linkages**	**29.2**	**51**	
5.2.1	University/industry research collaboration†	51.4	37	
5.2.2	State of cluster development†	41.3	90	○ ◇
5.2.3	GERD financed by abroad, %	19.2	19	●
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	39	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.3	37	
5.3	**Knowledge absorption**	**28.6**	**89**	○ ◇
5.3.1	Intellectual property payments, % total trade	0.2	90	○ ◇
5.3.2	High-tech imports, % total trade	6.5	85	○
5.3.3	ICT services imports, % total trade	0.8	84	○
5.3.4	FDI net inflows, % GDP	2.4	73	
5.3.5	Research talent, % in business enterprise	29.0	43	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**24.4**	**55**	
6.1	**Knowledge creation**	**16.7**	**53**	
6.1.1	Patents by origin/bn PPP$ GDP	1.1	59	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.4	39	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	17.2	29	
6.1.5	Citable documents H-index	11.3	58	
6.2	**Knowledge impact**	**36.9**	**61**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.5	34	◆
6.2.2	New businesses/th pop. 15–64	3.3	38	
6.2.3	Computer software spending, % GDP	0.1	97	○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	14.1	25	
6.2.5	High- & medium-high-tech manufactures, %	0.2	59	
6.3	**Knowledge diffusion**	**19.6**	**50**	
6.3.1	Intellectual property receipts, % total trade	0.1	60	
6.3.2	High-tech net exports, % total trade	5.9	26	
6.3.3	ICT services exports, % total trade ◷	1.0	81	
6.3.4	FDI net outflows, % GDP	1.2	50	
	CREATIVE OUTPUTS	**40.3**	**30**	
7.1	**Intangible assets**	**48.4**	**42**	
7.1.1	Trademarks by origin/bn PPP$ GDP	53.7	44	
7.1.2	Industrial designs by origin/bn PPP$ GDP	3.5	36	
7.1.3	ICTs & business model creation†	69.8	31	
7.1.4	ICTs & organizational model creation†	68.4	21	●
7.2	**Creative goods & services**	**20.8**	**56**	
7.2.1	Cultural & creative services exports, % total trade	0.6	43	
7.2.2	National feature films/mn pop. 15–69	5.5	40	
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	1.2	49	
7.2.5	Creative goods exports, % total trade	2.0	29	
7.3	**Online creativity**	**43.5**	**15**	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	13.1	34	
7.3.2	Country-code TLDs/th pop. 15–69	26.3	22	●
7.3.3	Wikipedia edits/mn pop. 15–69	54.3	19	●
7.3.4	Mobile app creation/bn PPP$ GDP	98.0	4	● ◆

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.

LUXEMBOURG

GII 2019 rank

18

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
11	23	High	EUR	0.6	66.1	106,704.9	15

		Score/Value	Rank	
	INSTITUTIONS	**80.7**	**24**	
1.1	**Political environment**	**90.4**	**11**	
1.1.1	Political and operational stability*	96.5	2	● ◆
1.1.2	Government effectiveness*	87.3	12	
1.2	**Regulatory environment**	**84.5**	**22**	
1.2.1	Regulatory quality*	87.3	13	
1.2.2	Rule of law*	92.3	11	
1.2.3	Cost of redundancy dismissal, salary weeks	21.7	91	◇
1.3	**Business environment**	**67.1**	**74**	◇
1.3.1	Ease of starting a business*	88.7	59	◇
1.3.2	Ease of resolving insolvency*	45.5	81	◇
	HUMAN CAPITAL & RESEARCH	**41.7**	**38**	◇
2.1	**Education**	**48.3**	**66**	◇
2.1.1	Expenditure on education, % GDP	3.9	82	◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	19.2	52	
2.1.3	School life expectancy, years	14.2	68	◇
2.1.4	PISA scales in reading, maths, & science	483.3	32	◇
2.1.5	Pupil-teacher ratio, secondary ⊙	8.8	17	◆
2.2	**Tertiary education**	**41.1**	**34**	
2.2.1	Tertiary enrolment, % gross ⊙	19.6	94	○ ◇
2.2.2	Graduates in science & engineering, %	17.9	74	○
2.2.3	Tertiary inbound mobility, %	47.0	1	● ◆
2.3	**Research & development (R&D)**	**35.6**	**31**	◇
2.3.1	Researchers, FTE/mn pop.	4,682.5	15	
2.3.2	Gross expenditure on R&D, % GDP	1.3	29	◇
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	58.7	23	
2.3.4	QS university ranking, average score top 3*	0.0	78	○ ◇
	INFRASTRUCTURE	**58.7**	**25**	◇
3.1	**Information & communication technologies(ICTs)**	**90.7**	**5**	●
3.1.1	ICT access*	94.2	1	● ◆
3.1.2	ICT use*	82.4	10	
3.1.3	Government's online service*	92.4	22	
3.1.4	E-participation*	93.8	19	
3.2	**General infrastructure**	**32.2**	**74**	◇
3.2.1	Electricity output, kWh/mn pop.	1,480.0	88	○ ◇
3.2.2	Logistics performance*	73.3	24	
3.2.3	Gross capital formation, % GDP	17.4	106	○ ◇
3.3	**Ecological sustainability**	**53.3**	**17**	
3.3.1	GDP/unit of energy use	13.9	17	
3.3.2	Environmental performance*	79.1	7	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.9	49	
	MARKET SOPHISTICATION	**46.9**	**68**	◇
4.1	**Credit**	**32.8**	**77**	◇
4.1.1	Ease of getting credit*	15.0	124	○ ◇
4.1.2	Domestic credit to private sector, % GDP	105.9	21	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**47.2**	**45**	
4.2.1	Ease of protecting minority investors*	48.3	99	○ ◇
4.2.2	Market capitalization, % GDP	98.5	12	
4.2.3	Venture capital deals/bn PPP$ GDP	0.2	8	
4.3	**Trade, competition, & market scale**	**60.7**	**65**	◇
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	72.4	43	
4.3.3	Domestic market scale, bn PPP$	66.1	92	◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**60.7**	**8**	
5.1	**Knowledge workers**	**66.1**	**16**	
5.1.1	Knowledge-intensive employment, %	55.9	2	● ◆
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.7	28	◇
5.1.4	GERD financed by business, % ⊙	47.1	32	
5.1.5	Females employed w/advanced degrees, %	17.7	30	
5.2	**Innovation linkages**	**56.8**	**6**	●
5.2.1	University/industry research collaboration†	68.2	13	
5.2.2	State of cluster development†	67.0	13	
5.2.3	GERD financed by abroad, % ⊙	3.4	69	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	11	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	8.2	4	◆
5.3	**Knowledge absorption**	**59.1**	**4**	●
5.3.1	Intellectual property payments, % total trade	4.3	1	● ◆
5.3.2	High-tech imports, % total trade	1.9	127	○ ◇
5.3.3	ICT services imports, % total trade	3.1	8	◆
5.3.4	FDI net inflows, % GDP	35.7	3	● ◆
5.3.5	Research talent, % in business enterprise	41.9	32	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**42.2**	**18**	
6.1	**Knowledge creation**	**43.5**	**15**	
6.1.1	Patents by origin/bn PPP$ GDP	11.5	9	
6.1.2	PCT patents by origin/bn PPP$ GDP	5.9	1	● ◆
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	12.1	41	◇
6.1.5	Citable documents H-index	9.1	74	◇
6.2	**Knowledge impact**	**34.9**	**74**	◇
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.9	101	○ ◇
6.2.2	New businesses/th pop. 15-64	15.4	8	◆
6.2.3	Computer software spending, % GDP	0.2	69	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.4	72	◇
6.2.5	High- & medium-high-tech manufactures, %	0.1	68	◇
6.3	**Knowledge diffusion**	**48.0**	**11**	
6.3.1	Intellectual property receipts, % total trade	2.0	11	
6.3.2	High-tech net exports, % total trade	0.6	76	◇
6.3.3	ICT services exports, % total trade	3.5	24	
6.3.4	FDI net outflows, % GDP	63.5	1	● ◆
	CREATIVE OUTPUTS	**56.2**	**2**	● ◆
7.1	**Intangible assets**	**59.4**	**9**	
7.1.1	Trademarks by origin/bn PPP$ GDP	102.9	11	
7.1.2	Industrial designs by origin/bn PPP$ GDP	4.6	28	
7.1.3	ICTs & business model creation†	80.3	9	
7.1.4	ICTs & organizational model creation†	72.2	15	
7.2	**Creative goods & services**	**38.6**	**9**	
7.2.1	Cultural & creative services exports, % total trade	4.0	1	● ◆
7.2.2	National feature films/mn pop. 15-69 ⊙	42.4	1	● ◆
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	0.9	73	
7.2.5	Creative goods exports, % total trade	0.1	100	○ ◇
7.3	**Online creativity**	**67.6**	**1**	● ◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	90.8	4	● ◆
7.3.2	Country-code TLDs/th pop. 15-69	63.3	9	
7.3.3	Wikipedia edits/mn pop. 15-69 ⊙	87.7	9	
7.3.4	Mobile app creation/bn PPP$ GDP	57.2	9	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

MADAGASCAR

GII 2019 rank

121

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
109	122	Low	SSF	26.3	42.8	1,630.2	n/a

		Score/Value	Rank	
	INSTITUTIONS	**49.9**	**109**	
1.1	**Political environment**	**31.9**	**123**	
1.1.1	Political and operational stability*	57.9	101	
1.1.2	Government effectiveness*	19.0	126	○
1.2	**Regulatory environment**	**56.7**	**94**	
1.2.1	Regulatory quality*	23.3	110	
1.2.2	Rule of law*	23.7	115	
1.2.3	Cost of redundancy dismissal, salary weeks	14.7	58	
1.3	**Business environment**	**61.2**	**100**	
1.3.1	Ease of starting a business*	88.1	65	
1.3.2	Ease of resolving insolvency*	34.2	112	
	HUMAN CAPITAL & RESEARCH	**15.3**	**109**	
2.1	**Education**	**23.5**	**118**	
2.1.1	Expenditure on education, % GDP ⊙	2.8	109	◇
2.1.2	Government funding/pupil, secondary, % GDP/cap ⊙	8.4	101	◇
2.1.3	School life expectancy, years	10.4	103	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	20.0	88	
2.2	**Tertiary education**	**22.2**	**86**	◆
2.2.1	Tertiary enrolment, % gross ⊙	4.8	118	
2.2.2	Graduates in science & engineering, %	23.3	41	●
2.2.3	Tertiary inbound mobility, %	1.7	80	
2.3	**Research & development (R&D)**	**0.1**	**118**	
2.3.1	Researchers, FTE/mn pop	30.6	99	
2.3.2	Gross expenditure on R&D, % GDP	0.0	114	○ ◇
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	**22.6**	**126**	○
3.1	**Information & communication technologies(ICTs)**	**23.3**	**125**	○
3.1.1	ICT access*	22.3	125	○ ◇
3.1.2	ICT use*	7.6	125	○ ◇
3.1.3	Government's online service*	30.6	119	
3.1.4	E-participation*	32.6	116	
3.2	**General infrastructure**	**21.4**	**113**	
3.2.1	Electricity output, kWh/mn pop	n/a	n/a	
3.2.2	Logistics performance*	15.2	113	
3.2.3	Gross capital formation, % GDP	17.1	110	
3.3	**Ecological sustainability**	**23.0**	**121**	
3.3.1	GDP/unit of energy use	n/a	n/a	
3.3.2	Environmental performance*	33.7	123	○ ◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	109	
	MARKET SOPHISTICATION	**40.3**	**98**	
4.1	**Credit**	**23.2**	**112**	
4.1.1	Ease of getting credit*	40.0	104	
4.1.2	Domestic credit to private sector, % GDP	13.6	122	○
4.1.3	Microfinance gross loans, % GDP	1.5	16	●
4.2	**Investment**	**51.7**	**[35]**	
4.2.1	Ease of protecting minority investors*	51.7	89	
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**	**46.1**	**115**	
4.3.1	Applied tariff rate, weighted avg., %	5.7	92	
4.3.2	Intensity of local competition†	n/a	n/a	
4.3.3	Domestic market scale, bn PPP$	42.8	103	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**18.4**	**[125]**	
5.1	**Knowledge workers**	**7.6**	**[126]**	
5.1.1	Knowledge-intensive employment, % ⊙	3.4	113	
5.1.2	Firms offering formal training, % firms	12.7	86	◇
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	101	
5.2	**Innovation linkages**	**10.1**	**[128]**	
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	GERD financed by abroad, % ⊙	10.6	40	●
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	93	○ ◇
5.3	**Knowledge absorption**	**37.6**	**45**	● ◆
5.3.1	Intellectual property payments, % total trade	0.4	72	
5.3.2	High-tech imports, % total trade	4.1	116	
5.3.3	ICT services imports, % total trade	2.5	14	● ◆
5.3.4	FDI net inflows, % GDP	4.3	39	●
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**15.4**	**96**	
6.1	**Knowledge creation**	**3.7**	**113**	
6.1.1	Patents by origin/bn PPP$ GDP	0.2	95	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	88	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.6	95	
6.1.5	Citable documents H-index	3.8	105	
6.2	**Knowledge impact**	**28.2**	**99**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.1	60	
6.2.2	New businesses/th pop. 15–64	0.1	103	○
6.2.3	Computer software spending, % GDP	0.0	116	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.9	87	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**14.4**	**79**	
6.3.1	Intellectual property receipts, % total trade	0.2	37	● ◆
6.3.2	High-tech net exports, % total trade	0.1	112	
6.3.3	ICT services exports, % total trade	2.3	48	●
6.3.4	FDI net outflows, % GDP	0.9	55	
	CREATIVE OUTPUTS	**15.5**	**113**	
7.1	**Intangible assets**	**23.8**	**[124]**	
7.1.1	Trademarks by origin/bn PPP$ GDP	60.4	35	● ◆
7.1.2	Industrial designs by origin/bn PPP$ GDP	4.1	31	● ◆
7.1.3	ICTs & business model creation†	n/a	n/a	
7.1.4	ICTs & organizational model creation†	n/a	n/a	
7.2	**Creative goods & services**	**14.3**	**70**	◆
7.2.1	Cultural & creative services exports, % total trade	0.1	82	
7.2.2	National feature films/mn pop. 15–69	0.8	88	
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing ⊙	2.0	20	● ◆
7.2.5	Creative goods exports, % total trade	0.1	95	
7.3	**Online creativity**	**0.2**	**120**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	122	
7.3.2	Country-code TLDs/th pop. 15–69	0.1	118	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	0.4	109	
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.

MALAWI

GII 2019 rank

118

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
112	**119**	**Low**	**SSF**	**19.2**	**23.7**	**1,199.4**	**114**

		Score/Value	Rank	
	INSTITUTIONS	**51.3**	**105**	
1.1	**Political environment**	**40.7**	**102**	
1.1.1	Political and operational stability*	61.4	91	
1.1.2	Government effectiveness*	30.3	111	
1.2	**Regulatory environment**	**58.0**	**89**	
1.2.1	Regulatory quality*	21.9	114	
1.2.2	Rule of law*	36.6	84	
1.2.3	Cost of redundancy dismissal, salary weeks	16.7	68	
1.3	**Business environment**	**55.2**	**116**	
1.3.1	Ease of starting a business*	77.2	114	
1.3.2	Ease of resolving insolvency*	33.3	113	
	HUMAN CAPITAL & RESEARCH	**10.8**	**122**	
2.1	**Education**	**30.1**	**107**	
2.1.1	Expenditure on education, % GDP	4.0	78	
2.1.2	Government funding/pupil, secondary, % GDP/cap	25.2	24	●
2.1.3	School life expectancy, years ⊙	10.4	104	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ⊙	37.9	112	○ ◇
2.2	**Tertiary education**	**2.0**	**125**	○ ◇
2.2.1	Tertiary enrolment, % gross ⊙	0.8	123	○ ◇
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, % ⊙	1.1	85	
2.3	**Research & development (R&D)**	**0.1**	**116**	
2.3.1	Researchers, FTE/mn pop. ⊙	48.3	90	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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	**23.5**	**125**	
3.1	**Information & communication technologies(ICTs)**	**20.4**	**127**	○ ◇
3.1.1	ICT access*	22.6	123	○ ◇
3.1.2	ICT use*	13.1	120	
3.1.3	Government's online service*	25.7	122	
3.1.4	E-participation*	20.2	123	◇
3.2	**General infrastructure**	**16.7**	**122**	
3.2.1	Electricity output, kWh/mn pop.	n/a	n/a	
3.2.2	Logistics performance*	24.4	92	
3.2.3	Gross capital formation, % GDP	11.8	123	○ ◇
3.3	**Ecological sustainability**	**33.2**	**83**	
3.3.1	GDP/unit of energy use	n/a	n/a	
3.3.2	Environmental performance*	49.2	101	◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	115	
	MARKET SOPHISTICATION	**38.8**	**107**	
4.1	**Credit**	**32.0**	**83**	
4.1.1	Ease of getting credit*	90.0	7	● ◆
4.1.2	Domestic credit to private sector, % GDP ⊙	10.5	124	○
4.1.3	Microfinance gross loans, % GDP	0.2	41	
4.2	**Investment**	**36.8**	**89**	
4.2.1	Ease of protecting minority investors*	50.0	93	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	31	●
4.3	**Trade, competition, & market scale**	**47.4**	**113**	
4.3.1	Applied tariff rate, weighted avg., % ⊙	4.8	82	◆
4.3.2	Intensity of local competition†	61.1	105	
4.3.3	Domestic market scale, bn PPP$	23.7	123	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**29.5**	**[72]**	
5.1	**Knowledge workers**	**17.8**	**[112]**	
5.1.1	Knowledge-intensive employment, % ⊙	3.8	110	
5.1.2	Firms offering formal training, % firms	32.9	45	●
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, %	0.6	111	
5.2	**Innovation linkages**	**33.0**	**[43]**	
5.2.1	University/industry research collaboration†	28.7	110	
5.2.2	State of cluster development†	35.2	105	
5.2.3	GERD financed by abroad, %	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	n/a	n/a	
5.3	**Knowledge absorption**	**37.7**	**44**	● ◆
5.3.1	Intellectual property payments, % total trade	0.2	87	
5.3.2	High-tech imports, % total trade	10.5	25	●
5.3.3	ICT services imports, % total trade	1.5	47	●
5.3.4	FDI net inflows, % GDP	6.2	24	●
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**15.0**	**99**	
6.1	**Knowledge creation**	**8.3**	**78**	
6.1.1	Patents by origin/bn PPP$ GDP ⊙	0.1	105	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	99	○ ◇
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	9.7	51	● ◆
6.1.5	Citable documents H-index	7.0	83	◆
6.2	**Knowledge impact**	**22.1**	**110**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.4	98	
6.2.2	New businesses/th pop. 15–64 ⊙	0.1	102	
6.2.3	Computer software spending, % GDP	0.0	109	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.8	112	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.1	83	
6.3	**Knowledge diffusion**	**14.8**	**77**	
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	0.5	81	◆
6.3.3	ICT services exports, % total trade	2.1	52	●
6.3.4	FDI net outflows, % GDP	-0.1	117	
	CREATIVE OUTPUTS	**15.5**	**114**	
7.1	**Intangible assets**	**25.9**	**119**	
7.1.1	Trademarks by origin/bn PPP$ GDP ⊙	23.6	82	
7.1.2	Industrial designs by origin/bn PPP$ GDP	n/a	n/a	
7.1.3	ICTs & business model creation†	40.0	121	
7.1.4	ICTs & organizational model creation†	28.7	124	○ ◇
7.2	**Creative goods & services**	**10.0**	**[85]**	
7.2.1	Cultural & creative services exports, % total trade	0.1	81	
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 ⊙	1.2	46	●
7.2.5	Creative goods exports, % total trade	0.1	104	
7.3	**Online creativity**	**0.1**	**121**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.2	118	
7.3.2	Country-code TLDs/th pop. 15–69	0.3	104	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	0.0	124	○
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.

MALAYSIA

GII 2019 rank

35

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
39	34	Upper middle	SEAO	32.0	999.8	30,859.9	35

		Score/Value	Rank	
	INSTITUTIONS	**71.6**	**40**	◆
1.1	**Political environment**	**72.6**	**35**	◆
1.1.1	Political and operational stability*	84.2	25	◆
1.1.2	Government effectiveness*	66.9	37	◆
1.2	**Regulatory environment**	**67.3**	**64**	
1.2.1	Regulatory quality*	60.3	40	◆
1.2.2	Rule of law*	57.3	46	◆
1.2.3	Cost of redundancy dismissal, salary weeks	23.9	100	○
1.3	**Business environment**	**75.0**	**46**	
1.3.1	Ease of starting a business*	82.8	94	○
1.3.2	Ease of resolving insolvency*	67.2	38	

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**44.2**	**33**	◆
2.1	**Education**	**46.1**	**70**	
2.1.1	Expenditure on education, % GDP	4.7	56	
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.0	35	
2.1.3	School life expectancy, years	13.5	76	○
2.1.4	PISA scales in reading, maths, & science ⊙	412.7	58	○
2.1.5	Pupil-teacher ratio, secondary	12.3	51	
2.2	**Tertiary education**	**47.8**	**18**	◆
2.2.1	Tertiary enrolment, % gross	41.9	68	
2.2.2	Graduates in science & engineering, %	32.1	8	● ◆
2.2.3	Tertiary inbound mobility, %	8.1	27	◆
2.3	**Research & development (R&D)**	**38.6**	**27**	◆
2.3.1	Researchers, FTE/mn pop. ⊙	2,357.9	36	◆
2.3.2	Gross expenditure on R&D, % GDP ⊙	1.4	23	◆
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	44.3	37	◆
2.3.4	QS university ranking, average score top 3*	50.6	17	● ◆

		Score/Value	Rank	
	INFRASTRUCTURE	**51.8**	**42**	◆
3.1	**Information & communication technologies(ICTs)**	**79.4**	**33**	◆
3.1.1	ICT access*	75.0	43	◆
3.1.2	ICT use*	64.8	47	◆
3.1.3	Government's online service*	88.9	27	◆
3.1.4	E-participation*	88.8	32	
3.2	**General infrastructure**	**38.1**	**50**	
3.2.1	Electricity output, kWh/mn pop.	5,022.8	45	
3.2.2	Logistics performance*	54.1	40	◆
3.2.3	Gross capital formation, % GDP	24.3	51	
3.3	**Ecological sustainability**	**37.9**	**66**	
3.3.1	GDP/unit of energy use	8.8	65	
3.3.2	Environmental performance*	59.2	66	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.4	42	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**57.8**	**25**	◆
4.1	**Credit**	**44.8**	**45**	◆
4.1.1	Ease of getting credit*	75.0	29	
4.1.2	Domestic credit to private sector, % GDP	118.8	18	◆
4.1.3	Microfinance gross loans, % GDP ⊙	0.1	52	
4.2	**Investment**	**55.9**	**29**	
4.2.1	Ease of protecting minority investors*	81.7	2	● ◆
4.2.2	Market capitalization, % GDP	131.7	6	● ◆
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	48	
4.3	**Trade, competition, & market scale**	**72.6**	**27**	
4.3.1	Applied tariff rate, weighted avg., % ⊙	4.0	74	
4.3.2	Intensity of local competition†	76.7	17	● ◆
4.3.3	Domestic market scale, bn PPP$	999.8	25	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**39.3**	**36**	◆
5.1	**Knowledge workers**	**38.1**	**58**	
5.1.1	Knowledge-intensive employment, % ⊙	27.3	50	
5.1.2	Firms offering formal training, % firms	18.5	77	○ ◇
5.1.3	GERD performed by business, % GDP ⊙	0.8	25	◆
5.1.4	GERD financed by business, %	56.9	16	◆
5.1.5	Females employed w/advanced degrees, % ⊙	12.5	56	
5.2	**Innovation linkages**	**30.2**	**47**	◆
5.2.1	University/industry research collaboration†	72.0	8	● ◆
5.2.2	State of cluster development†	71.1	8	● ◆
5.2.3	GERD financed by abroad, %	0.9	91	○
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	34	◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.2	50	
5.3	**Knowledge absorption**	**49.5**	**19**	◆
5.3.1	Intellectual property payments, % total trade	0.7	53	
5.3.2	High-tech imports, % total trade	26.4	3	● ◆
5.3.3	ICT services imports, % total trade	1.4	48	
5.3.4	FDI net inflows, % GDP	3.6	46	
5.3.5	Research talent, % in business enterprise ⊙	21.9	53	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**32.1**	**34**	◆
6.1	**Knowledge creation**	**9.9**	**71**	
6.1.1	Patents by origin/bn PPP$ GDP	1.2	57	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	58	
6.1.3	Utility models by origin/bn PPP$ GDP	0.1	48	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	8.0	59	
6.1.5	Citable documents H-index	17.0	43	
6.2	**Knowledge impact**	**46.3**	**24**	◆
6.2.1	Growth rate of PPP$ GDP/worker, %	3.3	21	
6.2.2	New businesses/th pop. 15-64	2.3	46	
6.2.3	Computer software spending, % GDP	0.4	29	◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	11.1	27	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.4	17	◆
6.3	**Knowledge diffusion**	**40.0**	**20**	◆
6.3.1	Intellectual property receipts, % total trade	0.1	62	
6.3.2	High-tech net exports, % total trade	34.1	1	● ◆
6.3.3	ICT services exports, % total trade	1.3	72	
6.3.4	FDI net outflows, % GDP	2.9	23	◆

		Score/Value	Rank	
	CREATIVE OUTPUTS	**32.8**	**44**	
7.1	**Intangible assets**	**44.4**	**51**	
7.1.1	Trademarks by origin/bn PPP$ GDP	20.9	87	○
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.6	83	○
7.1.3	ICTs & business model creation†	74.4	21	◆
7.1.4	ICTs & organizational model creation†	71.9	17	● ◆
7.2	**Creative goods & services**	**37.1**	**11**	● ◆
7.2.1	Cultural & creative services exports, % total trade	0.3	67	
7.2.2	National feature films/mn pop. 15-69	3.8	48	
7.2.3	Entertainment & Media market/th pop. 15-69	9.7	36	◆
7.2.4	Printing & other media, % manufacturing ⊙	0.9	72	○
7.2.5	Creative goods exports, % total trade	9.8	1	● ◆
7.3	**Online creativity**	**5.2**	**64**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	6.2	51	
7.3.2	Country-code TLDs/th pop. 15-69	4.0	56	
7.3.3	Wikipedia edits/mn pop. 15-69	9.4	65	
7.3.4	Mobile app creation/bn PPP$ GDP	4.2	54	

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.

MALI

GII 2019 rank

112

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
100	120	Low	SSF	19.1	44.3	2,384.0	112

		Score/Value	Rank	
	INSTITUTIONS	**51.4**	**103**	
1.1	**Political environment**	**31.7**	**124**	○
1.1.1	Political and operational stability*	47.4	123	○
1.1.2	Government effectiveness*	23.8	121	
1.2	**Regulatory environment**	**58.8**	**85**	
1.2.1	Regulatory quality*	26.6	105	
1.2.2	Rule of law*	25.8	110	
1.2.3	Cost of redundancy dismissal, salary weeks	13.7	52	●
1.3	**Business environment**	**63.8**	**85**	
1.3.1	Ease of starting a business*	84.1	85	
1.3.2	Ease of resolving insolvency*	43.5	86	
	HUMAN CAPITAL & RESEARCH	**10.7**	**123**	○
2.1	**Education**	**27.1**	**111**	
2.1.1	Expenditure on education, % GDP	3.1	101	
2.1.2	Government funding/pupil, secondary, % GDP/cap	20.3	48	●
2.1.3	School life expectancy, years ◷	7.3	117	○ ◇
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	17.4	77	
2.2	**Tertiary education**	**3.4**	**122**	○ ◇
2.2.1	Tertiary enrolment, % gross ◷	5.5	117	○
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, % ◷	0.9	90	
2.3	**Research & development (R&D)**	**1.6**	**96**	
2.3.1	Researchers, FTE/mn pop.	32.8	98	
2.3.2	Gross expenditure on R&D, % GDP	0.3	80	
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	**27.5**	**119**	
3.1	**Information & communication technologies(ICTs)**	**25.2**	**124**	○
3.1.1	ICT access*	35.7	110	
3.1.2	ICT use*	14.6	117	
3.1.3	Government's online service*	26.4	121	
3.1.4	E-participation*	24.2	121	◇
3.2	**General infrastructure**	**27.8**	**90**	
3.2.1	Electricity output, kWh/mn pop.	n/a	n/a	
3.2.2	Logistics performance*	24.6	91	
3.2.3	Gross capital formation, % GDP	19.4	98	
3.3	**Ecological sustainability**	**29.6**	**98**	
3.3.1	GDP/unit of energy use	n/a	n/a	
3.3.2	Environmental performance*	43.7	112	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	116	
	MARKET SOPHISTICATION	**33.9**	**123**	○
4.1	**Credit**	**18.3**	**120**	
4.1.1	Ease of getting credit*	30.0	115	
4.1.2	Domestic credit to private sector, % GDP	27.1	101	
4.1.3	Microfinance gross loans, % GDP	0.8	22	●
4.2	**Investment**	**40.0**	**[72]**	
4.2.1	Ease of protecting minority investors*	40.0	114	
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**	**43.3**	**123**	○
4.3.1	Applied tariff rate, weighted avg., %	10.0	112	
4.3.2	Intensity of local competition†	58.3	112	
4.3.3	Domestic market scale, bn PPP$	44.3	98	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**30.1**	**68**	◆
5.1	**Knowledge workers**	**8.1**	**125**	○
5.1.1	Knowledge-intensive employment, % ◷	3.7	111	
5.1.2	Firms offering formal training, % firms	17.7	80	
5.1.3	GERD performed by business, % GDP	n/a	n/a	
5.1.4	GERD financed by business, %	0.8	91	
5.1.5	Females employed w/advanced degrees, % ◷	0.3	114	○
5.2	**Innovation linkages**	**41.3**	**27**	● ◆
5.2.1	University/industry research collaboration†	39.8	70	
5.2.2	State of cluster development†	46.5	66	◆
5.2.3	GERD financed by abroad, %	50.2	2	● ◆
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	77	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**41.1**	**39**	● ◆
5.3.1	Intellectual property payments, % total trade ◷	0.1	107	
5.3.2	High-tech imports, % total trade	6.6	81	
5.3.3	ICT services imports, % total trade	3.1	7	● ◆
5.3.4	FDI net inflows, % GDP	2.1	80	
5.3.5	Research talent, % in business enterprise	31.4	40	● ◆
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**20.5**	**[71]**	
6.1	**Knowledge creation**	**3.8**	**[111]**	
6.1.1	Patents by origin/bn PPP$ GDP	0.2	96	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.3	108	◇
6.1.5	Citable documents H-index	4.0	102	
6.2	**Knowledge impact**	**38.9**	**[53]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.8	29	●
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.0	113	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.2	127	○
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**18.8**	**53**	● ◆
6.3.1	Intellectual property receipts, % total trade	0.0	95	
6.3.2	High-tech net exports, % total trade	0.1	116	
6.3.3	ICT services exports, % total trade	5.0	9	● ◆
6.3.4	FDI net outflows, % GDP	0.6	64	●
	CREATIVE OUTPUTS	**14.2**	**119**	
7.1	**Intangible assets**	**27.2**	**116**	
7.1.1	Trademarks by origin/bn PPP$ GDP	5.3	115	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.2	99	
7.1.3	ICTs & business model creation†	48.6	111	
7.1.4	ICTs & organizational model creation†	45.0	95	
7.2	**Creative goods & services**	**0.2**	**[127]**	
7.2.1	Cultural & creative services exports, % total trade	0.0	103	
7.2.2	National feature films/mn pop. 15–69	0.1	107	○ ◇
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	118	
7.3	**Online creativity**	**2.3**	**81**	◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	121	
7.3.2	Country-code TLDs/th pop. 15–69	6.7	45	● ◆
7.3.3	Wikipedia edits/mn pop. 15–69 ◷	0.1	121	○
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.

MALTA

GII 2019 rank

27

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
20	**32**	**High**	**EUR**	**0.4**	**20.8**	**45,605.9**	**26**

		Score/Value	Rank	
	INSTITUTIONS	**75.2**	**35**	
1.1	**Political environment**	**75.9**	**30**	
1.1.1	Political and operational stability*	86.0	21	
1.1.2	Government effectiveness*	70.9	31	
1.2	**Regulatory environment**	**88.2**	**17**	
1.2.1	Regulatory quality*	76.4	22	
1.2.2	Rule of law*	76.6	24	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	● ◆
1.3	**Business environment**	**61.5**	**97**	○ ◇
1.3.1	Ease of starting a business*	84.9	79	◇
1.3.2	Ease of resolving insolvency*	38.1	105	○ ◇

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**36.6**	**45**	
2.1	**Education**	**60.0**	**24**	
2.1.1	Expenditure on education, % GDP	5.3	35	
2.1.2	Government funding/pupil, secondary, % GDP/cap	29.9	13	◆
2.1.3	School life expectancy, years	15.9	36	
2.1.4	PISA scales in reading, maths, & science	463.4	40	
2.1.5	Pupil-teacher ratio, secondary ⊙	7.2	4	● ◆
2.2	**Tertiary education**	**29.9**	**69**	◇
2.2.1	Tertiary enrolment, % gross ⊙	48.8	58	
2.2.2	Graduates in science & engineering, %	18.0	72	○
2.2.3	Tertiary inbound mobility, %	8.4	23	
2.3	**Research & development (R&D)**	**19.8**	**45**	
2.3.1	Researchers, FTE/mn pop.	2,075.0	40	
2.3.2	Gross expenditure on R&D, % GDP	0.5	56	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	42.5	39	
2.3.4	QS university ranking, average score top 3*	0.0	78	○ ◇

		Score/Value	Rank	
	INFRASTRUCTURE	**61.1**	**18**	
3.1	**Information & communication technologies(ICTs)**	**84.6**	**22**	
3.1.1	ICT access*	91.3	5	● ◆
3.1.2	ICT use*	78.1	19	
3.1.3	Government's online service*	84.0	36	
3.1.4	E-participation*	84.8	39	
3.2	**General infrastructure**	**25.8**	**98**	○ ◇
3.2.1	Electricity output, kWh/mn pop.	1,945.5	78	◇
3.2.2	Logistics performance*	35.1	68	◇
3.2.3	Gross capital formation, % GDP	19.9	93	○
3.3	**Ecological sustainability**	**72.8**	**1**	● ◆
3.3.1	GDP/unit of energy use	25.6	2	● ◆
3.3.2	Environmental performance*	80.9	4	● ◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.8	52	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**45.2**	**80**	◇
4.1	**Credit**	**36.2**	**65**	
4.1.1	Ease of getting credit*	35.0	110	○ ◇
4.1.2	Domestic credit to private sector, % GDP	79.6	37	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**44.0**	**59**	
4.2.1	Ease of protecting minority investors*	61.7	54	
4.2.2	Market capitalization, % GDP	40.8	36	
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	13	
4.3	**Trade, competition, & market scale**	**55.5**	**87**	◇
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	80.4	7	◆
4.3.3	Domestic market scale, bn PPP$	20.8	125	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**54.9**	**15**	
5.1	**Knowledge workers**	**53.8**	**31**	
5.1.1	Knowledge-intensive employment, %	42.5	22	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.3	44	
5.1.4	GERD financed by business, %	54.5	18	
5.1.5	Females employed w/advanced degrees, %	13.3	50	
5.2	**Innovation linkages**	**55.8**	**8**	◆
5.2.1	University/industry research collaboration†	48.8	42	
5.2.2	State of cluster development†	53.8	41	
5.2.3	GERD financed by abroad, %	10.7	38	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.3	1	● ◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	5.3	11	◆
5.3	**Knowledge absorption**	**55.1**	**11**	
5.3.1	Intellectual property payments, % total trade	3.6	4	● ◆
5.3.2	High-tech imports, % total trade ⊙	8.4	51	
5.3.3	ICT services imports, % total trade	1.2	61	
5.3.4	FDI net inflows, % GDP	25.9	6	◆
5.3.5	Research talent, % in business enterprise	57.0	16	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**31.9**	**35**	
6.1	**Knowledge creation**	**21.0**	**41**	
6.1.1	Patents by origin/bn PPP$ GDP ⊙	5.2	23	
6.1.2	PCT patents by origin/bn PPP$ GDP	2.2	16	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	10.0	48	
6.1.5	Citable documents H-index	5.4	93	○ ◇
6.2	**Knowledge impact**	**43.2**	**37**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.4	78	○
6.2.2	New businesses/th pop. 15-64	17.9	4	● ◆
6.2.3	Computer software spending, % GDP	0.4	30	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	9.9	31	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.1	76	○ ◇
6.3	**Knowledge diffusion**	**31.5**	**28**	
6.3.1	Intellectual property receipts, % total trade	2.5	9	◆
6.3.2	High-tech net exports, % total trade ⊙	3.8	37	
6.3.3	ICT services exports, % total trade	0.5	100	○
6.3.4	FDI net outflows, % GDP	n/a	n/a	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**55.0**	**4**	● ◆
7.1	**Intangible assets**	**64.2**	**4**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP	119.8	8	◆
7.1.2	Industrial designs by origin/bn PPP$ GDP ⊙	12.4	10	◆
7.1.3	ICTs & business model creation†	76.1	15	
7.1.4	ICTs & organizational model creation†	64.4	31	
7.2	**Creative goods & services**	**54.2**	**2**	● ◆
7.2.1	Cultural & creative services exports, % total trade	5.9	1	● ◆
7.2.2	National feature films/mn pop. 15-69	16.4	6	◆
7.2.3	Entertainment & Media market/th pop. 15-69	12.1	32	◇
7.2.4	Printing & other media, % manufacturing ⊙	22.4	1	● ◆
7.2.5	Creative goods exports, % total trade ⊙	0.2	81	
7.3	**Online creativity**	**37.3**	**20**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	93.7	3	● ◆
7.3.2	Country-code TLDs/th pop. 15-69	15.6	33	
7.3.3	Wikipedia edits/mn pop. 15-69 ⊙	41.9	33	
7.3.4	Mobile app creation/bn PPP$ GDP	11.9	39	

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.

MAURITIUS

GII 2019 rank

82

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
96	67	Upper middle	SSF	1.3	30.1	23,699.5	75

		Score/Value	Rank	
	INSTITUTIONS	**63.6**	**62**	
1.1	**Political environment**	**76.0**	**29**	◆
1.1.1	Political and operational stability*	91.2	12	● ◆
1.1.2	Government effectiveness*	68.3	35	◆
1.2	**Regulatory environment**	**33.3**	**126**	○ ◇
1.2.1	Regulatory quality*	68.7	33	◆
1.2.2	Rule of law*	64.4	36	◆
1.2.3	Cost of redundancy dismissal, salary weeks	73.6	127	○ ◇
1.3	**Business environment**	**81.7**	**30**	◆
1.3.1	Ease of starting a business*	94.3	18	● ◆
1.3.2	Ease of resolving insolvency*	69.1	32	◆
	HUMAN CAPITAL & RESEARCH	**27.1**	**77**	
2.1	**Education**	**56.5**	**41**	
2.1.1	Expenditure on education, % GDP	5.0	47	
2.1.2	Government funding/pupil, secondary, % GDP/cap	32.0	10	● ◆
2.1.3	School life expectancy, years	15.0	53	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	12.7	53	
2.2	**Tertiary education**	**23.5**	**84**	
2.2.1	Tertiary enrolment, % gross	38.8	71	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	4.5	45	
2.3	**Research & development (R&D)**	**1.4**	**100**	
2.3.1	Researchers, FTE/mn pop. ⊕	181.8	79	
2.3.2	Gross expenditure on R&D, % GDP ⊕	0.2	91	
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	**44.2**	**76**	
3.1	**Information & communication technologies(ICTs)**	**66.3**	**66**	
3.1.1	ICT access*	74.3	49	◆
3.1.2	ICT use*	49.0	73	
3.1.3	Government's online service*	72.9	63	
3.1.4	E-participation*	69.1	70	
3.2	**General infrastructure**	**20.8**	**118**	○ ◇
3.2.1	Electricity output, kWh/mn pop	2,414.3	72	
3.2.2	Logistics performance*	31.3	77	
3.2.3	Gross capital formation, % GDP	15.8	117	○ ◇
3.3	**Ecological sustainability**	**45.4**	**44**	
3.3.1	GDP/unit of energy use	15.6	10	● ◆
3.3.2	Environmental performance*	56.6	78	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.8	72	
	MARKET SOPHISTICATION	**53.4**	**43**	
4.1	**Credit**	**56.9**	**22**	● ◆
4.1.1	Ease of getting credit*	65.0	54	
4.1.2	Domestic credit to private sector, % GDP	102.3	25	● ◆
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**46.4**	**50**	
4.2.1	Ease of protecting minority investors*	75.0	14	● ◆
4.2.2	Market capitalization, % GDP	65.7	24	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	36	
4.3	**Trade, competition, & market scale**	**56.8**	**82**	
4.3.1	Applied tariff rate, weighted avg., %	0.9	8	●
4.3.2	Intensity of local competition†	70.5	54	
4.3.3	Domestic market scale, bn PPP$	30.1	116	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**27.9**	**79**	
5.1	**Knowledge workers**	**27.9**	**87**	
5.1.1	Knowledge-intensive employment, %	24.0	60	
5.1.2	Firms offering formal training, % firms ⊕	25.6	62	
5.1.3	GERD performed by business, % GDP	n/a	n/a	
5.1.4	GERD financed by business, % ⊕	0.3	95	○ ◇
5.1.5	Females employed w/advanced degrees, %	8.4	78	
5.2	**Innovation linkages**	**24.2**	**69**	
5.2.1	University/industry research collaboration†	35.7	90	
5.2.2	State of cluster development†	51.2	45	
5.2.3	GERD financed by abroad, % ⊕	6.4	56	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	29	◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.2	45	
5.3	**Knowledge absorption**	**31.6**	**74**	
5.3.1	Intellectual property payments, % total trade	0.3	78	
5.3.2	High-tech imports, % total trade	5.5	97	
5.3.3	ICT services imports, % total trade	1.6	36	
5.3.4	FDI net inflows, % GDP	2.3	76	
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**11.0**	**116**	○ ◇
6.1	**Knowledge creation**	**4.0**	**[106]**	
6.1.1	Patents by origin/bn PPP$ GDP	0.0	123	○
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.1	92	
6.1.5	Citable documents H-index	2.4	116	○
6.2	**Knowledge impact**	**17.8**	**113**	◇
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	9.8	14	● ◆
6.2.3	Computer software spending, % GDP	0.2	72	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.2	45	
6.2.5	High- & medium-high-tech manufactures, %	0.0	98	○ ◇
6.3	**Knowledge diffusion**	**11.2**	**97**	
6.3.1	Intellectual property receipts, % total trade	0.0	78	
6.3.2	High-tech net exports, % total trade ⊕	0.0	127	○
6.3.3	ICT services exports, % total trade	2.0	54	
6.3.4	FDI net outflows, % GDP	0.3	78	
	CREATIVE OUTPUTS	**24.9**	**73**	
7.1	**Intangible assets**	**36.0**	**92**	
7.1.1	Trademarks by origin/bn PPP$ GDP	36.6	69	
7.1.2	Industrial designs by origin/bn PPP$ GDP ⊕	0.4	89	
7.1.3	ICTs & business model creation†	57.4	79	
7.1.4	ICTs & organizational model creation†	53.2	65	
7.2	**Creative goods & services**	**21.3**	**53**	
7.2.1	Cultural & creative services exports, % total trade	0.1	78	
7.2.2	National feature films/mn pop. 15–69	9.3	20	● ◆
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	1.8	22	●
7.2.5	Creative goods exports, % total trade	0.9	47	
7.3	**Online creativity**	**6.5**	**60**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	13.2	33	◆
7.3.2	Country-code TLDs/th pop. 15–69	2.2	66	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊕	5.9	75	
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.

MEXICO

GII 2019 rank

56

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
55	**59**	**Upper middle**	**LCN**	**130.8**	**2,575.2**	**20,601.7**	**56**

		Score/Value	Rank	
	INSTITUTIONS	**62.8**	**66**	
1.1	**Political environment**	**51.1**	**78**	
1.1.1	Political and operational stability*	61.4	91	
1.1.2	Government effectiveness*	45.9	72	
1.2	**Regulatory environment**	**59.0**	**84**	
1.2.1	Regulatory quality*	47.2	61	
1.2.2	Rule of law*	31.4	97	
1.2.3	Cost of redundancy dismissal, salary weeks	22.0	94	
1.3	**Business environment**	**78.4**	**37**	
1.3.1	Ease of starting a business*	85.9	75	
1.3.2	Ease of resolving insolvency*	70.8	30	◆

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**33.4**	**54**	
2.1	**Education**	**43.5**	**76**	
2.1.1	Expenditure on education, % GDP	5.2	38	
2.1.2	Government funding/pupil, secondary, % GDP/cap	15.6	79	
2.1.3	School life expectancy, years	14.3	66	
2.1.4	PISA scales in reading, maths, & science	415.7	55	
2.1.5	Pupil-teacher ratio, secondary	16.9	75	
2.2	**Tertiary education**	**30.7**	**64**	
2.2.1	Tertiary enrolment, % gross	38.2	72	
2.2.2	Graduates in science & engineering, %	25.5	27	
2.2.3	Tertiary inbound mobility, %	0.3	102	○ ◇
2.3	**Research & development (R&D)**	**25.8**	**42**	
2.3.1	Researchers, FTE/mn pop. ⊕	244.2	74	
2.3.2	Gross expenditure on R&D, % GDP ⊕	0.5	65	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	49.0	29	◆
2.3.4	QS university ranking, average score top 3*	41.2	30	◆

		Score/Value	Rank	
	INFRASTRUCTURE	**48.3**	**59**	
3.1	**Information & communication technologies(ICTs)**	**72.8**	**51**	
3.1.1	ICT access*	54.9	79	
3.1.2	ICT use*	49.6	72	
3.1.3	Government's online service*	92.4	22	● ◆
3.1.4	E-participation*	94.4	17	● ◆
3.2	**General infrastructure**	**31.9**	**76**	
3.2.1	Electricity output, kWh/mn pop.	2,586.2	69	
3.2.2	Logistics performance*	46.2	50	
3.2.3	Gross capital formation, % GDP	22.5	70	
3.3	**Ecological sustainability**	**40.1**	**54**	
3.3.1	GDP/unit of energy use	11.6	34	
3.3.2	Environmental performance*	59.7	64	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.7	74	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**49.9**	**57**	
4.1	**Credit**	**37.3**	**62**	
4.1.1	Ease of getting credit*	90.0	7	● ◆
4.1.2	Domestic credit to private sector, % GDP	35.5	87	
4.1.3	Microfinance gross loans, % GDP ⊕	0.4	35	
4.2	**Investment**	**32.8**	**110**	○
4.2.1	Ease of protecting minority investors*	58.3	68	
4.2.2	Market capitalization, % GDP	34.4	44	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	69	○
4.3	**Trade, competition, & market scale**	**79.5**	**8**	● ◆
4.3.1	Applied tariff rate, weighted avg., %	1.2	12	●
4.3.2	Intensity of local competition†	70.1	59	
4.3.3	Domestic market scale, bn PPP$	2,575.2	11	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**29.4**	**73**	
5.1	**Knowledge workers**	**35.7**	**68**	
5.1.1	Knowledge-intensive employment, %	19.9	74	
5.1.2	Firms offering formal training, % firms ⊕	50.8	20	●
5.1.3	GERD performed by business, % GDP ⊕	0.1	55	
5.1.4	GERD financed by business, %	20.7	66	
5.1.5	Females employed w/advanced degrees, %	8.8	74	
5.2	**Innovation linkages**	**20.0**	**87**	
5.2.1	University/industry research collaboration†	43.7	56	
5.2.2	State of cluster development†	53.8	39	◆
5.2.3	GERD financed by abroad, %	0.6	95	○
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	81	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	63	
5.3	**Knowledge absorption**	**32.6**	**67**	
5.3.1	Intellectual property payments, % total trade	0.1	104	○
5.3.2	High-tech imports, % total trade	17.0	10	● ◆
5.3.3	ICT services imports, % total trade	0.0	125	○ ◇
5.3.4	FDI net inflows, % GDP	3.1	54	
5.3.5	Research talent, % in business enterprise ⊕	24.5	50	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**25.5**	**50**	
6.1	**Knowledge creation**	**11.0**	**67**	
6.1.1	Patents by origin/bn PPP$ GDP	0.5	76	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	65	
6.1.3	Utility models by origin/bn PPP$ GDP	0.2	42	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.3	88	
6.1.5	Citable documents H-index	27.4	34	◆
6.2	**Knowledge impact**	**36.7**	**65**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.3	82	
6.2.2	New businesses/th pop. 15-64	0.5	83	○
6.2.3	Computer software spending, % GDP	0.2	66	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.9	77	
6.2.5	High- & medium-high-tech manufactures, %	0.5	11	● ◆
6.3	**Knowledge diffusion**	**28.7**	**33**	◆
6.3.1	Intellectual property receipts, % total trade	0.0	102	○ ◇
6.3.2	High-tech net exports, % total trade	15.0	9	● ◆
6.3.3	ICT services exports, % total trade	0.0	126	○
6.3.4	FDI net outflows, % GDP	0.7	61	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**29.2**	**55**	
7.1	**Intangible assets**	**41.4**	**62**	
7.1.1	Trademarks by origin/bn PPP$ GDP	44.1	59	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.7	82	
7.1.3	ICTs & business model creation†	67.6	37	◆
7.1.4	ICTs & organizational model creation†	57.9	53	
7.2	**Creative goods & services**	**32.1**	**22**	● ◆
7.2.1	Cultural & creative services exports, % total trade	0.0	118	○
7.2.2	National feature films/mn pop. 15-69	2.0	66	
7.2.3	Entertainment & Media market/th pop. 15-69	7.5	40	
7.2.4	Printing & other media, % manufacturing	0.4	96	○ ◇
7.2.5	Creative goods exports, % total trade	9.6	1	● ◆
7.3	**Online creativity**	**2.2**	**82**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	2.5	72	
7.3.2	Country-code TLDs/th pop. 15-69	3.3	58	
7.3.3	Wikipedia edits/mn pop. 15-69	3.4	93	
7.3.4	Mobile app creation/bn PPP$ GDP	0.7	66	

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.

MONGOLIA

GII 2019 rank

53

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
44	73	Lower middle	SEAO	3.1	43.2	13,446.5	53

		Score/Value	Rank	
	INSTITUTIONS	**59.8**	**76**	
1.1	**Political environment**	**52.5**	**73**	
1.1.1	Political and operational stability*	77.2	44	◆
1.1.2	Government effectiveness*	40.2	86	
1.2	**Regulatory environment**	**68.8**	**58**	◆
1.2.1	Regulatory quality*	38.8	77	
1.2.2	Rule of law*	38.4	80	
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	19	● ◆
1.3	**Business environment**	**58.1**	**108**	
1.3.1	Ease of starting a business*	86.9	70	
1.3.2	Ease of resolving insolvency*	29.4	122	○ ◇

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**24.6**	**84**	
2.1	**Education**	**41.9**	**79**	
2.1.1	Expenditure on education, % GDP	4.1	76	
2.1.2	Government funding/pupil, secondary, % GDP/cap ⊙	15.4	81	
2.1.3	School life expectancy, years ⊙	14.6	61	◆
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ⊙	14.5	65	
2.2	**Tertiary education**	**31.1**	**63**	
2.2.1	Tertiary enrolment, % gross	64.8	36	◆
2.2.2	Graduates in science & engineering, %	21.6	53	
2.2.3	Tertiary inbound mobility, %	1.0	87	
2.3	**Research & development (R&D)**	**0.9**	**108**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	0.1	99	
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	○ ◇

		Score/Value	Rank	
	INFRASTRUCTURE	**41.0**	**84**	
3.1	**Information & communication technologies(ICTs)**	**55.6**	**84**	
3.1.1	ICT access*	49.1	89	
3.1.2	ICT use*	40.0	88	
3.1.3	Government's online service*	59.7	91	
3.1.4	E-participation*	73.6	63	
3.2	**General infrastructure**	**36.8**	**57**	
3.2.1	Electricity output, kWh/mn pop.	1,870.3	79	
3.2.2	Logistics performance*	14.5	114	○ ◇
3.2.3	Gross capital formation, % GDP	34.8	12	● ◆
3.3	**Ecological sustainability**	**30.6**	**90**	
3.3.1	GDP/unit of energy use	6.8	89	
3.3.2	Environmental performance*	57.5	72	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	122	○

		Score/Value	Rank	
	MARKET SOPHISTICATION	**62.2**	**13**	● ◆
4.1	**Credit**	**68.0**	**14**	● ◆
4.1.1	Ease of getting credit*	80.0	20	
4.1.2	Domestic credit to private sector, % GDP	53.0	61	
4.1.3	Microfinance gross loans, % GDP	18.5	1	● ◆
4.2	**Investment**	**68.3**	**[9]**	
4.2.1	Ease of protecting minority investors*	68.3	30	
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**	**50.4**	**106**	
4.3.1	Applied tariff rate, weighted avg., %	5.5	91	
4.3.2	Intensity of local competition†	61.9	98	
4.3.3	Domestic market scale, bn PPP$	43.2	101	◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**23.5**	**108**	
5.1	**Knowledge workers**	**42.4**	**49**	◆
5.1.1	Knowledge-intensive employment, %	23.7	61	
5.1.2	Firms offering formal training, % firms	60.9	7	● ◆
5.1.3	GERD performed by business, % GDP	0.0	86	○
5.1.4	GERD financed by business, %	4.6	82	
5.1.5	Females employed w/advanced degrees, %	18.5	27	◆
5.2	**Innovation linkages**	**13.8**	**123**	○
5.2.1	University/industry research collaboration†	26.6	119	○
5.2.2	State of cluster development†	30.2	120	○ ◇
5.2.3	GERD financed by abroad, %	2.1	76	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	n/a	n/a	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	65	
5.3	**Knowledge absorption**	**14.4**	**129**	○ ◇
5.3.1	Intellectual property payments, % total trade	0.3	75	
5.3.2	High-tech imports, % total trade	4.3	114	
5.3.3	ICT services imports, % total trade	1.1	66	
5.3.4	FDI net inflows, % GDP	-7.8	128	○ ◇
5.3.5	Research talent, % in business enterprise	n/a	n/a	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**17.2**	**86**	
6.1	**Knowledge creation**	**34.0**	**26**	● ◆
6.1.1	Patents by origin/bn PPP$ GDP	3.1	31	◆
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	75	
6.1.3	Utility models by origin/bn PPP$ GDP	6.4	1	● ◆
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.4	87	
6.1.5	Citable documents H-index	3.7	106	
6.2	**Knowledge impact**	**10.6**	**115**	◇
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64 ⊙	6.3	23	● ◆
6.2.3	Computer software spending, % GDP	0.1	81	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.8	114	
6.2.5	High- & medium-high-tech manufactures, %	0.1	92	
6.3	**Knowledge diffusion**	**7.2**	**120**	○
6.3.1	Intellectual property receipts, % total trade	0.0	73	
6.3.2	High-tech net exports, % total trade	0.1	118	
6.3.3	ICT services exports, % total trade	0.4	106	
6.3.4	FDI net outflows, % GDP	0.2	86	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**43.5**	**18**	● ◆
7.1	**Intangible assets**	**68.5**	**2**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP	229.1	2	● ◆
7.1.2	Industrial designs by origin/bn PPP$ GDP	17.9	4	● ◆
7.1.3	ICTs & business model creation†	51.3	101	
7.1.4	ICTs & organizational model creation†	42.8	101	
7.2	**Creative goods & services**	**33.4**	**19**	● ◆
7.2.1	Cultural & creative services exports, % total trade	0.2	73	
7.2.2	National feature films/mn pop. 15–69	26.3	1	● ◆
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	2.4	11	● ◆
7.2.5	Creative goods exports, % total trade	0.0	125	○
7.3	**Online creativity**	**3.4**	**75**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.6	101	
7.3.2	Country-code TLDs/th pop. 15–69	2.2	65	◆
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	15.7	58	
7.3.4	Mobile app creation/bn PPP$ GDP	0.1	83	

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.

MONTENEGRO

GII 2019 rank

45

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
46	55	Upper middle	EUR	0.6	11.8	19,043.3	52

		Score/Value	Rank	
	INSTITUTIONS	**68.9**	**46**	◆
1.1	**Political environment**	**58.7**	**56**	
1.1.1	Political and operational stability*	75.4	46	
1.1.2	Government effectiveness*	50.3	62	
1.2	**Regulatory environment**	**71.7**	**47**	
1.2.1	Regulatory quality*	50.0	56	
1.2.2	Rule of law*	46.7	63	
1.2.3	Cost of redundancy dismissal, salary weeks	11.2	35	
1.3	**Business environment**	**76.3**	**42**	
1.3.1	Ease of starting a business*	86.7	72	
1.3.2	Ease of resolving insolvency*	66.0	40	
	HUMAN CAPITAL & RESEARCH	**33.0**	**[56]**	
2.1	**Education**	**49.3**	**[62]**	
2.1.1	Expenditure on education, % GDP	n/a	n/a	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	15.0	51	
2.1.4	PISA scales in reading, maths, & science	418.7	52	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**45.7**	**[22]**	
2.2.1	Tertiary enrolment, % gross	58.2	48	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**3.8**	**83**	
2.3.1	Researchers, FTE/mn pop. ⓘ	714.3	57	
2.3.2	Gross expenditure on R&D, % GDP ⓘ	0.3	76	
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	**48.8**	**56**	
3.1	**Information & communication technologies(ICTs)**	**68.3**	**61**	
3.1.1	ICT access*	74.4	47	◆
3.1.2	ICT use*	58.1	59	
3.1.3	Government's online service*	66.7	75	
3.1.4	E-participation*	74.2	62	
3.2	**General infrastructure**	**39.0**	**47**	
3.2.1	Electricity output, kWh/mn pop.	5,066.1	42	
3.2.2	Logistics performance*	31.9	76	
3.2.3	Gross capital formation, % GDP	30.2	22	●
3.3	**Ecological sustainability**	**39.0**	**63**	
3.3.1	GDP/unit of energy use	9.8	56	
3.3.2	Environmental performance*	61.3	58	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.5	56	
	MARKET SOPHISTICATION	**44.4**	**83**	
4.1	**Credit**	**36.5**	**64**	
4.1.1	Ease of getting credit*	85.0	11	● ◆
4.1.2	Domestic credit to private sector, % GDP ⓘ	48.9	71	
4.1.3	Microfinance gross loans, % GDP	0.1	48	
4.2	**Investment**	**52.8**	**33**	
4.2.1	Ease of protecting minority investors*	61.7	54	
4.2.2	Market capitalization, % GDP ⓘ	82.6	19	
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	n/a	
4.3	**Trade, competition, & market scale**	**43.9**	**121**	○ ◇
4.3.1	Applied tariff rate, weighted avg., %	3.1	64	
4.3.2	Intensity of local competition†	62.9	92	
4.3.3	Domestic market scale, bn PPP$	11.8	128	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**32.2**	**62**	
5.1	**Knowledge workers**	**39.9**	**57**	
5.1.1	Knowledge-intensive employment, %	37.6	32	◆
5.1.2	Firms offering formal training, % firms	23.7	67	
5.1.3	GERD performed by business, % GDP ⓘ	0.1	71	○
5.1.4	GERD financed by business, % ⓘ	29.8	61	
5.1.5	Females employed w/advanced degrees, %	17.5	34	
5.2	**Innovation linkages**	**21.1**	**80**	
5.2.1	University/industry research collaboration†	41.6	61	
5.2.2	State of cluster development†	41.8	86	
5.2.3	GERD financed by abroad, % ⓘ	5.9	60	
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	93	○ ◇
5.3	**Knowledge absorption**	**35.5**	**53**	
5.3.1	Intellectual property payments, % total trade	0.2	85	
5.3.2	High-tech imports, % total trade	5.5	98	○
5.3.3	ICT services imports, % total trade	2.6	13	● ◆
5.3.4	FDI net inflows, % GDP	11.3	12	● ◆
5.3.5	Research talent, % in business enterprise ⓘ	12.2	62	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**18.5**	**79**	
6.1	**Knowledge creation**	**12.9**	**62**	
6.1.1	Patents by origin/bn PPP$ GDP ⓘ	1.0	62	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.7	33	◆
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	16.8	31	◆
6.1.5	Citable documents H-index	0.6	127	○ ◇
6.2	**Knowledge impact**	**33.3**	**80**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.0	86	○
6.2.2	New businesses/th pop. 15–64	6.7	22	●
6.2.3	Computer software spending, % GDP	0.4	23	● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4.6	59	
6.2.5	High- & medium-high-tech manufactures, % ⓘ	0.1	88	○ ◇
6.3	**Knowledge diffusion**	**9.3**	**107**	○
6.3.1	Intellectual property receipts, % total trade	0.0	77	
6.3.2	High-tech net exports, % total trade	0.2	96	
6.3.3	ICT services exports, % total trade	2.4	43	
6.3.4	FDI net outflows, % GDP	-1.2	123	○ ◇
	CREATIVE OUTPUTS	**41.4**	**26**	● ◆
7.1	**Intangible assets**	**45.3**	**49**	
7.1.1	Trademarks by origin/bn PPP$ GDP	n/a	n/a	
7.1.2	Industrial designs by origin/bn PPP$ GDP ⓘ	0.8	79	
7.1.3	ICTs & business model creation†	58.6	71	
7.1.4	ICTs & organizational model creation†	52.6	70	
7.2	**Creative goods & services**	**35.8**	**14**	● ◆
7.2.1	Cultural & creative services exports, % total trade ⓘ	1.5	14	● ◆
7.2.2	National feature films/mn pop. 15–69 ⓘ	13.2	10	● ◆
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing ⓘ	3.0	6	● ◆
7.2.5	Creative goods exports, % total trade	0.1	94	
7.3	**Online creativity**	**39.3**	**18**	● ◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.5	89	
7.3.2	Country-code TLDs/th pop. 15–69	100.0	1	● ◆
7.3.3	Wikipedia edits/mn pop. 15–69 ⓘ	24.3	44	
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.

MOROCCO

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
66	83	Lower middle	NAWA	36.2	315.4	8,932.6	76

		Score/Value	Rank	
	INSTITUTIONS	**61.1**	**72**	◆
1.1	**Political environment**	**50.7**	**79**	
1.1.1	Political and operational stability*	66.7	74	
1.1.2	Government effectiveness*	42.7	81	
1.2	**Regulatory environment**	**59.7**	**82**	
1.2.1	Regulatory quality*	35.8	86	
1.2.2	Rule of law*	41.7	71	
1.2.3	Cost of redundancy dismissal, salary weeks	20.7	86	
1.3	**Business environment**	**72.9**	**55**	◆
1.3.1	Ease of starting a business*	93.0	31	●
1.3.2	Ease of resolving insolvency*	52.8	65	
	HUMAN CAPITAL & RESEARCH	**27.8**	**75**	
2.1	**Education**	**54.0**	**47**	●
2.1.1	Expenditure on education, % GDP ◷	5.3	36	●
2.1.2	Government funding/pupil, secondary, % GDP/cap ◷	36.5	5	● ◆
2.1.3	School life expectancy, years	13.5	75	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	20.3	90	○
2.2	**Tertiary education**	**21.5**	**90**	
2.2.1	Tertiary enrolment, % gross	33.8	78	
2.2.2	Graduates in science & engineering, %	18.4	71	
2.2.3	Tertiary inbound mobility, %	2.0	75	
2.3	**Research & development (R&D)**	**7.9**	**65**	
2.3.1	Researchers, FTE/mn pop. ◷	1,069.0	51	◆
2.3.2	Gross expenditure on R&D, % GDP ◷	0.7	49	◆
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*	3.5	73	
	INFRASTRUCTURE	**48.0**	**61**	◆
3.1	**Information & communication technologies(ICTs)**	**62.5**	**74**	
3.1.1	ICT access*	63.6	70	◆
3.1.2	ICT use*	42.2	84	
3.1.3	Government's online service*	66.7	75	
3.1.4	E-participation*	77.5	56	
3.2	**General infrastructure**	**37.5**	**53**	
3.2.1	Electricity output, kWh/mn pop.	899.5	96	
3.2.2	Logistics performance*	22.3	101	○
3.2.3	Gross capital formation, % GDP	34.4	13	● ◆
3.3	**Ecological sustainability**	**43.9**	**47**	● ◆
3.3.1	GDP/unit of energy use	13.2	23	● ◆
3.3.2	Environmental performance*	63.5	49	◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.6	82	
	MARKET SOPHISTICATION	**42.9**	**94**	
4.1	**Credit**	**26.8**	**101**	
4.1.1	Ease of getting credit*	45.0	94	○
4.1.2	Domestic credit to private sector, % GDP	63.0	51	
4.1.3	Microfinance gross loans, % GDP	0.4	37	
4.2	**Investment**	**36.3**	**96**	
4.2.1	Ease of protecting minority investors*	60.0	61	
4.2.2	Market capitalization, % GDP	54.1	30	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	52	
4.3	**Trade, competition, & market scale**	**65.6**	**49**	
4.3.1	Applied tariff rate, weighted avg., %	3.2	66	
4.3.2	Intensity of local competition†	67.2	73	
4.3.3	Domestic market scale, bn PPP$	315.4	52	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**19.8**	**122**	○ ◇
5.1	**Knowledge workers**	**20.9**	**107**	○
5.1.1	Knowledge-intensive employment, % ◷	6.9	105	○ ◇
5.1.2	Firms offering formal training, % firms	26.3	60	
5.1.3	GERD performed by business, % GDP ◷	0.2	51	◆
5.1.4	GERD financed by business, % ◷	29.9	60	
5.1.5	Females employed w/advanced degrees, %	n/a	n/a	
5.2	**Innovation linkages**	**16.9**	**114**	○
5.2.1	University/industry research collaboration†	31.2	103	○
5.2.2	State of cluster development†	45.9	71	
5.2.3	GERD financed by abroad, % ◷	1.7	81	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	80	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	80	
5.3	**Knowledge absorption**	**21.5**	**116**	○
5.3.1	Intellectual property payments, % total trade	0.3	82	
5.3.2	High-tech imports, % total trade	6.5	86	
5.3.3	ICT services imports, % total trade	0.5	103	○
5.3.4	FDI net inflows, % GDP	2.6	62	
5.3.5	Research talent, % in business enterprise ◷	7.0	67	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**20.7**	**69**	
6.1	**Knowledge creation**	**8.4**	**77**	
6.1.1	Patents by origin/bn PPP$ GDP	0.7	74	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.2	55	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.8	72	
6.1.5	Citable documents H-index	10.0	67	
6.2	**Knowledge impact**	**36.2**	**67**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.3	39	●
6.2.2	New businesses/th pop. 15–64	1.7	59	
6.2.3	Computer software spending, % GDP	0.3	58	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.9	78	
6.2.5	High- & medium-high-tech manufactures, % ◷	0.3	38	●
6.3	**Knowledge diffusion**	**17.6**	**64**	
6.3.1	Intellectual property receipts, % total trade	0.0	88	○
6.3.2	High-tech net exports, % total trade	1.5	61	
6.3.3	ICT services exports, % total trade	3.4	25	●
6.3.4	FDI net outflows, % GDP	0.7	59	
	CREATIVE OUTPUTS	**26.0**	**69**	
7.1	**Intangible assets**	**48.3**	**43**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP	56.9	39	●
7.1.2	Industrial designs by origin/bn PPP$ GDP	12.4	9	● ◆
7.1.3	ICTs & business model creation†	60.4	63	
7.1.4	ICTs & organizational model creation†	51.3	76	
7.2	**Creative goods & services**	**5.6**	**98**	
7.2.1	Cultural & creative services exports, % total trade	0.4	53	
7.2.2	National feature films/mn pop. 15–69	1.5	72	
7.2.3	Entertainment & Media market/th pop. 15–69	0.8	58	○
7.2.4	Printing & other media, % manufacturing ◷	0.7	84	○
7.2.5	Creative goods exports, % total trade	0.1	101	
7.3	**Online creativity**	**1.6**	**91**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.6	86	
7.3.2	Country-code TLDs/th pop. 15–69	0.8	85	
7.3.3	Wikipedia edits/mn pop. 15–69 ◷	5.2	81	
7.3.4	Mobile app creation/bn PPP$ GDP	0.4	71	

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.

MOZAMBIQUE

GII 2019 rank

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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.

NAMIBIA

GII 2019 rank

101

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
103	99	Upper middle	SSF	2.6	27.5	11,228.8	93

		Score/Value	Rank	
	INSTITUTIONS	**61.2**	**71**	
1.1	**Political environment**	**59.4**	**54**	
1.1.1	Political and operational stability*	75.4	46	●
1.1.2	Government effectiveness*	51.4	58	
1.2	**Regulatory environment**	**71.1**	**48**	●
1.2.1	Regulatory quality*	36.9	84	
1.2.2	Rule of law*	52.7	52	◆
1.2.3	Cost of redundancy dismissal, salary weeks	9.7	28	●
1.3	**Business environment**	**53.0**	**122**	○ ◇
1.3.1	Ease of starting a business*	69.1	122	○ ◇
1.3.2	Ease of resolving insolvency*	37.0	107	◇
	HUMAN CAPITAL & RESEARCH	**13.9**	**112**	○ ◇
2.1	**Education**	**23.5**	**[119]**	
2.1.1	Expenditure on education, % GDP ⊖	3.1	100	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**15.9**	**99**	◇
2.2.1	Tertiary enrolment, % gross ⊖	20.6	92	◇
2.2.2	Graduates in science & engineering, %	13.0	96	○ ◇
2.2.3	Tertiary inbound mobility, %	7.1	32	● ◆
2.3	**Research & development (R&D)**	**2.2**	**91**	
2.3.1	Researchers, FTE/mn pop. ⊖	143.3	83	
2.3.2	Gross expenditure on R&D, % GDP ⊖	0.3	73	
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	**34.9**	**104**	◇
3.1	**Information & communication technologies(ICTs)**	**40.5**	**104**	◇
3.1.1	ICT access*	45.4	98	◇
3.1.2	ICT use*	32.3	99	◇
3.1.3	Government's online service*	45.1	111	○ ◇
3.1.4	E-participation*	39.3	111	○ ◇
3.2	**General infrastructure**	**24.5**	**101**	
3.2.1	Electricity output, kWh/mn pop.	573.0	105	○ ◇
3.2.2	Logistics performance*	n/a	n/a	
3.2.3	Gross capital formation, % GDP	22.3	73	
3.3	**Ecological sustainability**	**39.6**	**56**	
3.3.1	GDP/unit of energy use	11.9	30	●
3.3.2	Environmental performance*	58.5	69	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	89	
	MARKET SOPHISTICATION	**40.2**	**99**	◇
4.1	**Credit**	**29.9**	**93**	
4.1.1	Ease of getting credit*	60.0	66	
4.1.2	Domestic credit to private sector, % GDP	63.8	50	
4.1.3	Microfinance gross loans, % GDP ⊖	0.0	59	
4.2	**Investment**	**36.7**	**93**	
4.2.1	Ease of protecting minority investors*	51.7	89	
4.2.2	Market capitalization, % GDP	19.7	61	
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	n/a	
4.3	**Trade, competition, & market scale**	**54.1**	**92**	
4.3.1	Applied tariff rate, weighted avg., %	0.9	10	●
4.3.2	Intensity of local competition†	62.0	96	◇
4.3.3	Domestic market scale, bn PPP$	27.5	118	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**24.7**	**101**	
5.1	**Knowledge workers**	**22.9**	**101**	
5.1.1	Knowledge-intensive employment, % ⊖	18.7	75	
5.1.2	Firms offering formal training, % firms	25.4	63	
5.1.3	GERD performed by business, % GDP ⊖	0.0	73	
5.1.4	GERD financed by business, % ⊖	11.1	73	
5.1.5	Females employed w/advanced degrees, % ⊖	7.7	80	
5.2	**Innovation linkages**	**26.1**	**62**	
5.2.1	University/industry research collaboration†	37.5	84	
5.2.2	State of cluster development†	42.2	84	
5.2.3	GERD financed by abroad, % ⊖	15.8	25	●
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	28	● ◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**25.1**	**102**	
5.3.1	Intellectual property payments, % total trade	0.1	101	
5.3.2	High-tech imports, % total trade	7.4	65	
5.3.3	ICT services imports, % total trade	0.9	76	
5.3.4	FDI net inflows, % GDP	5.9	26	●
5.3.5	Research talent, % in business enterprise ⊖	6.9	68	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**6.0**	**124**	○ ◇
6.1	**Knowledge creation**	**5.4**	**95**	
6.1.1	Patents by origin/bn PPP$ GDP	0.4	81	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	63	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.9	69	
6.1.5	Citable documents H-index	3.7	106	
6.2	**Knowledge impact**	**5.3**	**120**	○ ◇
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64 ⊖	0.9	74	
6.2.3	Computer software spending, % GDP	0.1	82	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.5	97	
6.2.5	High- & medium-high-tech manufactures, % ⊖	0.0	95	○ ◇
6.3	**Knowledge diffusion**	**7.1**	**121**	○ ◇
6.3.1	Intellectual property receipts, % total trade	0.0	94	
6.3.2	High-tech net exports, % total trade	0.0	121	○
6.3.3	ICT services exports, % total trade	0.7	88	
6.3.4	FDI net outflows, % GDP	-0.1	118	○
	CREATIVE OUTPUTS	**27.5**	**64**	
7.1	**Intangible assets**	**51.7**	**29**	●
7.1.1	Trademarks by origin/bn PPP$ GDP	128.7	5	● ◆
7.1.2	Industrial designs by origin/bn PPP$ GDP	n/a	n/a	
7.1.3	ICTs & business model creation†	55.0	86	
7.1.4	ICTs & organizational model creation†	46.7	94	
7.2	**Creative goods & services**	**2.8**	**[111]**	
7.2.1	Cultural & creative services exports, % total trade	0.0	95	
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	n/a	n/a	
7.2.5	Creative goods exports, % total trade	0.3	69	
7.3	**Online creativity**	**3.9**	**70**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	8.5	42	●
7.3.2	Country-code TLDs/th pop. 15–69	0.7	87	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊖	3.6	91	
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.

NEPAL

GII 2019 rank

109

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
119	93	Low	CSA	29.6	86.1	2,904.9	108

		Score/Value	Rank	
	INSTITUTIONS	**49.8**	**110**	
1.1	**Political environment**	**35.5**	**120**	
1.1.1	Political and operational stability*	56.1	105	
1.1.2	Government effectiveness*	25.2	119	
1.2	**Regulatory environment**	**48.2**	**114**	
1.2.1	Regulatory quality*	22.7	111	
1.2.2	Rule of law*	28.5	104	
1.2.3	Cost of redundancy dismissal, salary weeks	27.2	105	◇
1.3	**Business environment**	**65.8**	**79**	
1.3.1	Ease of starting a business*	84.4	82	
1.3.2	Ease of resolving insolvency*	47.2	75	◆
	HUMAN CAPITAL & RESEARCH	**12.9**	**115**	
2.1	**Education**	**32.3**	**104**	
2.1.1	Expenditure on education, % GDP	5.1	45	●
2.1.2	Government funding/pupil, secondary, % GDP/cap	11.0	91	
2.1.3	School life expectancy, years	12.2	90	◆
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	28.8	105	
2.2	**Tertiary education**	**4.4**	**121**	○
2.2.1	Tertiary enrolment, % gross	11.8	103	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, % ⊙	0.0	111	○ ◇
2.3	**Research & development (R&D)**	**2.1**	**92**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.3	77	
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	**42.2**	**80**	◆
3.1	**Information & communication technologies(ICTs)**	**53.6**	**89**	◆
3.1.1	ICT access*	42.0	101	◆
3.1.2	ICT use*	25.5	100	◆
3.1.3	Government's online service*	68.8	72	◆
3.1.4	E-participation*	78.1	55	● ◆
3.2	**General infrastructure**	**55.4**	**9**	● ◆
3.2.1	Electricity output, kWh/mn pop.	146.4	116	○
3.2.2	Logistics performance*	21.0	105	
3.2.3	Gross capital formation, % GDP	51.8	1	● ◆
3.3	**Ecological sustainability**	**17.6**	**129**	○ ◇
3.3.1	GDP/unit of energy use	5.1	107	
3.3.2	Environmental performance*	31.4	124	○ ◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	107	
	MARKET SOPHISTICATION	**45.9**	**72**	◆
4.1	**Credit**	**34.3**	**70**	
4.1.1	Ease of getting credit*	50.0	87	
4.1.2	Domestic credit to private sector, % GDP	79.8	36	● ◆
4.1.3	Microfinance gross loans, % GDP	0.9	20	●
4.2	**Investment**	**58.3**	**[22]**	
4.2.1	Ease of protecting minority investors*	58.3	68	◆
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**	**45.0**	**118**	
4.3.1	Applied tariff rate, weighted avg., % ⊙	12.4	124	○
4.3.2	Intensity of local competition†	63.1	91	
4.3.3	Domestic market scale, bn PPP$	86.1	85	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**32.8**	**54**	● ◆
5.1	**Knowledge workers**	**37.6**	**[60]**	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	31.9	49	●
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, %	n/a	n/a	
5.2	**Innovation linkages**	**29.6**	**[49]**	
5.2.1	University/industry research collaboration†	30.1	105	
5.2.2	State of cluster development†	38.0	96	
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	54	●
5.2.5	Patent families 2+ offices/bn PPP$ GDP	n/a	n/a	
5.3	**Knowledge absorption**	**31.1**	**[80]**	
5.3.1	Intellectual property payments, % total trade	n/a	n/a	
5.3.2	High-tech imports, % total trade	11.5	21	●
5.3.3	ICT services imports, % total trade	0.2	121	○ ◇
5.3.4	FDI net inflows, % GDP	0.5	119	
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**10.4**	**[118]**	
6.1	**Knowledge creation**	**7.3**	**[81]**	
6.1.1	Patents by origin/bn PPP$ GDP	0.3	89	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.7	73	
6.1.5	Citable documents H-index	6.3	87	
6.2	**Knowledge impact**	**3.7**	**125**	○ ◇
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	1.0	72	
6.2.3	Computer software spending, % GDP	0.0	119	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.9	109	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.1	90	
6.3	**Knowledge diffusion**	**20.3**	**[49]**	
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	0.1	111	
6.3.3	ICT services exports, % total trade	4.2	17	● ◆
6.3.4	FDI net outflows, % GDP	n/a	n/a	
	CREATIVE OUTPUTS	**15.5**	**112**	
7.1	**Intangible assets**	**28.3**	**110**	
7.1.1	Trademarks by origin/bn PPP$ GDP	50.6	47	● ◆
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.2	104	
7.1.3	ICTs & business model creation†	40.4	120	○
7.1.4	ICTs & organizational model creation†	37.9	117	○
7.2	**Creative goods & services**	**4.0**	**[106]**	
7.2.1	Cultural & creative services exports, % total trade	n/a	n/a	
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 ⊙	0.4	95	◇
7.2.5	Creative goods exports, % total trade	0.2	80	◆
7.3	**Online creativity**	**1.7**	**89**	◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.5	110	
7.3.2	Country-code TLDs/th pop. 15–69	0.9	82	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	6.1	73	◆
7.3.4	Mobile app creation/bn PPP$ GDP	1.2	65	◆

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.

NETHERLANDS (THE)

GII 2019 rank

4

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
2	11	High	EUR	17.1	972.5	56,383.2	2

		Score/Value	Rank	
	INSTITUTIONS	**90.9**	**8**	
1.1	**Political environment**	**91.4**	**8**	
1.1.1	Political and operational stability*	91.2	12	
1.1.2	Government effectiveness*	91.4	7	
1.2	**Regulatory environment**	**91.9**	**14**	
1.2.1	Regulatory quality*	96.9	4	●
1.2.2	Rule of law*	94.8	7	
1.2.3	Cost of redundancy dismissal, salary weeks	15.8	65	○
1.3	**Business environment**	**89.3**	**7**	
1.3.1	Ease of starting a business*	94.3	19	
1.3.2	Ease of resolving insolvency*	84.3	7	
	HUMAN CAPITAL & RESEARCH	**52.4**	**17**	
2.1	**Education**	**60.1**	**23**	
2.1.1	Expenditure on education, % GDP	5.4	29	
2.1.2	Government funding/pupil, secondary, % GDP/cap	22.9	36	
2.1.3	School life expectancy, years	18.0	11	
2.1.4	PISA scales in reading, maths, & science	507.9	12	
2.1.5	Pupil-teacher ratio, secondary ◷	14.4	64	○
2.2	**Tertiary education**	**32.8**	**59**	○
2.2.1	Tertiary enrolment, % gross ◷	80.4	19	
2.2.2	Graduates in science & engineering, % ◷	14.1	91	○ ◇
2.2.3	Tertiary inbound mobility, %	10.7	18	
2.3	**Research & development (R&D)**	**64.4**	**12**	
2.3.1	Researchers, FTE/mn pop.	5,007.1	13	
2.3.2	Gross expenditure on R&D, % GDP	2.0	17	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	85.4	9	
2.3.4	QS university ranking, average score top 3*	68.1	13	
	INFRASTRUCTURE	**61.8**	**14**	
3.1	**Information & communication technologies(ICTs)**	**91.1**	**4**	●
3.1.1	ICT access*	87.5	8	
3.1.2	ICT use*	84.8	7	
3.1.3	Government's online service*	93.1	17	
3.1.4	E-participation*	98.9	4	●
3.2	**General infrastructure**	**45.7**	**31**	
3.2.1	Electricity output, kWh/mn pop.	6,805.9	31	
3.2.2	Logistics performance*	91.5	6	
3.2.3	Gross capital formation, % GDP	21.3	85	○
3.3	**Ecological sustainability**	**48.5**	**36**	
3.3.1	GDP/unit of energy use	10.9	42	
3.3.2	Environmental performance*	75.5	18	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.0	33	
	MARKET SOPHISTICATION	**58.2**	**23**	
4.1	**Credit**	**49.3**	**32**	
4.1.1	Ease of getting credit*	45.0	94	○ ◇
4.1.2	Domestic credit to private sector, % GDP	111.9	20	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**48.8**	**42**	
4.2.1	Ease of protecting minority investors*	58.3	68	○
4.2.2	Market capitalization, % GDP	111.0	9	
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	15	
4.3	**Trade, competition, & market scale**	**76.5**	**18**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	○
4.3.2	Intensity of local competition†	80.5	5	●
4.3.3	Domestic market scale, bn PPP$	972.5	26	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**63.7**	**6**	◆
5.1	**Knowledge workers**	**64.6**	**18**	
5.1.1	Knowledge-intensive employment, %	46.8	12	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	1.2	17	
5.1.4	GERD financed by business, %	52.0	24	
5.1.5	Females employed w/advanced degrees, %	19.7	24	
5.2	**Innovation linkages**	**59.0**	**5**	●
5.2.1	University/industry research collaboration†	75.5	4	● ◆
5.2.2	State of cluster development†	72.8	5	● ◆
5.2.3	GERD financed by abroad, %	13.9	30	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	23	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	6.0	8	
5.3	**Knowledge absorption**	**67.6**	**2**	● ◆
5.3.1	Intellectual property payments, % total trade	8.1	1	● ◆
5.3.2	High-tech imports, % total trade	11.5	22	
5.3.3	ICT services imports, % total trade	2.3	17	
5.3.4	FDI net inflows, % GDP	27.7	5	● ◆
5.3.5	Research talent, % in business enterprise	62.7	7	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**61.8**	**3**	● ◆
6.1	**Knowledge creation**	**65.0**	**7**	
6.1.1	Patents by origin/bn PPP$ GDP	10.0	12	
6.1.2	PCT patents by origin/bn PPP$ GDP	4.3	10	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	20.8	21	
6.1.5	Citable documents H-index	68.8	8	
6.2	**Knowledge impact**	**45.4**	**27**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.6	70	○
6.2.2	New businesses/th pop. 15–64	6.1	24	
6.2.3	Computer software spending, % GDP	0.6	8	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	10.9	28	
6.2.5	High- & medium-high-tech manufactures, %	0.3	36	
6.3	**Knowledge diffusion**	**75.0**	**2**	● ◆
6.3.1	Intellectual property receipts, % total trade	7.0	1	● ◆
6.3.2	High-tech net exports, % total trade	11.2	15	
6.3.3	ICT services exports, % total trade	3.6	23	
6.3.4	FDI net outflows, % GDP	36.3	1	● ◆
	CREATIVE OUTPUTS	**53.2**	**5**	● ◆
7.1	**Intangible assets**	**56.1**	**16**	
7.1.1	Trademarks by origin/bn PPP$ GDP	53.9	43	○
7.1.2	Industrial designs by origin/bn PPP$ GDP	3.8	33	
7.1.3	ICTs & business model creation†	84.0	3	● ◆
7.1.4	ICTs & organizational model creation†	80.2	4	● ◆
7.2	**Creative goods & services**	**37.1**	**12**	
7.2.1	Cultural & creative services exports, % total trade	1.7	10	
7.2.2	National feature films/mn pop. 15–69	7.6	23	
7.2.3	Entertainment & Media market/th pop. 15–69	50.4	17	
7.2.4	Printing & other media, % manufacturing	1.2	51	○
7.2.5	Creative goods exports, % total trade	4.1	14	
7.3	**Online creativity**	**63.3**	**2**	● ◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	78.9	5	● ◆
7.3.2	Country-code TLDs/th pop. 15–69	100.0	1	● ◆
7.3.3	Wikipedia edits/mn pop. 15–69	86.3	10	
7.3.4	Mobile app creation/bn PPP$ GDP	16.3	28	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

NEW ZEALAND

GII 2019 rank

25

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
32	18	High	SEAO	4.7	199.3	40,135.4	22

		Score/Value	Rank	
1	**INSTITUTIONS**	**92.1**	**5**	●
1.1	**Political environment**	**91.7**	**7**	●
1.1.1	Political and operational stability*	96.5	2	● ◆
1.1.2	Government effectiveness*	89.4	10	●
1.2	**Regulatory environment**	**98.8**	**1**	●
1.2.1	Regulatory quality*	98.0	3	● ◆
1.2.2	Rule of law*	97.2	5	●
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	**Business environment**	**85.9**	**18**	
1.3.1	Ease of starting a business*	100.0	1	● ◆
1.3.2	Ease of resolving insolvency*	71.8	29	
2	**HUMAN CAPITAL & RESEARCH**	**52.6**	**16**	
2.1	**Education**	**63.0**	**15**	
2.1.1	Expenditure on education, % GDP	6.3	17	
2.1.2	Government funding/pupil, secondary, % GDP/cap	20.8	47	
2.1.3	School life expectancy, years	18.8	7	●
2.1.4	PISA scales in reading, maths, & science	505.9	14	
2.1.5	Pupil-teacher ratio, secondary	13.6	61	○
2.2	**Tertiary education**	**51.3**	**12**	
2.2.1	Tertiary enrolment, % gross	82.0	15	
2.2.2	Graduates in science & engineering, %	21.2	56	○
2.2.3	Tertiary inbound mobility, %	19.8	5	● ◆
2.3	**Research & development (R&D)**	**43.4**	**23**	◇
2.3.1	Researchers, FTE/mn pop. ⊕	4,052.4	24	
2.3.2	Gross expenditure on R&D, % GDP ⊕	1.2	30	◇
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	47.8	32	
2.3.4	QS university ranking, average score top 3*	50.1	18	
3	**INFRASTRUCTURE**	**60.9**	**20**	
3.1	**Information & communication technologies(ICTs)**	**90.5**	**6**	●
3.1.1	ICT access*	86.2	12	
3.1.2	ICT use*	82.3	11	
3.1.3	Government's online service*	95.1	9	
3.1.4	E-participation*	98.3	5	●
3.2	**General infrastructure**	**50.4**	**18**	
3.2.1	Electricity output, kWh/mn pop.	8,935.3	18	
3.2.2	Logistics performance*	84.8	15	
3.2.3	Gross capital formation, % GDP	25.4	43	
3.3	**Ecological sustainability**	**41.8**	**49**	
3.3.1	GDP/unit of energy use	7.9	77	○
3.3.2	Environmental performance*	76.0	17	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.5	57	
4	**MARKET SOPHISTICATION**	**68.5**	**6**	●
4.1	**Credit**	**87.2**	**3**	● ◆
4.1.1	Ease of getting credit*	100.0	1	● ◆
4.1.2	Domestic credit to private sector, % GDP	152.9	8	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**51.5**	**36**	
4.2.1	Ease of protecting minority investors*	81.7	2	● ◆
4.2.2	Market capitalization, % GDP	43.4	33	◇
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	18	
4.3	**Trade, competition, & market scale**	**66.7**	**46**	
4.3.1	Applied tariff rate, weighted avg., %	1.4	13	
4.3.2	Intensity of local competition†	70.8	52	
4.3.3	Domestic market scale, bn PPP$	199.3	61	

		Score/Value	Rank	
5	**BUSINESS SOPHISTICATION**	**41.4**	**31**	◇
5.1	**Knowledge workers**	**43.8**	**[48]**	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP ⊕	0.6	33	◇
5.1.4	GERD financed by business, % ⊕	43.8	38	
5.1.5	Females employed w/advanced degrees, % ⊕	19.5	25	
5.2	**Innovation linkages**	**40.2**	**28**	
5.2.1	University/industry research collaboration†	62.7	21	
5.2.2	State of cluster development†	55.2	35	◇
5.2.3	GERD financed by abroad, % ⊕	7.8	50	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	15	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	2.2	19	
5.3	**Knowledge absorption**	**40.0**	**41**	◇
5.3.1	Intellectual property payments, % total trade	1.7	17	
5.3.2	High-tech imports, % total trade	10.0	29	
5.3.3	ICT services imports, % total trade	1.4	49	
5.3.4	FDI net inflows, % GDP	0.7	115	○
5.3.5	Research talent, % in business enterprise ⊕	36.9	36	◇
6	**KNOWLEDGE & TECHNOLOGY OUTPUTS**	**29.8**	**42**	◇
6.1	**Knowledge creation**	**39.1**	**20**	
6.1.1	Patents by origin/bn PPP$ GDP	5.4	22	
6.1.2	PCT patents by origin/bn PPP$ GDP	1.4	24	◇
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	26.4	11	
6.1.5	Citable documents H-index	33.9	27	
6.2	**Knowledge impact**	**36.8**	**63**	◇
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.6	100	○ ◇
6.2.2	New businesses/th pop. 15–64	14.5	9	
6.2.3	Computer software spending, % GDP	0.3	56	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.5	57	
6.2.5	High- & medium-high-tech manufactures, % ⊕	0.1	66	○ ◇
6.3	**Knowledge diffusion**	**13.6**	**82**	○ ◇
6.3.1	Intellectual property receipts, % total trade	0.7	23	
6.3.2	High-tech net exports, % total trade	1.0	69	○ ◇
6.3.3	ICT services exports, % total trade	1.1	77	○
6.3.4	FDI net outflows, % GDP	-0.3	121	○ ◇
7	**CREATIVE OUTPUTS**	**42.2**	**23**	
7.1	**Intangible assets**	**53.4**	**27**	
7.1.1	Trademarks by origin/bn PPP$ GDP	90.5	22	
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.8	54	
7.1.3	ICTs & business model creation†	73.5	23	
7.1.4	ICTs & organizational model creation†	71.3	18	
7.2	**Creative goods & services**	**24.8**	**43**	
7.2.1	Cultural & creative services exports, % total trade	0.5	52	
7.2.2	National feature films/mn pop. 15–69	6.2	36	
7.2.3	Entertainment & Media market/th pop. 15–69	59.0	11	
7.2.4	Printing & other media, % manufacturing ⊕	1.8	23	
7.2.5	Creative goods exports, % total trade	0.5	61	
7.3	**Online creativity**	**37.1**	**21**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	32.5	20	
7.3.2	Country-code TLDs/th pop. 15–69	59.7	10	●
7.3.3	Wikipedia edits/mn pop. 15–69	59.7	16	
7.3.4	Mobile app creation/bn PPP$ GDP	15.9	31	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

NICARAGUA

GII 2019 rank

120

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
122	108	Lower middle	LCN	6.3	35.8	5,682.7	n/a

		Score/Value	Rank	
	INSTITUTIONS	**52.5**	**101**	
1.1	**Political environment**	**38.8**	**109**	
1.1.1	Political and operational stability*	54.4	111	
1.1.2	Government effectiveness*	31.1	107	
1.2	**Regulatory environment**	**58.0**	**88**	
1.2.1	Regulatory quality*	23.9	108	
1.2.2	Rule of law*	29.3	100	
1.2.3	Cost of redundancy dismissal, salary weeks	14.9	60	●
1.3	**Business environment**	**60.5**	**104**	
1.3.1	Ease of starting a business*	79.8	109	
1.3.2	Ease of resolving insolvency*	41.1	93	
	HUMAN CAPITAL & RESEARCH	**11.7**	**[118]**	
2.1	**Education**	**22.8**	**[120]**	
2.1.1	Expenditure on education, % GDP	4.3	67	
2.1.2	Government funding/pupil, secondary, % GDP/cap ⊙	7.3	102	○ ◇
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ⊙	30.8	107	○ ◇
2.2	**Tertiary education**	**n/a**	**[n/a]**	
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**0.7**	**112**	
2.3.1	Researchers, FTE/mn pop	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.1	106	
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**	**106**	
3.1	**Information & communication technologies(ICTs)**	**36.0**	**113**	◇
3.1.1	ICT access*	43.6	99	
3.1.2	ICT use*	21.3	105	
3.1.3	Government's online service*	40.3	114	◇
3.1.4	E-participation*	38.8	112	◇
3.2	**General infrastructure**	**33.1**	**70**	
3.2.1	Electricity output, kWh/mn pop	746.3	100	
3.2.2	Logistics performance*	n/a	n/a	
3.2.3	Gross capital formation, % GDP	28.1	29	●
3.3	**Ecological sustainability**	**31.7**	**87**	
3.3.1	GDP/unit of energy use	7.9	78	
3.3.2	Environmental performance*	55.0	82	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	90	
	MARKET SOPHISTICATION	**39.1**	**105**	
4.1	**Credit**	**29.0**	**97**	
4.1.1	Ease of getting credit*	50.0	87	
4.1.2	Domestic credit to private sector, % GDP	42.6	78	
4.1.3	Microfinance gross loans, % GDP	1.1	18	●
4.2	**Investment**	**35.0**	**[99]**	
4.2.1	Ease of protecting minority investors*	35.0	123	○ ◇
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**	**53.3**	**95**	
4.3.1	Applied tariff rate, weighted avg., %	2.3	57	● ◆
4.3.2	Intensity of local competition†	60.3	106	◇
4.3.3	Domestic market scale, bn PPP$	35.8	109	◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**27.9**	**80**	
5.1	**Knowledge workers**	**41.3**	**[52]**	
5.1.1	Knowledge-intensive employment, % ⊙	13.8	92	
5.1.2	Firms offering formal training, % firms	57.3	11	● ◆
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, % ⊙	6.1	84	
5.2	**Innovation linkages**	**15.9**	**116**	
5.2.1	University/industry research collaboration†	27.1	115	
5.2.2	State of cluster development†	33.7	113	
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	102	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**26.5**	**96**	
5.3.1	Intellectual property payments, % total trade	0.0	111	◇
5.3.2	High-tech imports, % total trade	8.1	57	●
5.3.3	ICT services imports, % total trade	0.3	117	◇
5.3.4	FDI net inflows, % GDP	6.9	19	●
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**7.9**	**122**	○ ◇
6.1	**Knowledge creation**	**1.7**	**125**	○
6.1.1	Patents by origin/bn PPP$ GDP ⊙	0.0	124	○
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	84	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.1	122	○
6.1.5	Citable documents H-index	2.9	113	
6.2	**Knowledge impact**	**4.6**	**[122]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.1	98	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.7	90	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**17.5**	**65**	●
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	0.2	99	
6.3.3	ICT services exports, % total trade	2.6	39	●
6.3.4	FDI net outflows, % GDP	0.5	67	●
	CREATIVE OUTPUTS	**16.3**	**[110]**	
7.1	**Intangible assets**	**30.8**	**104**	
7.1.1	Trademarks by origin/bn PPP$ GDP ⊙	40.2	65	
7.1.2	Industrial designs by origin/bn PPP$ GDP ⊙	0.0	116	○
7.1.3	ICTs & business model creation†	48.9	110	
7.1.4	ICTs & organizational model creation†	43.0	100	
7.2	**Creative goods & services**	**2.1**	**[115]**	
7.2.1	Cultural & creative services exports, % total trade ⊙	0.0	97	
7.2.2	National feature films/mn pop. 15–69 ⊙	0.3	100	○
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	0.3	71	
7.3	**Online creativity**	**1.6**	**[90]**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.8	68	● ◆
7.3.2	Country-code TLDs/th pop. 15–69	0.5	94	
7.3.3	Wikipedia edits/mn pop. 15–69	n/a	n/a	
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.

NIGERIA

GII 2019 rank

114

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
105	116	Lower middle	SSF	195.9	1,169.1	6,027.2	118

		Score/Value	Rank	
1	**INSTITUTIONS**	**49.3**	**114**	
1.1	**Political environment**	**30.7**	**126**	○ ◇
1.1.1	Political and operational stability*	45.6	125	○ ◇
1.1.2	Government effectiveness*	23.3	122	◇
1.2	**Regulatory environment**	**60.4**	**81**	
1.2.1	Regulatory quality*	18.2	121	◇
1.2.2	Rule of law*	23.5	117	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	● ◆
1.3	**Business environment**	**56.7**	**113**	
1.3.1	Ease of starting a business*	83.0	92	
1.3.2	Ease of resolving insolvency*	30.4	119	◇

		Score/Value	Rank	
2	**HUMAN CAPITAL & RESEARCH**	**11.3**	**119**	◇
2.1	**Education**	**26.4**	**[114]**	
2.1.1	Expenditure on education, % GDP	n/a	n/a	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years ◷	8.7	113	○ ◇
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ◷	23.2	94	
2.2	**Tertiary education**	**7.5**	**[114]**	
2.2.1	Tertiary enrolment, % gross ◷	10.2	107	◇
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**0.0**	**[120]**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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	○ ◇

		Score/Value	Rank	
3	**INFRASTRUCTURE**	**26.6**	**122**	◇
3.1	**Information & communication technologies(ICTs)**	**36.7**	**111**	◇
3.1.1	ICT access*	29.9	117	◇
3.1.2	ICT use*	15.9	114	◇
3.1.3	Government's online service*	52.8	103	
3.1.4	E-participation*	48.3	105	
3.2	**General infrastructure**	**14.1**	**126**	○ ◇
3.2.1	Electricity output, kWh/mn pop.	166.1	115	◇
3.2.2	Logistics performance*	21.9	102	
3.2.3	Gross capital formation, % GDP	13.6	120	○ ◇
3.3	**Ecological sustainability**	**29.1**	**103**	
3.3.1	GDP/unit of energy use	6.6	93	
3.3.2	Environmental performance*	54.8	84	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	125	○ ◇

		Score/Value	Rank	
4	**MARKET SOPHISTICATION**	**43.4**	**88**	
4.1	**Credit**	**34.2**	**72**	
4.1.1	Ease of getting credit*	85.0	11	●
4.1.2	Domestic credit to private sector, % GDP	14.2	119	◇
4.1.3	Microfinance gross loans, % GDP	0.8	26	●
4.2	**Investment**	**34.8**	**101**	
4.2.1	Ease of protecting minority investors*	66.7	35	●
4.2.2	Market capitalization, % GDP	9.1	70	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	47	
4.3	**Trade, competition, & market scale**	**61.2**	**63**	●
4.3.1	Applied tariff rate, weighted avg., % ◷	11.3	118	◇
4.3.2	Intensity of local competition†	68.7	66	●
4.3.3	Domestic market scale, bn PPP$	1,169.1	23	● ◆

		Score/Value	Rank	
5	**BUSINESS SOPHISTICATION**	**26.7**	**85**	
5.1	**Knowledge workers**	**37.2**	**[64]**	
5.1.1	Knowledge-intensive employment, % ◷	28.4	49	● ◆
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, %	n/a	n/a	
5.1.5	Females employed w/advanced degrees, % ◷	5.0	90	
5.2	**Innovation linkages**	**18.4**	**100**	
5.2.1	University/industry research collaboration†	23.7	123	○ ◇
5.2.2	State of cluster development†	41.5	88	
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	89	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	92	
5.3	**Knowledge absorption**	**24.6**	**105**	
5.3.1	Intellectual property payments, % total trade	0.5	64	●
5.3.2	High-tech imports, % total trade	4.0	117	
5.3.3	ICT services imports, % total trade	0.9	81	
5.3.4	FDI net inflows, % GDP	0.9	106	
5.3.5	Research talent, % in business enterprise	n/a	n/a	

		Score/Value	Rank	
6	**KNOWLEDGE & TECHNOLOGY OUTPUTS**	**14.0**	**106**	
6.1	**Knowledge creation**	**5.0**	**99**	
6.1.1	Patents by origin/bn PPP$ GDP ◷	0.1	119	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	98	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.8	115	
6.1.5	Citable documents H-index	10.3	65	●
6.2	**Knowledge impact**	**26.9**	**102**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.1	91	◇
6.2.2	New businesses/th pop. 15-64	0.8	78	
6.2.3	Computer software spending, % GDP	0.1	83	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.2	126	○ ◇
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**10.1**	**101**	
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	0.0	122	○
6.3.3	ICT services exports, % total trade	0.6	99	
6.3.4	FDI net outflows, % GDP	0.3	79	

		Score/Value	Rank	
7	**CREATIVE OUTPUTS**	**18.8**	**101**	
7.1	**Intangible assets**	**32.0**	**102**	
7.1.1	Trademarks by origin/bn PPP$ GDP ◷	19.8	89	
7.1.2	Industrial designs by origin/bn PPP$ GDP ◷	0.8	72	
7.1.3	ICTs & business model creation†	55.1	85	
7.1.4	ICTs & organizational model creation†	47.5	88	
7.2	**Creative goods & services**	**10.8**	**[81]**	
7.2.1	Cultural & creative services exports, % total trade	n/a	n/a	
7.2.2	National feature films/mn pop. 15-69 ◷	11.2	12	● ◆
7.2.3	Entertainment & Media market/th pop. 15-69	0.6	59	
7.2.4	Printing & other media, % manufacturing	n/a	n/a	
7.2.5	Creative goods exports, % total trade ◷	0.0	126	○
7.3	**Online creativity**	**0.3**	**117**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.5	107	
7.3.2	Country-code TLDs/th pop. 15-69	0.3	102	
7.3.3	Wikipedia edits/mn pop. 15-69 ◷	0.3	112	
7.3.4	Mobile app creation/bn PPP$ GDP	0.1	81	

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.

NIGER (THE)

GII 2019 rank

127

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
127	125	Low	SSF	22.3	23.5	1,216.8	n/a

		Score/Value	Rank	
	INSTITUTIONS	**54.4**	**93**	
1.1	**Political environment**	**38.3**	**112**	
1.1.1	Political and operational stability*	54.4	111	
1.1.2	Government effectiveness*	30.2	112	
1.2	**Regulatory environment**	**58.5**	**86**	
1.2.1	Regulatory quality*	23.7	109	
1.2.2	Rule of law*	28.5	103	
1.2.3	Cost of redundancy dismissal, salary weeks	14.0	55	●
1.3	**Business environment**	**66.6**	**76**	
1.3.1	Ease of starting a business*	93.7	24	● ◆
1.3.2	Ease of resolving insolvency*	39.4	100	
	HUMAN CAPITAL & RESEARCH	**9.9**	**126**	◇
2.1	**Education**	**19.2**	**124**	◇
2.1.1	Expenditure on education, % GDP	3.5	93	
2.1.2	Government funding/pupil, secondary, % GDP/cap	16.0	77	
2.1.3	School life expectancy, years	6.5	118	○ ◇
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	29.7	106	
2.2	**Tertiary education**	**10.4**	**110**	
2.2.1	Tertiary enrolment, % gross	4.0	120	
2.2.2	Graduates in science & engineering, %	13.2	94	
2.2.3	Tertiary inbound mobility, %	4.3	47	●
2.3	**Research & development (R&D)**	**0.0**	**[120]**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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	**25.5**	**124**	
3.1	**Information & communication technologies(ICTs)**	**18.7**	**[128]**	
3.1.1	ICT access*	n/a	n/a	
3.1.2	ICT use*	n/a	n/a	
3.1.3	Government's online service*	16.0	127	○ ◇
3.1.4	E-participation*	21.4	122	◇
3.2	**General infrastructure**	**35.6**	**62**	●
3.2.1	Electricity output, kWh/mn pop.	25.4	121	○ ◇
3.2.2	Logistics performance*	0.3	121	◇
3.2.3	Gross capital formation, % GDP	38.5	9	● ◆
3.3	**Ecological sustainability**	**22.3**	**122**	
3.3.1	GDP/unit of energy use	6.3	96	
3.3.2	Environmental performance*	35.7	122	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.0	65	● ◆
	MARKET SOPHISTICATION	**27.3**	**127**	◇
4.1	**Credit**	**12.5**	**122**	
4.1.1	Ease of getting credit*	30.0	115	
4.1.2	Domestic credit to private sector, % GDP	15.7	114	
4.1.3	Microfinance gross loans, % GDP ⊙	0.1	49	
4.2	**Investment**	**40.0**	**[72]**	
4.2.1	Ease of protecting minority investors*	40.0	114	
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**	**29.4**	**127**	◇
4.3.1	Applied tariff rate, weighted avg., %	11.9	119	
4.3.2	Intensity of local competition†	n/a	n/a	
4.3.3	Domestic market scale, bn PPP$	23.5	124	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**22.8**	**[112]**	
5.1	**Knowledge workers**	**21.2**	**[105]**	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	27.5	57	
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, % ⊙	0.2	117	○ ◇
5.2	**Innovation linkages**	**0.0**	**[129]**	
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	GERD financed by abroad, %	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	93	○ ◇
5.3	**Knowledge absorption**	**47.1**	**24**	● ◆
5.3.1	Intellectual property payments, % total trade ⊙	0.0	110	
5.3.2	High-tech imports, % total trade ⊙	7.2	69	●
5.3.3	ICT services imports, % total trade	3.5	5	● ◆
5.3.4	FDI net inflows, % GDP	5.2	29	●
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**16.1**	**90**	
6.1	**Knowledge creation**	**3.2**	**116**	
6.1.1	Patents by origin/bn PPP$ GDP ⊙	0.3	84	◆
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	77	◆
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	97	
6.1.5	Citable documents H-index	2.6	114	
6.2	**Knowledge impact**	**28.1**	**100**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.1	61	●
6.2.2	New businesses/th pop. 15–64 ⊙	0.0	106	○ ◇
6.2.3	Computer software spending, % GDP	0.0	111	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.6	92	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**16.9**	**70**	●
6.3.1	Intellectual property receipts, % total trade ⊙	0.0	106	
6.3.2	High-tech net exports, % total trade ⊙	0.1	103	
6.3.3	ICT services exports, % total trade	4.3	14	● ◆
6.3.4	FDI net outflows, % GDP	0.5	68	●
	CREATIVE OUTPUTS	**0.4**	**[129]**	
7.1	**Intangible assets**	**0.0**	**[129]**	
7.1.1	Trademarks by origin/bn PPP$ GDP	2.8	121	○ ◇
7.1.2	Industrial designs by origin/bn PPP$ GDP ⊙	0.0	114	
7.1.3	ICTs & business model creation†	n/a	n/a	
7.1.4	ICTs & organizational model creation†	n/a	n/a	
7.2	**Creative goods & services**	**1.3**	**[121]**	
7.2.1	Cultural & creative services exports, % total trade	0.1	87	
7.2.2	National feature films/mn pop. 15–69 ⊙	0.7	91	
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	113	
7.3	**Online creativity**	**0.3**	**115**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.0	96	◆
7.3.2	Country-code TLDs/th pop. 15–69	0.0	127	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	0.0	127	○ ◇
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.

NORTH MACEDONIA

GII 2019 rank
59

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
63	52	Upper middle	EUR	2.1	32.3	15,709.5	84

		Score/Value	Rank	
	INSTITUTIONS	**69.7**	**43**	◆
1.1	**Political environment**	**56.7**	**64**	
1.1.1	Political and operational stability*	70.2	61	
1.1.2	Government effectiveness*	49.9	63	
1.2	**Regulatory environment**	**70.1**	**52**	
1.2.1	Regulatory quality*	55.5	45	
1.2.2	Rule of law*	40.0	74	
1.2.3	Cost of redundancy dismissal, salary weeks	13.0	42	
1.3	**Business environment**	**82.4**	**27**	● ◆
1.3.1	Ease of starting a business*	92.1	42	
1.3.2	Ease of resolving insolvency*	72.7	28	● ◆
	HUMAN CAPITAL & RESEARCH	**26.4**	**80**	
2.1	**Education**	**48.7**	**[65]**	
2.1.1	Expenditure on education, % GDP	n/a	n/a	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years ⊙	13.3	79	
2.1.4	PISA scales in reading, maths, & science	368.9	68	○
2.1.5	Pupil-teacher ratio, secondary ⊙	9.4	22	●
2.2	**Tertiary education**	**26.5**	**77**	
2.2.1	Tertiary enrolment, % gross ⊙	41.1	69	
2.2.2	Graduates in science & engineering, % ⊙	20.0	66	
2.2.3	Tertiary inbound mobility, % ⊙	3.5	58	
2.3	**Research & development (R&D)**	**4.0**	**80**	
2.3.1	Researchers, FTE/mn pop.	729.2	55	
2.3.2	Gross expenditure on R&D, % GDP	0.4	72	
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	**44.9**	**71**	
3.1	**Information & communication technologies(ICTs)**	**66.6**	**65**	
3.1.1	ICT access*	68.3	63	
3.1.2	ICT use*	56.3	62	
3.1.3	Government's online service*	71.5	69	
3.1.4	E-participation*	70.2	69	
3.2	**General infrastructure**	**19.8**	**120**	○ ◇
3.2.1	Electricity output, kWh/mn pop.	2,706.3	66	
3.2.2	Logistics performance*	30.0	80	
3.2.3	Gross capital formation, % GDP	n/a	n/a	
3.3	**Ecological sustainability**	**48.2**	**37**	◆
3.3.1	GDP/unit of energy use	10.1	49	
3.3.2	Environmental performance*	61.1	61	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	7.5	12	● ◆
	MARKET SOPHISTICATION	**57.1**	**28**	● ◆
4.1	**Credit**	**37.6**	**61**	
4.1.1	Ease of getting credit*	85.0	11	● ◆
4.1.2	Domestic credit to private sector, % GDP	50.0	68	
4.1.3	Microfinance gross loans, % GDP	0.3	39	
4.2	**Investment**	**80.0**	**[3]**	
4.2.1	Ease of protecting minority investors*	80.0	6	● ◆
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**	**53.8**	**93**	
4.3.1	Applied tariff rate, weighted avg., %	1.9	52	
4.3.2	Intensity of local competition†	62.5	95	
4.3.3	Domestic market scale, bn PPP$	32.3	112	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**30.5**	**66**	
5.1	**Knowledge workers**	**42.2**	**50**	
5.1.1	Knowledge-intensive employment, %	29.0	47	
5.1.2	Firms offering formal training, % firms	46.9	25	●
5.1.3	GERD performed by business, % GDP	0.1	62	
5.1.4	GERD financed by business, %	27.4	63	
5.1.5	Females employed w/advanced degrees, %	13.8	47	
5.2	**Innovation linkages**	**18.0**	**107**	○
5.2.1	University/industry research collaboration†	29.2	108	○ ◇
5.2.2	State of cluster development†	37.0	99	
5.2.3	GERD financed by abroad, %	5.9	59	
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	93	○ ◇
5.3	**Knowledge absorption**	**31.2**	**79**	
5.3.1	Intellectual property payments, % total trade	0.9	41	
5.3.2	High-tech imports, % total trade	5.4	102	○
5.3.3	ICT services imports, % total trade	1.4	52	
5.3.4	FDI net inflows, % GDP	3.8	43	
5.3.5	Research talent, % in business enterprise	21.5	55	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**21.6**	**66**	
6.1	**Knowledge creation**	**8.8**	**74**	
6.1.1	Patents by origin/bn PPP$ GDP ⊙	1.6	51	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.2	52	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	8.1	57	
6.1.5	Citable documents H-index	4.7	96	
6.2	**Knowledge impact**	**39.3**	**52**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.0	90	○
6.2.2	New businesses/th pop. 15–64	3.9	33	
6.2.3	Computer software spending, % GDP	0.1	80	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	14.3	24	●
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.4	20	● ◆
6.3	**Knowledge diffusion**	**16.8**	**71**	
6.3.1	Intellectual property receipts, % total trade	0.1	46	
6.3.2	High-tech net exports, % total trade	1.1	67	
6.3.3	ICT services exports, % total trade	2.5	42	
6.3.4	FDI net outflows, % GDP	1.4	45	
	CREATIVE OUTPUTS	**28.1**	**62**	
7.1	**Intangible assets**	**39.3**	**72**	
7.1.1	Trademarks by origin/bn PPP$ GDP	n/a	n/a	
7.1.2	Industrial designs by origin/bn PPP$ GDP	3.2	39	
7.1.3	ICTs & business model creation†	48.4	112	○ ◇
7.1.4	ICTs & organizational model creation†	41.1	111	○ ◇
7.2	**Creative goods & services**	**21.0**	**55**	
7.2.1	Cultural & creative services exports, % total trade	0.8	35	
7.2.2	National feature films/mn pop. 15–69	5.1	43	
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing ⊙	2.1	18	●
7.2.5	Creative goods exports, % total trade	0.2	85	
7.3	**Online creativity**	**12.7**	**45**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	6.7	47	
7.3.2	Country-code TLDs/th pop. 15–69	4.9	49	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	47.1	29	● ◆
7.3.4	Mobile app creation/bn PPP$ GDP	7.5	44	

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.

NORWAY

GII 2019 rank

19

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
27	13	High	EUR	5.4	398.3	74,356.1	19

		Score/Value	Rank	
	INSTITUTIONS	**93.9**	**2**	● ◆
1.1	**Political environment**	**94.7**	**3**	● ◆
1.1.1	Political and operational stability*	94.7	4	●
1.1.2	Government effectiveness*	94.6	3	● ◆
1.2	**Regulatory environment**	**97.1**	**4**	●
1.2.1	Regulatory quality*	90.6	9	
1.2.2	Rule of law*	99.8	2	●
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	21	
1.3	**Business environment**	**89.9**	**3**	●
1.3.1	Ease of starting a business*	94.3	19	
1.3.2	Ease of resolving insolvency*	85.4	5	●
	HUMAN CAPITAL & RESEARCH	**53.9**	**15**	
2.1	**Education**	**70.1**	**3**	● ◆
2.1.1	Expenditure on education, % GDP	7.6	4	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	26.4	20	◆
2.1.3	School life expectancy, years	18.1	10	
2.1.4	PISA scales in reading, maths, & science	504.5	15	
2.1.5	Pupil-teacher ratio, secondary ⏱	8.7	14	◆
2.2	**Tertiary education**	**35.8**	**50**	
2.2.1	Tertiary enrolment, % gross	82.0	16	
2.2.2	Graduates in science & engineering, %	20.5	61	○
2.2.3	Tertiary inbound mobility, %	3.9	55	
2.3	**Research & development (R&D)**	**55.8**	**19**	
2.3.1	Researchers, FTE/mn pop.	6,407.5	7	
2.3.2	Gross expenditure on R&D, % GDP	2.1	16	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	57.2	24	
2.3.4	QS university ranking, average score top 3*	42.9	26	
	INFRASTRUCTURE	**69.9**	**1**	● ◆
3.1	**Information & communication technologies(ICTs)**	**89.6**	**9**	
3.1.1	ICT access*	77.6	35	
3.1.2	ICT use*	88.1	5	● ◆
3.1.3	Government's online service*	95.1	9	
3.1.4	E-participation*	97.8	11	
3.2	**General infrastructure**	**68.5**	**1**	● ◆
3.2.1	Electricity output, kWh/mn pop.	28,078.2	1	● ◆
3.2.2	Logistics performance*	76.4	21	
3.2.3	Gross capital formation, % GDP	28.2	27	
3.3	**Ecological sustainability**	**51.5**	**24**	
3.3.1	GDP/unit of energy use	11.8	32	
3.3.2	Environmental performance*	77.5	14	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.5	29	
	MARKET SOPHISTICATION	**58.6**	**22**	
4.1	**Credit**	**63.0**	**18**	
4.1.1	Ease of getting credit*	55.0	77	○
4.1.2	Domestic credit to private sector, % GDP	146.3	10	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**45.3**	**54**	
4.2.1	Ease of protecting minority investors*	75.0	14	
4.2.2	Market capitalization, % GDP	61.5	27	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	40	○ ◇
4.3	**Trade, competition, & market scale**	**67.4**	**44**	
4.3.1	Applied tariff rate, weighted avg., %	3.1	65	◇
4.3.2	Intensity of local competition†	69.3	65	○ ◇
4.3.3	Domestic market scale, bn PPP$	398.3	45	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**50.2**	**21**	
5.1	**Knowledge workers**	**69.4**	**10**	
5.1.1	Knowledge-intensive employment, %	52.5	4	●
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	1.1	20	
5.1.4	GERD financed by business, %	43.2	40	◇
5.1.5	Females employed w/advanced degrees, %	25.2	10	
5.2	**Innovation linkages**	**38.3**	**31**	
5.2.1	University/industry research collaboration†	61.7	22	
5.2.2	State of cluster development†	64.6	18	
5.2.3	GERD financed by abroad, %	9.5	45	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	22	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	1.7	24	◇
5.3	**Knowledge absorption**	**42.7**	**33**	
5.3.1	Intellectual property payments, % total trade	0.4	69	○ ◇
5.3.2	High-tech imports, % total trade	6.6	80	○
5.3.3	ICT services imports, % total trade	2.8	10	
5.3.4	FDI net inflows, % GDP	-0.9	125	○
5.3.5	Research talent, % in business enterprise	48.1	26	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**33.7**	**30**	◇
6.1	**Knowledge creation**	**38.0**	**22**	
6.1.1	Patents by origin/bn PPP$ GDP	4.4	26	
6.1.2	PCT patents by origin/bn PPP$ GDP	1.9	18	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	19.3	26	
6.1.5	Citable documents H-index	39.3	20	
6.2	**Knowledge impact**	**41.0**	**45**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.6	71	○
6.2.2	New businesses/th pop. 15–64	8.2	18	
6.2.3	Computer software spending, % GDP	0.6	16	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.5	48	
6.2.5	High- & medium-high-tech manufactures, %	0.2	58	○ ◇
6.3	**Knowledge diffusion**	**22.1**	**43**	◇
6.3.1	Intellectual property receipts, % total trade	0.4	28	◇
6.3.2	High-tech net exports, % total trade	3.0	45	
6.3.3	ICT services exports, % total trade	1.7	63	
6.3.4	FDI net outflows, % GDP	2.8	26	
	CREATIVE OUTPUTS	**43.2**	**20**	
7.1	**Intangible assets**	**48.0**	**45**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	33.9	72	○
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.5	57	
7.1.3	ICTs & business model creation†	73.2	24	
7.1.4	ICTs & organizational model creation†	77.4	10	
7.2	**Creative goods & services**	**28.5**	**33**	
7.2.1	Cultural & creative services exports, % total trade ⏱	0.6	45	
7.2.2	National feature films/mn pop. 15–69	10.1	18	
7.2.3	Entertainment & Media market/th pop. 15–69	92.3	3	● ◆
7.2.4	Printing & other media, % manufacturing	1.2	52	
7.2.5	Creative goods exports, % total trade	0.5	60	
7.3	**Online creativity**	**48.4**	**13**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	50.7	15	
7.3.2	Country-code TLDs/th pop. 15–69	56.5	12	
7.3.3	Wikipedia edits/mn pop. 15–69	104.3	5	● ◆
7.3.4	Mobile app creation/bn PPP$ GDP	16.0	30	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

OMAN

GII 2019 rank

80

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
101	**57**	**High**	**NAWA**	**4.8**	**198.2**	**46,584.0**	**69**

		Score/Value	Rank	
	INSTITUTIONS	**61.5**	**69**	◇
1.1	**Political environment**	**61.3**	**49**	◇
1.1.1	Political and operational stability*	80.7	35	
1.1.2	Government effectiveness*	51.6	57	◇
1.2	**Regulatory environment**	**55.5**	**97**	◇
1.2.1	Regulatory quality*	53.2	50	◇
1.2.2	Rule of law*	57.8	45	◇
1.2.3	Cost of redundancy dismissal, salary weeks	n/a	n/a	
1.3	**Business environment**	**67.6**	**72**	◇
1.3.1	Ease of starting a business*	92.9	34	●
1.3.2	Ease of resolving insolvency*	42.3	88	◇

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**43.3**	**35**	
2.1	**Education**	**64.4**	**10**	●
2.1.1	Expenditure on education, % GDP	6.7	12	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	34.9	9	● ◆
2.1.3	School life expectancy, years	14.7	58	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	10.0	29	●
2.2	**Tertiary education**	**61.4**	**4**	● ◆
2.2.1	Tertiary enrolment, % gross ◷	44.6	66	◇
2.2.2	Graduates in science & engineering, %	44.8	1	● ◆
2.2.3	Tertiary inbound mobility, %	2.9	63	
2.3	**Research & development (R&D)**	**4.0**	**82**	◇
2.3.1	Researchers, FTE/mn pop.	244.0	75	◇
2.3.2	Gross expenditure on R&D, % GDP	0.2	88	◇
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*	8.6	65	◇

		Score/Value	Rank	
	INFRASTRUCTURE	**51.3**	**48**	
3.1	**Information & communication technologies(ICTs)**	**75.8**	**42**	
3.1.1	ICT access*	76.6	38	
3.1.2	ICT use*	62.2	52	◇
3.1.3	Government's online service*	81.3	43	
3.1.4	E-participation*	83.2	43	
3.2	**General infrastructure**	**48.0**	**24**	●
3.2.1	Electricity output, kWh/mn pop.	7,722.3	25	●
3.2.2	Logistics performance*	53.0	42	
3.2.3	Gross capital formation, % GDP	31.5	16	● ◆
3.3	**Ecological sustainability**	**30.0**	**95**	◇
3.3.1	GDP/unit of energy use	7.0	84	
3.3.2	Environmental performance*	51.3	94	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.2	62	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**45.5**	**78**	◇
4.1	**Credit**	**35.0**	**67**	◇
4.1.1	Ease of getting credit*	35.0	110	○ ◇
4.1.2	Domestic credit to private sector, % GDP ◷	75.0	42	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**36.6**	**94**	
4.2.1	Ease of protecting minority investors*	46.7	101	◇
4.2.2	Market capitalization, % GDP	41.3	35	
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	n/a	
4.3	**Trade, competition, & market scale**	**65.0**	**53**	
4.3.1	Applied tariff rate, weighted avg., %	1.7	21	●
4.3.2	Intensity of local competition†	66.2	76	
4.3.3	Domestic market scale, bn PPP$	198.2	62	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**23.8**	**107**	◇
5.1	**Knowledge workers**	**28.7**	**[86]**	
5.1.1	Knowledge-intensive employment, % ◷	18.5	77	◇
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.1	64	◇
5.1.4	GERD financed by business, %	38.5	49	
5.1.5	Females employed w/advanced degrees, %	n/a	n/a	
5.2	**Innovation linkages**	**24.9**	**67**	
5.2.1	University/industry research collaboration†	51.0	38	
5.2.2	State of cluster development†	60.5	24	●
5.2.3	GERD financed by abroad, %	0.1	99	○ ◇
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	27	●
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	86	
5.3	**Knowledge absorption**	**18.0**	**126**	○ ◇
5.3.1	Intellectual property payments, % total trade	n/a	n/a	
5.3.2	High-tech imports, % total trade	4.9	108	
5.3.3	ICT services imports, % total trade	0.3	114	○ ◇
5.3.4	FDI net inflows, % GDP	1.4	98	
5.3.5	Research talent, % in business enterprise	0.8	79	○ ◇

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**12.3**	**112**	○ ◇
6.1	**Knowledge creation**	**4.2**	**104**	◇
6.1.1	Patents by origin/bn PPP$ GDP	0.0	120	○
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	70	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.9	105	◇
6.1.5	Citable documents H-index	6.1	88	◇
6.2	**Knowledge impact**	**20.1**	**112**	○ ◇
6.2.1	Growth rate of PPP$ GDP/worker, %	-3.8	110	○ ◇
6.2.2	New businesses/th pop. 15–64	2.1	48	
6.2.3	Computer software spending, % GDP	0.1	101	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.5	71	
6.2.5	High- & medium-high-tech manufactures, %	0.2	61	
6.3	**Knowledge diffusion**	**12.6**	**89**	◇
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	0.1	109	○ ◇
6.3.3	ICT services exports, % total trade	0.3	108	
6.3.4	FDI net outflows, % GDP	1.5	41	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**21.5**	**88**	◇
7.1	**Intangible assets**	**38.8**	**74**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	59.5	36	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.1	109	○ ◇
7.1.3	ICTs & business model creation†	59.2	70	◇
7.1.4	ICTs & organizational model creation†	52.5	71	◇
7.2	**Creative goods & services**	**6.2**	**97**	◇
7.2.1	Cultural & creative services exports, % total trade	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	1.1	79	◇
7.2.3	Entertainment & Media market/th pop. 15–69	5.4	48	◇
7.2.4	Printing & other media, % manufacturing	0.6	89	○
7.2.5	Creative goods exports, % total trade	0.5	58	
7.3	**Online creativity**	**1.9**	**85**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.7	84	◇
7.3.2	Country-code TLDs/th pop. 15–69	0.2	106	◇
7.3.3	Wikipedia edits/mn pop. 15–69 ◷	5.7	77	◇
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.

PAKISTAN

GII 2019 rank

105

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
89	**113**	**Lower middle**	**CSA**	**200.8**	**1,148.3**	**5,679.8**	**109**

		Score/Value	Rank	
	INSTITUTIONS	**53.1**	**100**	
1.1	**Political environment**	**39.7**	**107**	
1.1.1	Political and operational stability*	54.4	111	
1.1.2	Government effectiveness*	32.4	101	
1.2	**Regulatory environment**	**48.7**	**113**	
1.2.1	Regulatory quality*	26.0	107	
1.2.2	Rule of law*	27.2	109	
1.2.3	Cost of redundancy dismissal, salary weeks	27.2	105	
1.3	**Business environment**	**70.9**	**62**	
1.3.1	Ease of starting a business*	81.9	100	
1.3.2	Ease of resolving insolvency*	59.9	48	● ◆
	HUMAN CAPITAL & RESEARCH	**12.5**	**116**	
2.1	**Education**	**21.6**	**122**	○ ◇
2.1.1	Expenditure on education, % GDP	2.8	110	○
2.1.2	Government funding/pupil, secondary, % GDP/cap	10.9	92	
2.1.3	School life expectancy, years	8.5	114	○ ◇
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	19.4	86	
2.2	**Tertiary education**	**7.4**	**[115]**	◇
2.2.1	Tertiary enrolment, % gross	10.1	108	◇
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**8.6**	**62**	
2.3.1	Researchers, FTE/mn pop. ⊙	293.6	73	
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.2	84	
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*	25.7	41	● ◆
	INFRASTRUCTURE	**27.3**	**120**	○ ◇
3.1	**Information & communication technologies(ICTs)**	**38.5**	**109**	
3.1.1	ICT access*	35.1	111	◇
3.1.2	ICT use*	13.9	118	○ ◇
3.1.3	Government's online service*	54.9	100	
3.1.4	E-participation*	50.0	104	
3.2	**General infrastructure**	**16.2**	**123**	○ ◇
3.2.1	Electricity output, kWh/mn pop.	590.1	104	
3.2.2	Logistics performance*	16.6	110	◇
3.2.3	Gross capital formation, % GDP	16.4	113	◇
3.3	**Ecological sustainability**	**27.4**	**108**	
3.3.1	GDP/unit of energy use	9.6	60	
3.3.2	Environmental performance*	37.5	121	○ ◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	97	
	MARKET SOPHISTICATION	**39.6**	**102**	
4.1	**Credit**	**20.1**	**118**	◇
4.1.1	Ease of getting credit*	45.0	94	
4.1.2	Domestic credit to private sector, % GDP	17.0	112	◇
4.1.3	Microfinance gross loans, % GDP	0.6	28	●
4.2	**Investment**	**38.8**	**83**	
4.2.1	Ease of protecting minority investors*	71.7	24	● ◆
4.2.2	Market capitalization, % GDP ⊙	29.2	50	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	72	○
4.3	**Trade, competition, & market scale**	**60.0**	**68**	
4.3.1	Applied tariff rate, weighted avg., % ⊙	10.1	113	◇
4.3.2	Intensity of local competition†	57.7	115	◇
4.3.3	Domestic market scale, bn PPP$	1,148.3	24	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**25.5**	**96**	
5.1	**Knowledge workers**	**23.6**	**[100]**	
5.1.1	Knowledge-intensive employment, %	11.6	96	
5.1.2	Firms offering formal training, % firms	32.0	47	
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, %	1.6	104	
5.2	**Innovation linkages**	**20.4**	**83**	
5.2.1	University/industry research collaboration†	44.5	52	
5.2.2	State of cluster development†	49.2	52	
5.2.3	GERD financed by abroad, % ⊙	2.7	72	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	59	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	90	
5.3	**Knowledge absorption**	**32.5**	**68**	
5.3.1	Intellectual property payments, % total trade	0.5	63	
5.3.2	High-tech imports, % total trade	10.6	24	●
5.3.3	ICT services imports, % total trade	0.9	73	
5.3.4	FDI net inflows, % GDP	0.8	110	
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**20.6**	**70**	
6.1	**Knowledge creation**	**13.3**	**[59]**	
6.1.1	Patents by origin/bn PPP$ GDP	0.2	101	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	8.5	56	
6.1.5	Citable documents H-index	14.4	50	●
6.2	**Knowledge impact**	**36.1**	**68**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.9	27	●
6.2.2	New businesses/th pop. 15-64	0.1	104	○
6.2.3	Computer software spending, % GDP	0.3	52	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.7	91	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**12.3**	**91**	
6.3.1	Intellectual property receipts, % total trade	0.0	75	
6.3.2	High-tech net exports, % total trade	0.8	73	
6.3.3	ICT services exports, % total trade	2.2	49	●
6.3.4	FDI net outflows, % GDP	0.0	109	
	CREATIVE OUTPUTS	**17.6**	**104**	
7.1	**Intangible assets**	**33.5**	**98**	
7.1.1	Trademarks by origin/bn PPP$ GDP	28.9	77	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.4	91	
7.1.3	ICTs & business model creation†	53.8	89	
7.1.4	ICTs & organizational model creation†	51.6	75	
7.2	**Creative goods & services**	**2.0**	**116**	
7.2.1	Cultural & creative services exports, % total trade	0.1	77	
7.2.2	National feature films/mn pop. 15-69	0.1	106	○
7.2.3	Entertainment & Media market/th pop. 15-69	0.4	62	○ ◇
7.2.4	Printing & other media, % manufacturing ⊙	0.3	100	○
7.2.5	Creative goods exports, % total trade	0.3	72	
7.3	**Online creativity**	**1.5**	**96**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.6	105	
7.3.2	Country-code TLDs/th pop. 15-69	0.2	109	
7.3.3	Wikipedia edits/mn pop. 15-69	1.6	101	
7.3.4	Mobile app creation/bn PPP$ GDP	4.2	55	

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.

PANAMA

GII 2019 rank

75

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
72	79	High	LCN	4.2	111.4	25,674.5	70

		Score/Value	Rank	
	INSTITUTIONS	**62.9**	**65**	◇
1.1	**Political environment**	**55.7**	**65**	◇
1.1.1	Political and operational stability*	73.7	50	◇
1.1.2	Government effectiveness*	46.7	70	◇
1.2	**Regulatory environment**	**67.2**	**65**	◇
1.2.1	Regulatory quality*	52.3	54	◇
1.2.2	Rule of law*	47.4	62	◇
1.2.3	Cost of redundancy dismissal, salary weeks	18.1	75	
1.3	**Business environment**	**65.8**	**78**	◇
1.3.1	Ease of starting a business*	92.1	43	
1.3.2	Ease of resolving insolvency*	39.6	99	◇
	HUMAN CAPITAL & RESEARCH	**20.2**	**95**	◇
2.1	**Education**	**31.7**	**106**	◇
2.1.1	Expenditure on education, % GDP	3.2	98	◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	9.2	99	○ ◇
2.1.3	School life expectancy, years	12.7	84	◇
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	14.5	66	◇
2.2	**Tertiary education**	**27.6**	**73**	◇
2.2.1	Tertiary enrolment, % gross	47.3	63	◇
2.2.2	Graduates in science & engineering, %	17.2	77	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**1.2**	**104**	◇
2.3.1	Researchers, FTE/mn pop.	39.1	95	◇
2.3.2	Gross expenditure on R&D, % GDP	0.1	111	○ ◇
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*	3.4	74	◇
	INFRASTRUCTURE	**57.2**	**30**	●
3.1	**Information & communication technologies(ICTs)**	**61.7**	**76**	◇
3.1.1	ICT access*	63.5	71	◇
3.1.2	ICT use*	45.6	76	◇
3.1.3	Government's online service*	66.0	79	◇
3.1.4	E-participation*	71.9	64	◇
3.2	**General infrastructure**	**57.6**	**5**	● ◆
3.2.1	Electricity output, kWh/mn pop.	2,701.2	68	◇
3.2.2	Logistics performance*	56.7	37	●
3.2.3	Gross capital formation, % GDP	43.5	5	● ◆
3.3	**Ecological sustainability**	**52.3**	**20**	●
3.3.1	GDP/unit of energy use	18.9	7	● ◆
3.3.2	Environmental performance*	62.7	50	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	104	◇
	MARKET SOPHISTICATION	**45.9**	**73**	
4.1	**Credit**	**42.3**	**49**	
4.1.1	Ease of getting credit*	80.0	20	● ◆
4.1.2	Domestic credit to private sector, % GDP	87.1	31	●
4.1.3	Microfinance gross loans, % GDP	0.3	38	
4.2	**Investment**	**37.3**	**88**	
4.2.1	Ease of protecting minority investors*	51.7	89	◇
4.2.2	Market capitalization, % GDP	24.0	54	
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	n/a	
4.3	**Trade, competition, & market scale**	**58.0**	**75**	◇
4.3.1	Applied tariff rate, weighted avg., %	5.4	90	◇
4.3.2	Intensity of local competition†	70.7	53	
4.3.3	Domestic market scale, bn PPP$	111.4	74	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**19.1**	**123**	○ ◇
5.1	**Knowledge workers**	**21.7**	**104**	◇
5.1.1	Knowledge-intensive employment, %	24.7	57	◇
5.1.2	Firms offering formal training, % firms	11.0	87	○ ◇
5.1.3	GERD performed by business, % GDP	0.0	90	○ ◇
5.1.4	GERD financed by business, %	10.8	74	◇
5.1.5	Females employed w/advanced degrees, %	10.5	62	◇
5.2	**Innovation linkages**	**18.3**	**103**	◇
5.2.1	University/industry research collaboration†	35.5	91	◇
5.2.2	State of cluster development†	46.6	65	
5.2.3	GERD financed by abroad, %	0.3	97	○ ◇
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	47	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	66	
5.3	**Knowledge absorption**	**17.4**	**128**	○ ◇
5.3.1	Intellectual property payments, % total trade	0.2	89	◇
5.3.2	High-tech imports, % total trade	2.9	123	○ ◇
5.3.3	ICT services imports, % total trade	0.3	113	◇
5.3.4	FDI net inflows, % GDP	8.9	14	●
5.3.5	Research talent, % in business enterprise	0.9	78	◇
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**10.6**	**117**	◇
6.1	**Knowledge creation**	**8.5**	**76**	◇
6.1.1	Patents by origin/bn PPP$ GDP	0.3	85	
6.1.2	PCT patents by origin/bn PPP$ GDP	1.7	21	●
6.1.3	Utility models by origin/bn PPP$ GDP	0.0	64	○ ◇
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.1	100	◇
6.1.5	Citable documents H-index	10.9	59	
6.2	**Knowledge impact**	**7.0**	**118**	◇
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	0.8	75	
6.2.3	Computer software spending, % GDP	0.2	70	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.9	88	◇
6.2.5	High- & medium-high-tech manufactures, %	0.0	93	◇
6.3	**Knowledge diffusion**	**16.3**	**72**	
6.3.1	Intellectual property receipts, % total trade	0.0	81	
6.3.2	High-tech net exports, % total trade	3.6	40	
6.3.3	ICT services exports, % total trade	1.1	79	
6.3.4	FDI net outflows, % GDP	1.3	46	
	CREATIVE OUTPUTS	**33.3**	**43**	
7.1	**Intangible assets**	**40.3**	**67**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	41.4	63	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.0	118	○ ◇
7.1.3	ICTs & business model creation†	67.5	38	
7.1.4	ICTs & organizational model creation†	57.4	55	
7.2	**Creative goods & services**	**32.2**	**21**	●
7.2.1	Cultural & creative services exports, % total trade	0.5	48	
7.2.2	National feature films/mn pop. 15–69	0.4	98	○ ◇
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	3.0	7	● ◆
7.2.5	Creative goods exports, % total trade	2.5	23	●
7.3	**Online creativity**	**20.2**	**33**	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	66.4	9	● ◆
7.3.2	Country-code TLDs/th pop. 15–69	1.1	80	◇
7.3.3	Wikipedia edits/mn pop. 15–69	14.6	59	◇
7.3.4	Mobile app creation/bn PPP$ GDP	3.5	56	

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.

PARAGUAY

GII 2019 rank

95

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
94	95	Upper middle	LCN	6.9	95.0	13,395.3	89

		Score/Value	Rank	
	INSTITUTIONS	**49.4**	**113**	◇
1.1	**Political environment**	**39.0**	**108**	◇
1.1.1	Political and operational stability*	63.2	86	
1.1.2	Government effectiveness*	26.8	117	◇
1.2	**Regulatory environment**	**49.9**	**111**	◇
1.2.1	Regulatory quality*	35.7	87	
1.2.2	Rule of law*	29.2	101	
1.2.3	Cost of redundancy dismissal, salary weeks	29.4	114	
1.3	**Business environment**	**59.4**	**107**	
1.3.1	Ease of starting a business*	77.5	113	
1.3.2	Ease of resolving insolvency*	41.3	91	

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**22.0**	**89**	
2.1	**Education**	**37.7**	**89**	
2.1.1	Expenditure on education, % GDP	4.5	61	●
2.1.2	Government funding/pupil, secondary, % GDP/cap	15.5	80	
2.1.3	School life expectancy, years ⏲	12.3	88	◇
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ⏲	18.4	80	
2.2	**Tertiary education**	**27.3**	**[75]**	
2.2.1	Tertiary enrolment, % gross ⏲	35.1	76	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**1.1**	**105**	
2.3.1	Researchers, FTE/mn pop. ⏲	122.1	84	
2.3.2	Gross expenditure on R&D, % GDP ⏲	0.2	95	
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	○ ◇

		Score/Value	Rank	
	INFRASTRUCTURE	**38.4**	**90**	
3.1	**Information & communication technologies(ICTs)**	**49.2**	**97**	◇
3.1.1	ICT access*	43.5	100	◇
3.1.2	ICT use*	40.3	87	◇
3.1.3	Government's online service*	55.6	98	
3.1.4	E-participation*	57.3	95	
3.2	**General infrastructure**	**31.6**	**80**	
3.2.1	Electricity output, kWh/mn pop.	9,475.6	16	● ◆
3.2.2	Logistics performance*	33.6	73	
3.2.3	Gross capital formation, % GDP	19.4	97	
3.3	**Ecological sustainability**	**34.4**	**81**	
3.3.1	GDP/unit of energy use	9.9	54	●
3.3.2	Environmental performance*	53.9	86	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	100	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**43.2**	**91**	
4.1	**Credit**	**31.3**	**85**	
4.1.1	Ease of getting credit*	40.0	104	◇
4.1.2	Domestic credit to private sector, % GDP	40.0	82	
4.1.3	Microfinance gross loans, % GDP	2.1	12	● ◆
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**	**56.7**	**83**	
4.3.1	Applied tariff rate, weighted avg., %	4.8	83	
4.3.2	Intensity of local competition†	65.6	78	
4.3.3	Domestic market scale, bn PPP$	95.0	80	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**26.6**	**87**	
5.1	**Knowledge workers**	**29.0**	**84**	
5.1.1	Knowledge-intensive employment, %	17.7	83	
5.1.2	Firms offering formal training, % firms	46.4	26	●
5.1.3	GERD performed by business, % GDP ⏲	0.0	92	○
5.1.4	GERD financed by business, %	0.4	94	○ ◇
5.1.5	Females employed w/advanced degrees, %	9.6	68	
5.2	**Innovation linkages**	**18.5**	**98**	
5.2.1	University/industry research collaboration†	26.4	121	○ ◇
5.2.2	State of cluster development†	34.3	111	◇
5.2.3	GERD financed by abroad, %	13.0	33	●
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	91	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**32.3**	**69**	
5.3.1	Intellectual property payments, % total trade	0.2	93	
5.3.2	High-tech imports, % total trade	16.7	11	● ◆
5.3.3	ICT services imports, % total trade	0.0	128	○ ◇
5.3.4	FDI net inflows, % GDP	1.3	100	◇
5.3.5	Research talent, % in business enterprise	n/a	n/a	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**6.4**	**123**	◇
6.1	**Knowledge creation**	**2.2**	**[120]**	
6.1.1	Patents by origin/bn PPP$ GDP ⏲	0.3	86	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.6	124	○ ◇
6.1.5	Citable documents H-index	3.1	112	
6.2	**Knowledge impact**	**7.5**	**117**	◇
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	0.1	97	
6.2.3	Computer software spending, % GDP	0.0	104	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.6	68	
6.2.5	High- & medium-high-tech manufactures, % ⏲	0.1	67	
6.3	**Knowledge diffusion**	**9.4**	**105**	
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	0.5	80	
6.3.3	ICT services exports, % total trade	0.1	124	○
6.3.4	FDI net outflows, % GDP	0.3	84	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**30.1**	**52**	●
7.1	**Intangible assets**	**55.0**	**21**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP ⏲	220.4	3	● ◆
7.1.2	Industrial designs by origin/bn PPP$ GDP ⏲	2.0	50	●
7.1.3	ICTs & business model creation†	52.8	94	
7.1.4	ICTs & organizational model creation†	41.8	109	◇
7.2	**Creative goods & services**	**9.1**	**89**	
7.2.1	Cultural & creative services exports, % total trade	0.0	116	○
7.2.2	National feature films/mn pop. 15–69 ⏲	1.3	75	
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing ⏲	1.3	37	●
7.2.5	Creative goods exports, % total trade	0.0	114	
7.3	**Online creativity**	**1.5**	**97**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.7	85	
7.3.2	Country-code TLDs/th pop. 15–69	1.3	74	
7.3.3	Wikipedia edits/mn pop. 15–69 ⏲	4.2	86	
7.3.4	Mobile app creation/bn PPP$ GDP	0.0	91	

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.

PERU

GII 2019 rank

69

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
86	48	Upper middle	LCN	32.6	458.4	14,224.3	71

		Score/Value	Rank	
	INSTITUTIONS	**61.2**	**70**	
1.1	**Political environment**	**50.6**	**80**	
1.1.1	Political and operational stability*	64.9	79	
1.1.2	Government effectiveness*	43.4	79	
1.2	**Regulatory environment**	**69.0**	**57**	
1.2.1	Regulatory quality*	53.2	52	
1.2.2	Rule of law*	33.1	94	
1.2.3	Cost of redundancy dismissal, salary weeks	11.4	36	●
1.3	**Business environment**	**64.1**	**84**	
1.3.1	Ease of starting a business*	82.4	96	
1.3.2	Ease of resolving insolvency*	45.7	79	
	HUMAN CAPITAL & RESEARCH	**30.4**	**66**	
2.1	**Education**	**39.7**	**86**	
2.1.1	Expenditure on education, % GDP	3.9	81	
2.1.2	Government funding/pupil, secondary, % GDP/cap	15.3	82	
2.1.3	School life expectancy, years	14.6	60	
2.1.4	PISA scales in reading, maths, & science	393.6	65	○
2.1.5	Pupil-teacher ratio, secondary	14.2	63	
2.2	**Tertiary education**	**45.8**	**21**	● ◆
2.2.1	Tertiary enrolment, % gross ⊙	69.6	28	● ◆
2.2.2	Graduates in science & engineering, %	23.8	36	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**5.7**	**73**	
2.3.1	Researchers, FTE/mn pop	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	0.1	101	○
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*	14.8	56	
	INFRASTRUCTURE	**46.7**	**65**	
3.1	**Information & communication technologies(ICTs)**	**65.2**	**70**	
3.1.1	ICT access*	50.8	87	◇
3.1.2	ICT use*	41.6	86	
3.1.3	Government's online service*	81.9	41	
3.1.4	E-participation*	86.5	36	●
3.2	**General infrastructure**	**26.7**	**92**	
3.2.1	Electricity output, kWh/mn pop	1,634.3	86	
3.2.2	Logistics performance*	29.5	81	
3.2.3	Gross capital formation, % GDP	22.3	72	
3.3	**Ecological sustainability**	**48.1**	**39**	● ◆
3.3.1	GDP/unit of energy use	15.6	10	● ◆
3.3.2	Environmental performance*	61.9	57	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.2	63	
	MARKET SOPHISTICATION	**57.6**	**26**	● ◆
4.1	**Credit**	**64.5**	**17**	● ◆
4.1.1	Ease of getting credit*	75.0	29	●
4.1.2	Domestic credit to private sector, % GDP	42.3	79	
4.1.3	Microfinance gross loans, % GDP	5.8	1	● ◆
4.2	**Investment**	**36.2**	**97**	
4.2.1	Ease of protecting minority investors*	63.3	48	
4.2.2	Market capitalization, % GDP	39.7	37	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	54	
4.3	**Trade, competition, & market scale**	**72.1**	**30**	●
4.3.1	Applied tariff rate, weighted avg., %	0.8	6	●
4.3.2	Intensity of local competition†	72.5	42	
4.3.3	Domestic market scale, bn PPP$	458.4	44	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**36.6**	**43**	
5.1	**Knowledge workers**	**56.8**	**[27]**	
5.1.1	Knowledge-intensive employment, %	24.4	59	
5.1.2	Firms offering formal training, % firms ⊙	60.1	8	● ◆
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, %	16.3	38	●
5.2	**Innovation linkages**	**18.8**	**94**	
5.2.1	University/industry research collaboration†	31.9	100	○
5.2.2	State of cluster development†	39.5	94	
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	104	○ ◇
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	72	
5.3	**Knowledge absorption**	**34.2**	**62**	
5.3.1	Intellectual property payments, % total trade	0.7	57	
5.3.2	High-tech imports, % total trade	8.4	52	
5.3.3	ICT services imports, % total trade	1.2	59	
5.3.4	FDI net inflows, % GDP	3.7	45	
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**15.3**	**97**	
6.1	**Knowledge creation**	**7.1**	**82**	
6.1.1	Patents by origin/bn PPP$ GDP	0.2	93	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	68	
6.1.3	Utility models by origin/bn PPP$ GDP	0.6	33	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.6	117	○
6.1.5	Citable documents H-index	12.6	56	
6.2	**Knowledge impact**	**31.6**	**88**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.3	55	
6.2.2	New businesses/th pop. 15-64	3.6	35	
6.2.3	Computer software spending, % GDP	0.2	67	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.2	75	
6.2.5	High- & medium-high-tech manufactures, %	0.1	75	
6.3	**Knowledge diffusion**	**7.3**	**119**	○ ◇
6.3.1	Intellectual property receipts, % total trade	0.0	74	
6.3.2	High-tech net exports, % total trade	0.4	83	
6.3.3	ICT services exports, % total trade	0.3	112	○
6.3.4	FDI net outflows, % GDP	0.1	98	○
	CREATIVE OUTPUTS	**23.4**	**79**	
7.1	**Intangible assets**	**36.7**	**87**	
7.1.1	Trademarks by origin/bn PPP$ GDP	50.0	48	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.2	100	○
7.1.3	ICTs & business model creation†	59.3	69	
7.1.4	ICTs & organizational model creation†	48.6	85	
7.2	**Creative goods & services**	**17.5**	**61**	
7.2.1	Cultural & creative services exports, % total trade	0.1	84	
7.2.2	National feature films/mn pop. 15-69	1.1	80	
7.2.3	Entertainment & Media market/th pop. 15-69	7.4	41	
7.2.4	Printing & other media, % manufacturing	2.5	10	● ◆
7.2.5	Creative goods exports, % total trade	0.3	70	
7.3	**Online creativity**	**2.6**	**80**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	5.2	53	
7.3.2	Country-code TLDs/th pop. 15-69	1.3	73	
7.3.3	Wikipedia edits/mn pop. 15-69	5.8	76	
7.3.4	Mobile app creation/bn PPP$ GDP	0.1	84	○

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.

PHILIPPINES

GII 2019 rank

54

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
42	**76**	**Lower middle**	**SEAO**	**106.5**	**956.0**	**8,935.9**	**73**

		Score/Value	Rank	
	INSTITUTIONS	**56.0**	**89**	
1.1	**Political environment**	**49.9**	**84**	
1.1.1	Political and operational stability*	59.6	98	
1.1.2	Government effectiveness*	45.0	73	
1.2	**Regulatory environment**	**54.6**	**99**	
1.2.1	Regulatory quality*	42.5	69	
1.2.2	Rule of law*	35.4	90	
1.2.3	Cost of redundancy dismissal, salary weeks	27.4	111	○
1.3	**Business environment**	**63.6**	**89**	
1.3.1	Ease of starting a business*	72.0	119	○ ◇
1.3.2	Ease of resolving insolvency*	55.2	58	◆

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**24.6**	**83**	
2.1	**Education**	**33.3**	**[102]**	
2.1.1	Expenditure on education, % GDP ◷	2.7	112	○
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years ◷	12.7	83	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ◷	23.5	96	
2.2	**Tertiary education**	**34.5**	**55**	
2.2.1	Tertiary enrolment, % gross	35.3	75	
2.2.2	Graduates in science & engineering, %	28.7	18	●
2.2.3	Tertiary inbound mobility, % ◷	0.1	108	○
2.3	**Research & development (R&D)**	**6.2**	**72**	
2.3.1	Researchers, FTE/mn pop. ◷	187.7	78	
2.3.2	Gross expenditure on R&D, % GDP ◷	0.1	98	
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*	19.9	51	◆

		Score/Value	Rank	
	INFRASTRUCTURE	**48.5**	**58**	◆
3.1	**Information & communication technologies(ICTs)**	**68.5**	**60**	◆
3.1.1	ICT access*	47.5	94	
3.1.2	ICT use*	44.7	78	◆
3.1.3	Government's online service*	88.2	30	◆
3.1.4	E-participation*	93.8	19	● ◆
3.2	**General infrastructure**	**34.2**	**67**	
3.2.1	Electricity output, kWh/mn pop.	878.8	97	
3.2.2	Logistics performance*	39.3	59	
3.2.3	Gross capital formation, % GDP	27.5	31	
3.3	**Ecological sustainability**	**42.8**	**48**	◆
3.3.1	GDP/unit of energy use	13.3	19	◆
3.3.2	Environmental performance*	57.7	71	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.2	61	◆

		Score/Value	Rank	
	MARKET SOPHISTICATION	**38.3**	**110**	
4.1	**Credit**	**8.8**	**126**	○ ◇
4.1.1	Ease of getting credit*	5.0	128	○ ◇
4.1.2	Domestic credit to private sector, % GDP	47.8	72	
4.1.3	Microfinance gross loans, % GDP	0.0	76	○
4.2	**Investment**	**30.9**	**118**	○
4.2.1	Ease of protecting minority investors*	43.3	105	◇
4.2.2	Market capitalization, % GDP	84.3	18	◆
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	68	○
4.3	**Trade, competition, & market scale**	**75.2**	**20**	● ◆
4.3.1	Applied tariff rate, weighted avg., %	1.7	18	● ◆
4.3.2	Intensity of local competition†	75.0	27	◆
4.3.3	Domestic market scale, bn PPP$	956.0	27	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**40.9**	**32**	◆
5.1	**Knowledge workers**	**46.1**	**44**	◆
5.1.1	Knowledge-intensive employment, %	25.2	55	
5.1.2	Firms offering formal training, % firms	59.8	9	● ◆
5.1.3	GERD performed by business, % GDP ◷	0.0	72	
5.1.4	GERD financed by business, % ◷	36.9	50	
5.1.5	Females employed w/advanced degrees, % ◷	12.4	57	
5.2	**Innovation linkages**	**22.6**	**71**	
5.2.1	University/industry research collaboration†	57.5	25	◆
5.2.2	State of cluster development†	50.0	48	
5.2.3	GERD financed by abroad, % ◷	1.8	80	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	43	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	76	
5.3	**Knowledge absorption**	**54.1**	**14**	● ◆
5.3.1	Intellectual property payments, % total trade	0.7	55	
5.3.2	High-tech imports, % total trade	23.2	5	● ◆
5.3.3	ICT services imports, % total trade	0.8	83	
5.3.4	FDI net inflows, % GDP	2.6	65	
5.3.5	Research talent, % in business enterprise ◷	63.2	6	● ◆

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**33.7**	**31**	◆
6.1	**Knowledge creation**	**11.5**	**64**	
6.1.1	Patents by origin/bn PPP$ GDP	0.4	82	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	90	
6.1.3	Utility models by origin/bn PPP$ GDP	1.6	15	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.9	123	○
6.1.5	Citable documents H-index	13.4	54	
6.2	**Knowledge impact**	**43.2**	**38**	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.9	10	● ◆
6.2.2	New businesses/th pop. 15–64	0.3	91	○
6.2.3	Computer software spending, % GDP	0.3	55	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4.4	61	
6.2.5	High- & medium-high-tech manufactures, % ◷	0.4	25	◆
6.3	**Knowledge diffusion**	**46.5**	**14**	● ◆
6.3.1	Intellectual property receipts, % total trade	0.0	87	
6.3.2	High-tech net exports, % total trade	32.7	1	● ◆
6.3.3	ICT services exports, % total trade	5.5	8	● ◆
6.3.4	FDI net outflows, % GDP	1.3	48	◆

		Score/Value	Rank	
	CREATIVE OUTPUTS	**27.7**	**63**	
7.1	**Intangible assets**	**41.3**	**63**	
7.1.1	Trademarks by origin/bn PPP$ GDP	30.7	75	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.9	71	
7.1.3	ICTs & business model creation†	68.9	32	◆
7.1.4	ICTs & organizational model creation†	61.7	39	◆
7.2	**Creative goods & services**	**26.6**	**40**	◆
7.2.1	Cultural & creative services exports, % total trade	0.1	92	
7.2.2	National feature films/mn pop. 15–69 ◷	0.8	86	
7.2.3	Entertainment & Media market/th pop. 15–69	2.6	50	◆
7.2.4	Printing & other media, % manufacturing ◷	0.6	87	
7.2.5	Creative goods exports, % total trade	7.0	8	● ◆
7.3	**Online creativity**	**1.4**	**99**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.1	92	
7.3.2	Country-code TLDs/th pop. 15–69	0.3	101	
7.3.3	Wikipedia edits/mn pop. 15–69	3.8	89	
7.3.4	Mobile app creation/bn PPP$ GDP	1.4	63	

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.

POLAND

GII 2019 rank

39

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
41	37	High	EUR	38.1	1,201.9	31,938.7	39

		Score/Value	Rank	
	INSTITUTIONS	**73.6**	**37**	
1.1	**Political environment**	**68.2**	**39**	
1.1.1	Political and operational stability*	80.7	35	
1.1.2	Government effectiveness*	61.9	40	
1.2	**Regulatory environment**	**72.9**	**42**	
1.2.1	Regulatory quality*	65.6	36	
1.2.2	Rule of law*	58.9	42	
1.2.3	Cost of redundancy dismissal, salary weeks	18.8	77	○
1.3	**Business environment**	**79.7**	**34**	
1.3.1	Ease of starting a business*	82.9	93	○ ◇
1.3.2	Ease of resolving insolvency*	76.5	23	●
	HUMAN CAPITAL & RESEARCH	**41.2**	**40**	
2.1	**Education**	**57.0**	**39**	
2.1.1	Expenditure on education, % GDP	4.8	54	
2.1.2	Government funding/pupil, secondary, % GDP/cap	22.1	41	
2.1.3	School life expectancy, years	16.4	23	●
2.1.4	PISA scales in reading, maths, & science	503.9	17	
2.1.5	Pupil-teacher ratio, secondary ⊙	9.2	19	●
2.2	**Tertiary education**	**35.5**	**52**	
2.2.1	Tertiary enrolment, % gross ⊙	66.6	34	
2.2.2	Graduates in science & engineering, %	22.9	44	
2.2.3	Tertiary inbound mobility, %	3.4	59	
2.3	**Research & development (R&D)**	**31.0**	**37**	
2.3.1	Researchers, FTE/mn pop.	3,001.9	30	
2.3.2	Gross expenditure on R&D, % GDP	1.0	35	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	39.9	42	
2.3.4	QS university ranking, average score top 3*	25.4	42	
	INFRASTRUCTURE	**53.8**	**38**	
3.1	**Information & communication technologies(ICTs)**	**81.5**	**28**	
3.1.1	ICT access*	74.0	50	◇
3.1.2	ICT use*	69.8	35	
3.1.3	Government's online service*	93.1	17	●
3.1.4	E-participation*	89.3	31	
3.2	**General infrastructure**	**38.2**	**49**	
3.2.1	Electricity output, kWh/mn pop.	4,421.3	50	
3.2.2	Logistics performance*	69.0	27	
3.2.3	Gross capital formation, % GDP	21.5	81	○
3.3	**Ecological sustainability**	**41.5**	**50**	
3.3.1	GDP/unit of energy use	9.7	57	
3.3.2	Environmental performance*	64.1	46	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.6	39	
	MARKET SOPHISTICATION	**47.9**	**65**	
4.1	**Credit**	**33.5**	**75**	○ ◇
4.1.1	Ease of getting credit*	75.0	29	
4.1.2	Domestic credit to private sector, % GDP	52.5	63	
4.1.3	Microfinance gross loans, % GDP ⊙	0.1	54	○
4.2	**Investment**	**35.3**	**98**	○
4.2.1	Ease of protecting minority investors*	61.7	54	
4.2.2	Market capitalization, % GDP	32.2	45	○
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	41	
4.3	**Trade, competition, & market scale**	**75.0**	**21**	●
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	70.2	58	
4.3.3	Domestic market scale, bn PPP$	1,201.9	22	●

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**38.4**	**38**	
5.1	**Knowledge workers**	**52.3**	**32**	
5.1.1	Knowledge-intensive employment, %	38.6	30	
5.1.2	Firms offering formal training, % firms	34.6	42	
5.1.3	GERD performed by business, % GDP	0.7	30	
5.1.4	GERD financed by business, %	53.1	22	
5.1.5	Females employed w/advanced degrees, %	20.4	23	●
5.2	**Innovation linkages**	**21.7**	**75**	○ ◇
5.2.1	University/industry research collaboration†	35.1	92	○ ◇
5.2.2	State of cluster development†	46.6	64	
5.2.3	GERD financed by abroad, %	5.5	63	○
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	52	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.4	34	
5.3	**Knowledge absorption**	**41.2**	**37**	
5.3.1	Intellectual property payments, % total trade	1.1	32	
5.3.2	High-tech imports, % total trade	9.3	40	
5.3.3	ICT services imports, % total trade	1.3	56	
5.3.4	FDI net inflows, % GDP	3.0	56	
5.3.5	Research talent, % in business enterprise	47.1	28	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**30.9**	**39**	
6.1	**Knowledge creation**	**24.3**	**36**	
6.1.1	Patents by origin/bn PPP$ GDP	3.9	28	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.3	45	
6.1.3	Utility models by origin/bn PPP$ GDP	0.8	27	
6.1.4	Scientific & technical articles/bn PPP$ GDP	16.5	32	
6.1.5	Citable documents H-index	35.5	25	
6.2	**Knowledge impact**	**43.2**	**36**	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.6	16	● ◆
6.2.2	New businesses/th pop. 15-64	1.7	58	
6.2.3	Computer software spending, % GDP	0.3	42	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	10.5	30	
6.2.5	High- & medium-high-tech manufactures, %	0.3	35	
6.3	**Knowledge diffusion**	**25.1**	**39**	
6.3.1	Intellectual property receipts, % total trade	0.2	41	
6.3.2	High-tech net exports, % total trade	6.5	25	●
6.3.3	ICT services exports, % total trade	2.3	47	
6.3.4	FDI net outflows, % GDP	1.6	40	
	CREATIVE OUTPUTS	**32.4**	**46**	
7.1	**Intangible assets**	**42.6**	**58**	
7.1.1	Trademarks by origin/bn PPP$ GDP	38.2	67	○
7.1.2	Industrial designs by origin/bn PPP$ GDP	n/a	n/a	
7.1.3	ICTs & business model creation†	60.8	60	◇
7.1.4	ICTs & organizational model creation†	51.9	73	○ ◇
7.2	**Creative goods & services**	**27.2**	**37**	
7.2.1	Cultural & creative services exports, % total trade	1.1	25	
7.2.2	National feature films/mn pop. 15-69	1.8	69	○ ◇
7.2.3	Entertainment & Media market/th pop. 15-69	11.5	33	◇
7.2.4	Printing & other media, % manufacturing	1.2	54	
7.2.5	Creative goods exports, % total trade	4.4	12	● ◆
7.3	**Online creativity**	**17.4**	**38**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	6.9	46	
7.3.2	Country-code TLDs/th pop. 15-69	25.7	23	●
7.3.3	Wikipedia edits/mn pop. 15-69	34.3	36	
7.3.4	Mobile app creation/bn PPP$ GDP	13.8	34	

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.

PORTUGAL

GII 2019 rank

32

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
35	31	High	EUR	10.3	328.8	32,006.4	32

		Score/Value	Rank	
	INSTITUTIONS	**81.8**	**22**	
1.1	**Political environment**	**81.2**	**19**	●
1.1.1	Political and operational stability*	86.0	21	
1.1.2	Government effectiveness*	78.8	22	
1.2	**Regulatory environment**	**78.8**	**32**	
1.2.1	Regulatory quality*	66.3	35	
1.2.2	Rule of law*	76.3	25	
1.2.3	Cost of redundancy dismissal, salary weeks	17.0	70	○
1.3	**Business environment**	**85.5**	**19**	●
1.3.1	Ease of starting a business*	90.9	49	
1.3.2	Ease of resolving insolvency*	80.0	15	●
	HUMAN CAPITAL & RESEARCH	**47.7**	**24**	
2.1	**Education**	**59.4**	**27**	
2.1.1	Expenditure on education, % GDP	4.9	52	
2.1.2	Government funding/pupil, secondary, % GDP/cap	27.7	16	●
2.1.3	School life expectancy, years	16.3	27	
2.1.4	PISA scales in reading, maths, & science	497.0	22	
2.1.5	Pupil-teacher ratio, secondary ⊙	9.6	24	
2.2	**Tertiary education**	**44.9**	**24**	
2.2.1	Tertiary enrolment, % gross ⊙	62.9	41	
2.2.2	Graduates in science & engineering, %	29.0	16	●
2.2.3	Tertiary inbound mobility, % ⊙	5.0	41	
2.3	**Research & development (R&D)**	**38.8**	**26**	
2.3.1	Researchers, FTE/mn pop	4,350.5	20	
2.3.2	Gross expenditure on R&D, % GDP	1.3	26	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	43.1	38	
2.3.4	QS university ranking, average score top 3*	30.3	38	
	INFRASTRUCTURE	**56.8**	**31**	
3.1	**Information & communication technologies(ICTs)**	**82.5**	**25**	
3.1.1	ICT access*	80.3	28	
3.1.2	ICT use*	66.8	40	
3.1.3	Government's online service*	93.1	17	
3.1.4	E-participation*	89.9	30	
3.2	**General infrastructure**	**35.9**	**60**	
3.2.1	Electricity output, kWh/mn pop	5,592.2	37	
3.2.2	Logistics performance*	73.9	23	
3.2.3	Gross capital formation, % GDP	17.3	107	○ ◇
3.3	**Ecological sustainability**	**52.0**	**23**	
3.3.1	GDP/unit of energy use	12.3	27	
3.3.2	Environmental performance*	71.9	25	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	4.7	24	
	MARKET SOPHISTICATION	**49.8**	**58**	
4.1	**Credit**	**47.4**	**38**	
4.1.1	Ease of getting credit*	45.0	94	○
4.1.2	Domestic credit to private sector, % GDP	104.1	24	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**33.5**	**105**	○ ◇
4.2.1	Ease of protecting minority investors*	60.0	61	
4.2.2	Market capitalization, % GDP	30.9	47	○
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	58	○
4.3	**Trade, competition, & market scale**	**68.5**	**40**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	70.3	55	
4.3.3	Domestic market scale, bn PPP$	328.8	51	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**37.3**	**42**	
5.1	**Knowledge workers**	**50.0**	**37**	
5.1.1	Knowledge-intensive employment, %	36.1	35	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.7	29	
5.1.4	GERD financed by business, %	44.4	37	
5.1.5	Females employed w/advanced degrees, %	16.1	40	
5.2	**Innovation linkages**	**27.7**	**53**	
5.2.1	University/industry research collaboration†	54.5	31	
5.2.2	State of cluster development†	54.4	37	
5.2.3	GERD financed by abroad, %	8.0	48	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	64	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.7	31	
5.3	**Knowledge absorption**	**34.3**	**61**	
5.3.1	Intellectual property payments, % total trade	0.9	42	
5.3.2	High-tech imports, % total trade	6.9	72	○
5.3.3	ICT services imports, % total trade	1.1	64	
5.3.4	FDI net inflows, % GDP	3.5	48	
5.3.5	Research talent, % in business enterprise	34.3	38	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**29.8**	**43**	
6.1	**Knowledge creation**	**25.3**	**34**	
6.1.1	Patents by origin/bn PPP$ GDP	2.5	35	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.8	30	
6.1.3	Utility models by origin/bn PPP$ GDP	0.2	40	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	29.3	8	● ◆
6.1.5	Citable documents H-index	30.4	30	
6.2	**Knowledge impact**	**47.0**	**22**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.1	92	○
6.2.2	New businesses/th pop. 15-64	5.0	26	
6.2.3	Computer software spending, % GDP	0.6	9	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	22.8	13	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.3	42	
6.3	**Knowledge diffusion**	**17.1**	**69**	
6.3.1	Intellectual property receipts, % total trade	0.1	47	
6.3.2	High-tech net exports, % total trade	2.7	48	
6.3.3	ICT services exports, % total trade	1.7	61	
6.3.4	FDI net outflows, % GDP	1.3	49	
	CREATIVE OUTPUTS	**39.4**	**32**	
7.1	**Intangible assets**	**58.2**	**13**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP	98.4	14	● ◆
7.1.2	Industrial designs by origin/bn PPP$ GDP	7.2	18	●
7.1.3	ICTs & business model creation†	78.6	11	●
7.1.4	ICTs & organizational model creation†	64.8	30	
7.2	**Creative goods & services**	**21.4**	**52**	
7.2.1	Cultural & creative services exports, % total trade	0.6	42	
7.2.2	National feature films/mn pop. 15-69	5.2	41	
7.2.3	Entertainment & Media market/th pop. 15-69	35.5	22	
7.2.4	Printing & other media, % manufacturing	1.2	45	
7.2.5	Creative goods exports, % total trade	1.5	37	
7.3	**Online creativity**	**19.8**	**35**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	18.8	29	
7.3.2	Country-code TLDs/th pop. 15-69	41.7	16	●
7.3.3	Wikipedia edits/mn pop. 15-69	23.4	46	
7.3.4	Mobile app creation/bn PPP$ GDP	2.8	59	○

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.

QATAR

GII 2019 rank

65

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
70	53	High	NAWA	2.7	356.7	130,475.1	51

		Score/Value	Rank	
	INSTITUTIONS	**66.2**	**53**	◇
1.1	**Political environment**	**67.6**	**40**	
1.1.1	Political and operational stability*	73.7	50	◇
1.1.2	Government effectiveness*	64.5	39	
1.2	**Regulatory environment**	**68.1**	**62**	◇
1.2.1	Regulatory quality*	53.2	51	◇
1.2.2	Rule of law*	65.5	35	
1.2.3	Cost of redundancy dismissal, salary weeks	23.2	97	◇
1.3	**Business environment**	**62.9**	**91**	◇
1.3.1	Ease of starting a business*	87.7	68	
1.3.2	Ease of resolving insolvency*	38.1	104	◇

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**28.9**	**70**	◇
2.1	**Education**	**31.9**	**105**	◇
2.1.1	Expenditure on education, % GDP	2.9	106	○ ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap. ⊙	10.5	95	○ ◇
2.1.3	School life expectancy, years	11.9	91	◇
2.1.4	PISA scales in reading, maths, & science	407.3	60	
2.1.5	Pupil-teacher ratio, secondary	10.4	34	
2.2	**Tertiary education**	**47.5**	**19**	●
2.2.1	Tertiary enrolment, % gross	16.4	98	◇
2.2.2	Graduates in science & engineering, %	22.9	43	
2.2.3	Tertiary inbound mobility, %	35.3	1	● ◆
2.3	**Research & development (R&D)**	**7.2**	**68**	◇
2.3.1	Researchers, FTE/mn pop. ⊙	603.8	63	◇
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.5	63	
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*	10.7	62	

		Score/Value	Rank	
	INFRASTRUCTURE	**58.0**	**28**	●
3.1	**Information & communication technologies(ICTs)**	**75.0**	**44**	
3.1.1	ICT access*	78.9	32	
3.1.2	ICT use*	70.7	32	
3.1.3	Government's online service*	79.2	48	
3.1.4	E-participation*	71.4	65	◇
3.2	**General infrastructure**	**62.3**	**3**	● ◆
3.2.1	Electricity output, kWh/mn pop.	16,461.9	6	● ◆
3.2.2	Logistics performance*	66.0	29	●
3.2.3	Gross capital formation, % GDP	n/a	n/a	
3.3	**Ecological sustainability**	**36.8**	**72**	◇
3.3.1	GDP/unit of energy use	7.0	86	
3.3.2	Environmental performance*	67.8	31	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.3	60	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**44.7**	**82**	◇
4.1	**Credit**	**38.1**	**59**	
4.1.1	Ease of getting credit*	40.0	104	○ ◇
4.1.2	Domestic credit to private sector, % GDP	77.3	40	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**31.6**	**114**	○ ◇
4.2.1	Ease of protecting minority investors*	28.3	127	○ ◇
4.2.2	Market capitalization, % GDP	89.5	16	●
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	n/a	
4.3	**Trade, competition, & market scale**	**64.4**	**55**	
4.3.1	Applied tariff rate, weighted avg., %	4.2	76	
4.3.2	Intensity of local competition†	65.6	79	
4.3.3	Domestic market scale, bn PPP$	356.7	49	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**30.2**	**67**	◇
5.1	**Knowledge workers**	**17.3**	**113**	○ ◇
5.1.1	Knowledge-intensive employment, %	18.1	80	◇
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP ⊙	0.1	63	◇
5.1.4	GERD financed by business, % ⊙	7.1	76	◇
5.1.5	Females employed w/advanced degrees, % ⊙	4.5	92	◇
5.2	**Innovation linkages**	**27.6**	**54**	
5.2.1	University/industry research collaboration†	64.8	17	●
5.2.2	State of cluster development†	65.4	15	●
5.2.3	GERD financed by abroad, % ⊙	1.9	79	◇
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	38	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	68	
5.3	**Knowledge absorption**	**45.7**	**25**	●
5.3.1	Intellectual property payments, % total trade	n/a	n/a	
5.3.2	High-tech imports, % total trade ⊙	6.6	82	
5.3.3	ICT services imports, % total trade	3.9	3	● ◆
5.3.4	FDI net inflows, % GDP	0.6	116	○
5.3.5	Research talent, % in business enterprise ⊙	18.6	57	◇

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**18.4**	**80**	◇
6.1	**Knowledge creation**	**5.1**	**97**	◇
6.1.1	Patents by origin/bn PPP$ GDP	0.1	115	○
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	78	◇
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.2	90	◇
6.1.5	Citable documents H-index	6.6	85	◇
6.2	**Knowledge impact**	**32.3**	**84**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-1.8	106	○ ◇
6.2.2	New businesses/th pop. 15–64 ⊙	1.7	56	
6.2.3	Computer software spending, % GDP	0.3	31	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.3	84	◇
6.2.5	High- & medium-high-tech manufactures, %	0.4	23	●
6.3	**Knowledge diffusion**	**17.9**	**59**	
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade ⊙	0.0	128	○ ◇
6.3.3	ICT services exports, % total trade	0.8	85	
6.3.4	FDI net outflows, % GDP	2.9	24	●

		Score/Value	Rank	
	CREATIVE OUTPUTS	**25.8**	**70**	◇
7.1	**Intangible assets**	**43.6**	**54**	
7.1.1	Trademarks by origin/bn PPP$ GDP	3.3	120	○ ◇
7.1.2	Industrial designs by origin/bn PPP$ GDP	n/a	n/a	
7.1.3	ICTs & business model creation†	66.7	44	
7.1.4	ICTs & organizational model creation†	63.9	33	
7.2	**Creative goods & services**	**13.1**	**75**	◇
7.2.1	Cultural & creative services exports, % total trade	0.3	62	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Entertainment & Media market/th pop. 15–69	25.7	25	
7.2.4	Printing & other media, % manufacturing	1.2	55	
7.2.5	Creative goods exports, % total trade ⊙	0.2	88	
7.3	**Online creativity**	**3.0**	**78**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.7	60	◇
7.3.2	Country-code TLDs/th pop. 15–69	2.4	61	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	8.4	66	◇
7.3.4	Mobile app creation/bn PPP$ GDP	0.3	78	

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.

REPUBLIC OF KOREA (THE)

GII 2019 rank

11

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
13	10	High	SEAO	51.2	2,139.7	41,350.6	12

		Score/Value	Rank	
	INSTITUTIONS	**79.7**	**26**	◇
1.1	**Political environment**	**77.2**	**27**	◇
1.1.1	Political and operational stability*	86.0	21	
1.1.2	Government effectiveness*	72.8	28	◇
1.2	**Regulatory environment**	**72.4**	**45**	◇
1.2.1	Regulatory quality*	71.6	29	◇
1.2.2	Rule of law*	77.2	23	
1.2.3	Cost of redundancy dismissal, salary weeks	27.4	107	○ ◇
1.3	**Business environment**	**89.4**	**6**	
1.3.1	Ease of starting a business*	95.8	11	
1.3.2	Ease of resolving insolvency*	83.0	10	
	HUMAN CAPITAL & RESEARCH	**66.5**	**1**	● ◆
2.1	**Education**	**60.8**	**21**	
2.1.1	Expenditure on education, % GDP	5.3	37	
2.1.2	Government funding/pupil, secondary, % GDP/cap	28.5	14	◆
2.1.3	School life expectancy, years	16.4	24	
2.1.4	PISA scales in reading, maths, & science	519.1	7	
2.1.5	Pupil-teacher ratio, secondary ⏲	13.8	62	○
2.2	**Tertiary education**	**49.4**	**16**	
2.2.1	Tertiary enrolment, % gross ⏲	93.8	4	◆
2.2.2	Graduates in science & engineering, %	29.9	14	◆
2.2.3	Tertiary inbound mobility, %	1.9	76	○ ◇
2.3	**Research & development (R&D)**	**89.3**	**1**	● ◆
2.3.1	Researchers, FTE/mn pop.	7,514.4	3	● ◆
2.3.2	Gross expenditure on R&D, % GDP	4.6	2	● ◆
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	92.6	4	●
2.3.4	QS university ranking, average score top 3*	74.1	9	
	INFRASTRUCTURE	**61.6**	**15**	
3.1	**Information & communication technologies(ICTs)**	**94.0**	**1**	● ◆
3.1.1	ICT access*	90.0	7	
3.1.2	ICT use*	88.1	4	● ◆
3.1.3	Government's online service*	97.9	4	
3.1.4	E-participation*	100.0	1	●
3.2	**General infrastructure**	**55.4**	**7**	
3.2.1	Electricity output, kWh/mn pop.	10,910.4	11	
3.2.2	Logistics performance*	72.4	25	
3.2.3	Gross capital formation, % GDP	31.2	18	◆
3.3	**Ecological sustainability**	**35.4**	**77**	○ ◇
3.3.1	GDP/unit of energy use	6.3	98	○
3.3.2	Environmental performance*	62.3	53	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.6	38	
	MARKET SOPHISTICATION	**64.3**	**11**	
4.1	**Credit**	**67.6**	**15**	
4.1.1	Ease of getting credit*	65.0	54	
4.1.2	Domestic credit to private sector, % GDP	144.8	11	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**48.7**	**43**	
4.2.1	Ease of protecting minority investors*	73.3	21	
4.2.2	Market capitalization, % GDP	97.8	13	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	39	◇
4.3	**Trade, competition, & market scale**	**76.7**	**17**	
4.3.1	Applied tariff rate, weighted avg., %	5.1	88	○ ◇
4.3.2	Intensity of local competition†	83.9	4	◆
4.3.3	Domestic market scale, bn PPP$	2,139.7	14	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**57.6**	**10**	
5.1	**Knowledge workers**	**75.3**	**5**	
5.1.1	Knowledge-intensive employment, %	39.1	28	◇
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	3.6	2	● ◆
5.1.4	GERD financed by business, %	76.2	3	● ◆
5.1.5	Females employed w/advanced degrees, % ⏲	16.2	39	◇
5.2	**Innovation linkages**	**46.1**	**18**	
5.2.1	University/industry research collaboration†	56.5	26	◇
5.2.2	State of cluster development†	59.6	29	
5.2.3	GERD financed by abroad, %	1.3	89	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	40	◇
5.2.5	Patent families 2+ offices/bn PPP$ GDP	14.4	4	◆
5.3	**Knowledge absorption**	**51.5**	**18**	
5.3.1	Intellectual property payments, % total trade	1.6	19	
5.3.2	High-tech imports, % total trade	15.2	13	
5.3.3	ICT services imports, % total trade	0.5	105	○ ◇
5.3.4	FDI net inflows, % GDP	0.8	113	○
5.3.5	Research talent, % in business enterprise	81.3	2	● ◆
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**50.2**	**13**	
6.1	**Knowledge creation**	**63.1**	**8**	
6.1.1	Patents by origin/bn PPP$ GDP	78.2	1	● ◆
6.1.2	PCT patents by origin/bn PPP$ GDP	8.0	1	● ◆
6.1.3	Utility models by origin/bn PPP$ GDP	3.2	7	
6.1.4	Scientific & technical articles/bn PPP$ GDP	20.4	24	
6.1.5	Citable documents H-index	43.3	18	
6.2	**Knowledge impact**	**43.8**	**31**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.1	42	
6.2.2	New businesses/th pop. 15–64	2.6	43	
6.2.3	Computer software spending, % GDP	0.2	62	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.2	49	
6.2.5	High- & medium-high-tech manufactures, %	0.6	7	
6.3	**Knowledge diffusion**	**43.8**	**16**	
6.3.1	Intellectual property receipts, % total trade	1.1	18	
6.3.2	High-tech net exports, % total trade	26.4	1	● ◆
6.3.3	ICT services exports, % total trade	0.7	90	○
6.3.4	FDI net outflows, % GDP	2.0	29	
	CREATIVE OUTPUTS	**44.1**	**17**	
7.1	**Intangible assets**	**65.8**	**3**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP	89.1	23	
7.1.2	Industrial designs by origin/bn PPP$ GDP	29.7	1	● ◆
7.1.3	ICTs & business model creation†	79.7	10	
7.1.4	ICTs & organizational model creation†	64.0	32	◇
7.2	**Creative goods & services**	**25.7**	**42**	
7.2.1	Cultural & creative services exports, % total trade	0.4	54	
7.2.2	National feature films/mn pop. 15–69 ⏲	8.7	22	
7.2.3	Entertainment & Media market/th pop. 15–69	47.8	19	
7.2.4	Printing & other media, % manufacturing	0.3	98	○ ◇
7.2.5	Creative goods exports, % total trade	3.6	16	
7.3	**Online creativity**	**19.0**	**37**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	8.1	43	◇
7.3.2	Country-code TLDs/th pop. 15–69	9.6	41	◇
7.3.3	Wikipedia edits/mn pop. 15–69	17.7	51	◇
7.3.4	Mobile app creation/bn PPP$ GDP	46.6	12	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

REPUBLIC OF MOLDOVA (THE)

GII 2019 rank

58

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
45	81	Lower middle	EUR	4.0	25.2	7,304.5	48

		Score/Value	Rank	
	INSTITUTIONS	**58.4**	**82**	
1.1	**Political environment**	**43.2**	**96**	
1.1.1	Political and operational stability*	61.4	91	
1.1.2	Government effectiveness*	34.2	97	
1.2	**Regulatory environment**	**57.1**	**91**	
1.2.1	Regulatory quality*	40.9	72	
1.2.2	Rule of law*	35.4	89	
1.2.3	Cost of redundancy dismissal, salary weeks	23.7	98	
1.3	**Business environment**	**74.8**	**47**	◆
1.3.1	Ease of starting a business*	95.6	12	● ◆
1.3.2	Ease of resolving insolvency*	54.1	63	

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**30.4**	**64**	
2.1	**Education**	**57.2**	**38**	◆
2.1.1	Expenditure on education, % GDP	6.7	11	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	36.3	7	● ◆
2.1.3	School life expectancy, years	11.6	93	
2.1.4	PISA scales in reading, maths, & science	421.3	51	
2.1.5	Pupil-teacher ratio, secondary	9.9	28	◆
2.2	**Tertiary education**	**30.3**	**66**	
2.2.1	Tertiary enrolment, % gross	41.1	70	
2.2.2	Graduates in science & engineering, % ◷	22.3	47	
2.2.3	Tertiary inbound mobility, %	4.1	52	◆
2.3	**Research & development (R&D)**	**3.7**	**84**	
2.3.1	Researchers, FTE/mn pop.	723.9	56	
2.3.2	Gross expenditure on R&D, % GDP	0.3	78	
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	○ ◇

		Score/Value	Rank	
	INFRASTRUCTURE	**39.4**	**88**	
3.1	**Information & communication technologies(ICTs)**	**72.3**	**52**	◆
3.1.1	ICT access*	72.8	56	◆
3.1.2	ICT use*	53.4	66	◆
3.1.3	Government's online service*	77.1	53	
3.1.4	E-participation*	86.0	37	◆
3.2	**General infrastructure**	**21.2**	**115**	○
3.2.1	Electricity output, kWh/mn pop.	1,641.4	85	
3.2.2	Logistics performance*	18.4	106	○
3.2.3	Gross capital formation, % GDP	19.8	95	
3.3	**Ecological sustainability**	**24.8**	**116**	○
3.3.1	GDP/unit of energy use	4.5	112	○ ◇
3.3.2	Environmental performance*	52.0	91	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	111	○

		Score/Value	Rank	
	MARKET SOPHISTICATION	**49.5**	**60**	
4.1	**Credit**	**29.8**	**94**	
4.1.1	Ease of getting credit*	70.0	40	
4.1.2	Domestic credit to private sector, % GDP	27.1	100	
4.1.3	Microfinance gross loans, % GDP	0.5	29	
4.2	**Investment**	**68.3**	**[9]**	
4.2.1	Ease of protecting minority investors*	68.3	30	
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**	**50.2**	**108**	○
4.3.1	Applied tariff rate, weighted avg., % ◷	3.5	69	
4.3.2	Intensity of local competition†	63.8	86	
4.3.3	Domestic market scale, bn PPP$	25.2	121	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**26.1**	**93**	
5.1	**Knowledge workers**	**33.6**	**76**	
5.1.1	Knowledge-intensive employment, %	26.5	52	◆
5.1.2	Firms offering formal training, % firms	32.4	46	
5.1.3	GERD performed by business, % GDP	0.1	70	
5.1.4	GERD financed by business, %	17.9	70	
5.1.5	Females employed w/advanced degrees, %	13.7	48	
5.2	**Innovation linkages**	**14.8**	**120**	○
5.2.1	University/industry research collaboration†	29.1	109	○
5.2.2	State of cluster development†	28.2	124	○ ◇
5.2.3	GERD financed by abroad, %	3.7	67	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	n/a	n/a	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	51	◆
5.3	**Knowledge absorption**	**30.0**	**82**	
5.3.1	Intellectual property payments, % total trade	0.5	61	
5.3.2	High-tech imports, % total trade	7.4	66	
5.3.3	ICT services imports, % total trade	1.9	28	● ◆
5.3.4	FDI net inflows, % GDP	2.2	77	
5.3.5	Research talent, % in business enterprise	6.4	70	○

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**28.7**	**44**	◆
6.1	**Knowledge creation**	**33.2**	**28**	● ◆
6.1.1	Patents by origin/bn PPP$ GDP	3.1	32	◆
6.1.2	PCT patents by origin/bn PPP$ GDP	0.2	49	◆
6.1.3	Utility models by origin/bn PPP$ GDP	5.9	4	● ◆
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.7	66	
6.1.5	Citable documents H-index	4.7	96	
6.2	**Knowledge impact**	**35.0**	**72**	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.2	13	●
6.2.2	New businesses/th pop. 15–64	1.8	54	
6.2.3	Computer software spending, % GDP	0.1	87	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4.6	60	
6.2.5	High- & medium-high-tech manufactures, %	0.1	71	
6.3	**Knowledge diffusion**	**17.9**	**61**	
6.3.1	Intellectual property receipts, % total trade	0.1	45	
6.3.2	High-tech net exports, % total trade	0.7	74	
6.3.3	ICT services exports, % total trade	4.2	18	●
6.3.4	FDI net outflows, % GDP	0.1	93	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**31.8**	**49**	◆
7.1	**Intangible assets**	**53.4**	**26**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP	127.1	7	● ◆
7.1.2	Industrial designs by origin/bn PPP$ GDP	12.2	11	● ◆
7.1.3	ICTs & business model creation†	52.1	98	
7.1.4	ICTs & organizational model creation†	48.3	86	
7.2	**Creative goods & services**	**10.5**	**83**	
7.2.1	Cultural & creative services exports, % total trade	0.9	31	◆
7.2.2	National feature films/mn pop. 15–69 ◷	0.3	99	○
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	1.0	68	
7.2.5	Creative goods exports, % total trade	0.2	83	
7.3	**Online creativity**	**9.9**	**52**	◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.0	78	
7.3.2	Country-code TLDs/th pop. 15–69	2.0	67	
7.3.3	Wikipedia edits/mn pop. 15–69 ◷	17.1	53	
7.3.4	Mobile app creation/bn PPP$ GDP	24.3	20	● ◆

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.

ROMANIA

GII 2019 rank

50

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
53	54	Upper middle	EUR	19.6	514.2	26,446.7	49

		Score/Value	Rank	
	INSTITUTIONS	**67.1**	**52**	
1.1	**Political environment**	**51.6**	**75**	
1.1.1	Political and operational stability*	70.2	61	
1.1.2	Government effectiveness*	42.3	84	
1.2	**Regulatory environment**	**77.9**	**35**	◆
1.2.1	Regulatory quality*	55.0	46	
1.2.2	Rule of law*	56.6	47	◆
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	**Business environment**	**71.9**	**57**	
1.3.1	Ease of starting a business*	83.9	86	
1.3.2	Ease of resolving insolvency*	59.9	47	
	HUMAN CAPITAL & RESEARCH	**29.1**	**69**	
2.1	**Education**	**40.5**	**82**	
2.1.1	Expenditure on education, % GDP	3.1	99	○
2.1.2	Government funding/pupil, secondary, % GDP/cap	16.2	76	
2.1.3	School life expectancy, years	14.3	67	
2.1.4	PISA scales in reading, maths, & science	437.5	47	
2.1.5	Pupil-teacher ratio, secondary ⊙	12.1	49	
2.2	**Tertiary education**	**41.4**	**31**	
2.2.1	Tertiary enrolment, % gross ⊙	48.0	60	
2.2.2	Graduates in science & engineering, %	28.8	17	●
2.2.3	Tertiary inbound mobility, %	4.8	43	
2.3	**Research & development (R&D)**	**5.3**	**77**	
2.3.1	Researchers, FTE/mn pop	890.2	52	
2.3.2	Gross expenditure on R&D, % GDP	0.5	64	
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	**54.5**	**35**	◆
3.1	**Information & communication technologies(ICTs)**	**67.6**	**63**	
3.1.1	ICT access*	71.4	61	
3.1.2	ICT use*	62.4	51	◆
3.1.3	Government's online service*	66.0	79	
3.1.4	E-participation*	70.8	67	
3.2	**General infrastructure**	**35.4**	**64**	
3.2.1	Electricity output, kWh/mn pop	3,277.3	60	
3.2.2	Logistics performance*	49.3	47	
3.2.3	Gross capital formation, % GDP	24.3	49	
3.3	**Ecological sustainability**	**60.6**	**6**	● ◆
3.3.1	GDP/unit of energy use	13.0	25	●
3.3.2	Environmental performance*	64.8	41	◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	11.7	4	● ◆
	MARKET SOPHISTICATION	**43.2**	**92**	
4.1	**Credit**	**30.2**	**92**	
4.1.1	Ease of getting credit*	80.0	20	
4.1.2	Domestic credit to private sector, % GDP	26.4	103	○
4.1.3	Microfinance gross loans, % GDP ⊙	0.0	72	○
4.2	**Investment**	**30.4**	**120**	○ ◇
4.2.1	Ease of protecting minority investors*	60.0	61	
4.2.2	Market capitalization, % GDP ⊙	7.9	72	○
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	76	○
4.3	**Trade, competition, & market scale**	**68.9**	**38**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	62.9	93	○
4.3.3	Domestic market scale, bn PPP$	514.2	39	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**33.6**	**51**	
5.1	**Knowledge workers**	**40.4**	**56**	
5.1.1	Knowledge-intensive employment, %	23.3	63	
5.1.2	Firms offering formal training, % firms	40.7	33	
5.1.3	GERD performed by business, % GDP	0.3	48	
5.1.4	GERD financed by business, %	49.4	27	
5.1.5	Females employed w/advanced degrees, %	11.0	60	
5.2	**Innovation linkages**	**19.2**	**92**	
5.2.1	University/industry research collaboration†	38.7	74	
5.2.2	State of cluster development†	34.5	109	○ ◇
5.2.3	GERD financed by abroad, %	9.9	43	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	70	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	64	
5.3	**Knowledge absorption**	**41.1**	**38**	◆
5.3.1	Intellectual property payments, % total trade	1.0	34	
5.3.2	High-tech imports, % total trade	9.8	34	
5.3.3	ICT services imports, % total trade	2.3	16	● ◆
5.3.4	FDI net inflows, % GDP	2.9	59	
5.3.5	Research talent, % in business enterprise	25.5	48	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**30.3**	**41**	
6.1	**Knowledge creation**	**10.5**	**69**	
6.1.1	Patents by origin/bn PPP$ GDP	2.4	37	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	73	
6.1.3	Utility models by origin/bn PPP$ GDP	0.1	55	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	10.6	43	
6.1.5	Citable documents H-index	13.9	53	
6.2	**Knowledge impact**	**55.2**	**8**	● ◆
6.2.1	Growth rate of PPP$ GDP/worker, %	4.7	11	● ◆
6.2.2	New businesses/th pop. 15–64	5.6	25	
6.2.3	Computer software spending, % GDP	0.3	45	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	25.2	9	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.4	22	● ◆
6.3	**Knowledge diffusion**	**25.1**	**38**	
6.3.1	Intellectual property receipts, % total trade	0.1	57	
6.3.2	High-tech net exports, % total trade	4.2	35	
6.3.3	ICT services exports, % total trade	4.9	10	● ◆
6.3.4	FDI net outflows, % GDP	0.5	66	
	CREATIVE OUTPUTS	**25.8**	**71**	
7.1	**Intangible assets**	**38.6**	**78**	
7.1.1	Trademarks by origin/bn PPP$ GDP	43.1	60	
7.1.2	Industrial designs by origin/bn PPP$ GDP	2.6	45	
7.1.3	ICTs & business model creation†	60.8	61	
7.1.4	ICTs & organizational model creation†	50.0	81	
7.2	**Creative goods & services**	**14.7**	**68**	
7.2.1	Cultural & creative services exports, % total trade	1.5	15	● ◆
7.2.2	National feature films/mn pop. 15–69	2.0	63	
7.2.3	Entertainment & Media market/th pop. 15–69	5.9	45	
7.2.4	Printing & other media, % manufacturing	1.0	65	
7.2.5	Creative goods exports, % total trade	0.7	52	
7.3	**Online creativity**	**11.2**	**50**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.6	56	
7.3.2	Country-code TLDs/th pop. 15–69	15.8	32	
7.3.3	Wikipedia edits/mn pop. 15–69	12.5	60	
7.3.4	Mobile app creation/bn PPP$ GDP	16.1	29	

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.

RUSSIAN FEDERATION (THE)

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
59	41	Upper middle	EUR	144.0	4,179.6	29,266.9	46

		Score/Value	Rank	
	INSTITUTIONS	**60.9**	**74**	
1.1	**Political environment**	**50.2**	**83**	
1.1.1	Political and operational stability*	61.4	91	○
1.1.2	Government effectiveness*	44.7	76	
1.2	**Regulatory environment**	**56.5**	**95**	○
1.2.1	Regulatory quality*	29.2	103	○
1.2.2	Rule of law*	25.4	111	○ ◇
1.2.3	Cost of redundancy dismissal, salary weeks	17.3	73	
1.3	**Business environment**	**75.8**	**43**	
1.3.1	Ease of starting a business*	93.0	29	
1.3.2	Ease of resolving insolvency*	58.6	50	
	HUMAN CAPITAL & RESEARCH	**48.3**	**23**	◆
2.1	**Education**	**57.6**	**35**	
2.1.1	Expenditure on education, % GDP	3.8	86	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	15.5	37	
2.1.4	PISA scales in reading, maths, & science	491.8	26	◆
2.1.5	Pupil-teacher ratio, secondary ⊕	8.8	15	● ◆
2.2	**Tertiary education**	**50.3**	**14**	● ◆
2.2.1	Tertiary enrolment, % gross ⊕	81.8	17	● ◆
2.2.2	Graduates in science & engineering, %	30.9	10	● ◆
2.2.3	Tertiary inbound mobility, %	3.9	54	
2.3	**Research & development (R&D)**	**36.9**	**30**	◆
2.3.1	Researchers, FTE/mn pop	2,851.7	33	◆
2.3.2	Gross expenditure on R&D, % GDP	1.1	33	◆
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	42.3	40	◆
2.3.4	QS university ranking, average score top 3*	46.7	24	◆
	INFRASTRUCTURE	**47.1**	**62**	
3.1	**Information & communication technologies(ICTs)**	**80.7**	**29**	◆
3.1.1	ICT access*	74.0	51	◆
3.1.2	ICT use*	64.9	45	◆
3.1.3	Government's online service*	91.7	25	◆
3.1.4	E-participation*	92.1	23	◆
3.2	**General infrastructure**	**31.5**	**81**	
3.2.1	Electricity output, kWh/mn pop	7,544.3	28	◆
3.2.2	Logistics performance*	32.4	74	
3.2.3	Gross capital formation, % GDP	21.2	86	
3.3	**Ecological sustainability**	**29.2**	**101**	○ ◇
3.3.1	GDP/unit of energy use	4.3	113	○ ◇
3.3.2	Environmental performance*	63.8	47	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	112	○
	MARKET SOPHISTICATION	**49.4**	**61**	
4.1	**Credit**	**34.6**	**69**	
4.1.1	Ease of getting credit*	80.0	20	
4.1.2	Domestic credit to private sector, % GDP	52.7	62	
4.1.3	Microfinance gross loans, % GDP	0.0	73	○
4.2	**Investment**	**34.7**	**102**	○
4.2.1	Ease of protecting minority investors*	61.7	54	
4.2.2	Market capitalization, % GDP	38.9	39	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	77	○
4.3	**Trade, competition, & market scale**	**78.8**	**11**	● ◆
4.3.1	Applied tariff rate, weighted avg., %	3.6	71	
4.3.2	Intensity of local competition†	70.9	51	
4.3.3	Domestic market scale, bn PPP$	4,179.6	6	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**40.0**	**35**	◆
5.1	**Knowledge workers**	**58.0**	**25**	◆
5.1.1	Knowledge-intensive employment, %	44.3	18	● ◆
5.1.2	Firms offering formal training, % firms ⊕	46.2	27	
5.1.3	GERD performed by business, % GDP	0.7	31	◆
5.1.4	GERD financed by business, %	30.2	58	
5.1.5	Females employed w/advanced degrees, %	26.3	7	● ◆
5.2	**Innovation linkages**	**19.1**	**93**	
5.2.1	University/industry research collaboration†	49.6	40	
5.2.2	State of cluster development†	41.4	89	
5.2.3	GERD financed by abroad, %	2.6	73	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	69	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	52	
5.3	**Knowledge absorption**	**42.7**	**32**	◆
5.3.1	Intellectual property payments, % total trade	1.7	18	● ◆
5.3.2	High-tech imports, % total trade	9.3	39	
5.3.3	ICT services imports, % total trade	1.5	45	
5.3.4	FDI net inflows, % GDP	1.6	92	
5.3.5	Research talent, % in business enterprise	47.1	27	◆
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**27.1**	**47**	
6.1	**Knowledge creation**	**29.9**	**30**	◆
6.1.1	Patents by origin/bn PPP$ GDP	5.8	20	● ◆
6.1.2	PCT patents by origin/bn PPP$ GDP	0.2	47	
6.1.3	Utility models by origin/bn PPP$ GDP	2.5	8	● ◆
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.9	63	
6.1.5	Citable documents H-index	37.4	22	● ◆
6.2	**Knowledge impact**	**33.9**	**77**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.0	63	
6.2.2	New businesses/th pop. 15-64	4.3	29	
6.2.3	Computer software spending, % GDP	0.2	63	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.9	111	○
6.2.5	High- & medium-high-tech manufactures, %	0.3	43	
6.3	**Knowledge diffusion**	**17.6**	**63**	
6.3.1	Intellectual property receipts, % total trade	0.2	39	◆
6.3.2	High-tech net exports, % total trade	2.6	49	
6.3.3	ICT services exports, % total trade	1.3	71	
6.3.4	FDI net outflows, % GDP	1.9	30	
	CREATIVE OUTPUTS	**25.1**	**72**	
7.1	**Intangible assets**	**39.4**	**71**	
7.1.1	Trademarks by origin/bn PPP$ GDP	58.1	38	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.9	69	
7.1.3	ICTs & business model creation†	53.3	91	○
7.1.4	ICTs & organizational model creation†	58.4	49	
7.2	**Creative goods & services**	**9.8**	**88**	
7.2.1	Cultural & creative services exports, % total trade	1.0	27	
7.2.2	National feature films/mn pop. 15-69	1.2	76	
7.2.3	Entertainment & Media market/th pop. 15-69	6.5	43	
7.2.4	Printing & other media, % manufacturing	0.8	78	○
7.2.5	Creative goods exports, % total trade	0.3	68	
7.3	**Online creativity**	**12.1**	**47**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	3.5	61	
7.3.2	Country-code TLDs/th pop. 15-69	13.3	34	
7.3.3	Wikipedia edits/mn pop. 15-69	19.7	49	
7.3.4	Mobile app creation/bn PPP$ GDP	18.1	26	

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.

RWANDA

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
123	65	Low	SSF	12.5	27.1	2,280.1	99

		Score/Value	Rank	
1	**INSTITUTIONS**	**68.1**	**50**	● ◆
1.1	**Political environment**	**59.8**	**51**	● ◆
1.1.1	Political and operational stability*	73.7	50	◆
1.1.2	Government effectiveness*	52.9	53	● ◆
1.2	**Regulatory environment**	**70.1**	**51**	● ◆
1.2.1	Regulatory quality*	45.9	63	◆
1.2.2	Rule of law*	49.8	54	◆
1.2.3	Cost of redundancy dismissal, salary weeks	13.0	40	●
1.3	**Business environment**	**74.3**	**52**	● ◆
1.3.1	Ease of starting a business*	91.4	45	●
1.3.2	Ease of resolving insolvency*	57.2	53	● ◆

		Score/Value	Rank	
2	**HUMAN CAPITAL & RESEARCH**	**17.8**	**102**	
2.1	**Education**	**43.9**	**74**	◆
2.1.1	Expenditure on education, % GDP	3.2	97	
2.1.2	Government funding/pupil, secondary, % GDP/cap	38.0	4	● ◆
2.1.3	School life expectancy, years	11.2	99	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	20.1	89	
2.2	**Tertiary education**	**9.5**	**112**	
2.2.1	Tertiary enrolment, % gross	7.6	113	○
2.2.2	Graduates in science & engineering, %	13.8	92	
2.2.3	Tertiary inbound mobility, %	1.7	78	
2.3	**Research & development (R&D)**	**0.0**	**120**	○ ◇
2.3.1	Researchers, FTE/mn pop. ◷	12.3	105	○ ◇
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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	○ ◇

		Score/Value	Rank	
3	**INFRASTRUCTURE**	**40.0**	**87**	◆
3.1	**Information & communication technologies(ICTs)**	**48.7**	**99**	◆
3.1.1	ICT access*	27.8	119	○
3.1.2	ICT use*	19.0	110	
3.1.3	Government's online service*	72.2	67	◆
3.1.4	E-participation*	75.8	59	◆
3.2	**General infrastructure**	**42.0**	**40**	●
3.2.1	Electricity output, kWh/mn pop	n/a	n/a	
3.2.2	Logistics performance*	42.6	56	◆
3.2.3	Gross capital formation, % GDP	25.0	46	●
3.3	**Ecological sustainability**	**29.1**	**102**	
3.3.1	GDP/unit of energy use	n/a	n/a	
3.3.2	Environmental performance*	43.7	113	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.0	128	○ ◇

		Score/Value	Rank	
4	**MARKET SOPHISTICATION**	**55.2**	**38**	● ◆
4.1	**Credit**	**67.6**	**16**	● ◆
4.1.1	Ease of getting credit*	95.0	3	● ◆
4.1.2	Domestic credit to private sector, % GDP	20.9	111	
4.1.3	Microfinance gross loans, % GDP	6.7	1	● ◆
4.2	**Investment**	**54.2**	**31**	● ◆
4.2.1	Ease of protecting minority investors*	76.7	13	● ◆
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	35	
4.3	**Trade, competition, & market scale**	**44.0**	**120**	○
4.3.1	Applied tariff rate, weighted avg., % ◷	7.3	99	
4.3.2	Intensity of local competition†	57.9	114	
4.3.3	Domestic market scale, bn PPP$	27.1	119	○

		Score/Value	Rank	
5	**BUSINESS SOPHISTICATION**	**36.2**	**[44]**	
5.1	**Knowledge workers**	**34.8**	**[69]**	
5.1.1	Knowledge-intensive employment, %	8.2	103	
5.1.2	Firms offering formal training, % firms ◷	55.4	12	● ◆
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, %	3.7	94	◆
5.2	**Innovation linkages**	**44.4**	**[23]**	
5.2.1	University/industry research collaboration†	41.5	63	
5.2.2	State of cluster development†	45.8	72	◆
5.2.3	GERD financed by abroad, %	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	n/a	n/a	
5.3	**Knowledge absorption**	**29.4**	**87**	
5.3.1	Intellectual property payments, % total trade ◷	0.1	99	
5.3.2	High-tech imports, % total trade ◷	9.8	35	●
5.3.3	ICT services imports, % total trade	0.6	96	
5.3.4	FDI net inflows, % GDP	3.0	57	
5.3.5	Research talent, % in business enterprise	n/a	n/a	

		Score/Value	Rank	
6	**KNOWLEDGE & TECHNOLOGY OUTPUTS**	**5.7**	**125**	○ ◇
6.1	**Knowledge creation**	**4.6**	**102**	
6.1.1	Patents by origin/bn PPP$ GDP	0.1	107	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	79	
6.1.3	Utility models by origin/bn PPP$ GDP	0.4	36	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.5	76	
6.1.5	Citable documents H-index	2.6	114	
6.2	**Knowledge impact**	**3.9**	**[123]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	2.0	51	◆
6.2.3	Computer software spending, % GDP	0.0	103	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.4	122	○
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**8.6**	**113**	
6.3.1	Intellectual property receipts, % total trade ◷	0.0	85	
6.3.2	High-tech net exports, % total trade ◷	0.2	94	
6.3.3	ICT services exports, % total trade	0.8	86	
6.3.4	FDI net outflows, % GDP	0.4	74	

		Score/Value	Rank	
7	**CREATIVE OUTPUTS**	**16.9**	**108**	
7.1	**Intangible assets**	**33.0**	**100**	
7.1.1	Trademarks by origin/bn PPP$ GDP	10.3	105	
7.1.2	Industrial designs by origin/bn PPP$ GDP ◷	0.2	97	
7.1.3	ICTs & business model creation†	60.8	62	◆
7.1.4	ICTs & organizational model creation†	51.0	77	◆
7.2	**Creative goods & services**	**1.5**	**[119]**	
7.2.1	Cultural & creative services exports, % total trade	0.0	105	
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	n/a	n/a	
7.2.5	Creative goods exports, % total trade ◷	0.2	87	
7.3	**Online creativity**	**0.1**	**123**	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	120	○
7.3.2	Country-code TLDs/th pop. 15–69	0.1	113	
7.3.3	Wikipedia edits/mn pop. 15–69 ◷	0.2	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.

SAUDI ARABIA

GII 2019 rank

68

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
85	49	High	NAWA	33.6	1,856.9	55,943.9	61

		Score/Value	Rank	
	INSTITUTIONS	**51.3**	**104**	◇
1.1	**Political environment**	**53.2**	**70**	◇
1.1.1	Political and operational stability*	54.4	111	○ ◇
1.1.2	Government effectiveness*	52.5	55	◇
1.2	**Regulatory environment**	**60.7**	**80**	◇
1.2.1	Regulatory quality*	41.9	71	◇
1.2.2	Rule of law*	49.0	56	◇
1.2.3	Cost of redundancy dismissal, salary weeks	23.7	99	◇
1.3	**Business environment**	**40.0**	**129**	○ ◇
1.3.1	Ease of starting a business*	80.1	107	○ ◇
1.3.2	Ease of resolving insolvency*	0.0	129	○ ◇

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**45.5**	**29**	●
2.1	**Education**	**63.2**	**[14]**	
2.1.1	Expenditure on education, % GDP ◷	5.1	43	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years ◷	16.9	18	●
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ◷	11.0	37	
2.2	**Tertiary education**	**36.1**	**49**	
2.2.1	Tertiary enrolment, % gross	68.9	29	●
2.2.2	Graduates in science & engineering, %	21.9	51	
2.2.3	Tertiary inbound mobility, %	4.9	42	
2.3	**Research & development (R&D)**	**37.3**	**29**	●
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP ◷	0.8	42	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	53.4	26	●
2.3.4	QS university ranking, average score top 3*	40.9	31	●

		Score/Value	Rank	
	INFRASTRUCTURE	**48.9**	**55**	◇
3.1	**Information & communication technologies(ICTs)**	**71.7**	**53**	◇
3.1.1	ICT access*	74.8	44	
3.1.2	ICT use*	61.6	54	◇
3.1.3	Government's online service*	79.2	48	
3.1.4	E-participation*	71.4	65	◇
3.2	**General infrastructure**	**43.2**	**37**	
3.2.1	Electricity output, kWh/mn pop.	10,681.8	12	●
3.2.2	Logistics performance*	44.3	54	◇
3.2.3	Gross capital formation, % GDP	26.6	35	
3.3	**Ecological sustainability**	**31.9**	**86**	◇
3.3.1	GDP/unit of energy use	7.6	83	
3.3.2	Environmental performance*	57.5	75	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	110	○ ◇

		Score/Value	Rank	
	MARKET SOPHISTICATION	**51.9**	**47**	
4.1	**Credit**	**34.7**	**68**	◇
4.1.1	Ease of getting credit*	45.0	94	
4.1.2	Domestic credit to private sector, % GDP	54.1	60	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**47.0**	**47**	
4.2.1	Ease of protecting minority investors*	80.0	6	● ◆
4.2.2	Market capitalization, % GDP	66.6	23	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	74	○
4.3	**Trade, competition, & market scale**	**74.0**	**23**	●
4.3.1	Applied tariff rate, weighted avg., %	4.9	84	◇
4.3.2	Intensity of local competition†	74.8	29	●
4.3.3	Domestic market scale, bn PPP$	1,856.9	16	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**34.3**	**[48]**	
5.1	**Knowledge workers**	**37.3**	**[63]**	
5.1.1	Knowledge-intensive employment, % ◷	27.3	51	◇
5.1.2	Firms offering formal training, % firms	n/a	n/a	
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, % ◷	5.5	88	◇
5.2	**Innovation linkages**	**30.3**	**45**	
5.2.1	University/industry research collaboration†	48.0	43	
5.2.2	State of cluster development†	62.1	21	●
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	72	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	53	
5.3	**Knowledge absorption**	**35.4**	**[55]**	
5.3.1	Intellectual property payments, % total trade	n/a	n/a	
5.3.2	High-tech imports, % total trade ◷	7.6	62	
5.3.3	ICT services imports, % total trade	1.4	53	
5.3.4	FDI net inflows, % GDP	0.9	107	○
5.3.5	Research talent, % in business enterprise	n/a	n/a	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**17.0**	**87**	◇
6.1	**Knowledge creation**	**12.8**	**63**	
6.1.1	Patents by origin/bn PPP$ GDP	0.7	73	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.4	43	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.2	67	◇
6.1.5	Citable documents H-index	18.7	39	
6.2	**Knowledge impact**	**26.5**	**104**	◇
6.2.1	Growth rate of PPP$ GDP/worker, %	-4.0	111	○ ◇
6.2.2	New businesses/th pop. 15–64	0.4	88	○
6.2.3	Computer software spending, % GDP	0.4	28	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.3	103	◇
6.2.5	High- & medium-high-tech manufactures, %	0.4	31	
6.3	**Knowledge diffusion**	**11.8**	**93**	◇
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade ◷	0.6	75	◇
6.3.3	ICT services exports, % total trade	0.2	118	○ ◇
6.3.4	FDI net outflows, % GDP	1.0	54	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**21.9**	**86**	◇
7.1	**Intangible assets**	**36.9**	**84**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP ◷	4.3	118	○ ◇
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.3	96	
7.1.3	ICTs & business model creation†	66.5	45	
7.1.4	ICTs & organizational model creation†	61.5	40	
7.2	**Creative goods & services**	**11.7**	**78**	◇
7.2.1	Cultural & creative services exports, % total trade ◷	0.0	115	○ ◇
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Entertainment & Media market/th pop. 15–69	13.9	30	◇
7.2.4	Printing & other media, % manufacturing	1.3	39	
7.2.5	Creative goods exports, % total trade ◷	0.4	66	
7.3	**Online creativity**	**2.0**	**84**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.8	67	◇
7.3.2	Country-code TLDs/th pop. 15–69	0.6	90	◇
7.3.3	Wikipedia edits/mn pop. 15–69	6.0	74	◇
7.3.4	Mobile app creation/bn PPP$ GDP	0.3	77	

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.

SENEGAL

GII 2019 rank

96

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
81	**103**	**Low**	**SSF**	**16.3**	**60.0**	**3,651.2**	**100**

		Score/Value	Rank	
	INSTITUTIONS	**60.4**	**75**	◆
1.1	**Political environment**	**49.3**	**86**	◆
1.1.1	Political and operational stability*	70.2	61	◆
1.1.2	Government effectiveness*	38.8	89	◆
1.2	**Regulatory environment**	**64.9**	**67**	
1.2.1	Regulatory quality*	38.0	80	◆
1.2.2	Rule of law*	42.4	68	◆
1.2.3	Cost of redundancy dismissal, salary weeks	14.8	59	
1.3	**Business environment**	**67.1**	**73**	
1.3.1	Ease of starting a business*	89.9	54	
1.3.2	Ease of resolving insolvency*	44.3	84	
	HUMAN CAPITAL & RESEARCH	**20.6**	**93**	◆
2.1	**Education**	**36.8**	**97**	
2.1.1	Expenditure on education, % GDP	6.2	19	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	15.2	83	
2.1.3	School life expectancy, years	9.0	111	○
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	18.9	83	
2.2	**Tertiary education**	**19.4**	**96**	
2.2.1	Tertiary enrolment, % gross	11.2	106	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	8.3	25	● ◆
2.3	**Research & development (R&D)**	**5.7**	**74**	◆
2.3.1	Researchers, FTE/mn pop. ◷	549.3	65	◆
2.3.2	Gross expenditure on R&D, % GDP ◷	0.8	48	◆
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	**31.1**	**111**	
3.1	**Information & communication technologies(ICTs)**	**39.0**	**106**	
3.1.1	ICT access*	38.4	106	◆
3.1.2	ICT use*	19.2	109	
3.1.3	Government's online service*	47.9	106	
3.1.4	E-participation*	50.6	103	
3.2	**General infrastructure**	**24.2**	**103**	
3.2.1	Electricity output, kWh/mn pop.	289.2	112	
3.2.2	Logistics performance*	8.8	118	○
3.2.3	Gross capital formation, % GDP	25.9	40	●
3.3	**Ecological sustainability**	**30.1**	**94**	
3.3.1	GDP/unit of energy use	8.3	70	
3.3.2	Environmental performance*	49.5	100	◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	105	
	MARKET SOPHISTICATION	**35.6**	**118**	
4.1	**Credit**	**20.7**	**116**	
4.1.1	Ease of getting credit*	30.0	115	○
4.1.2	Domestic credit to private sector, % GDP	29.5	96	
4.1.3	Microfinance gross loans, % GDP	1.2	17	●
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**	**44.3**	**119**	
4.3.1	Applied tariff rate, weighted avg., %	12.3	123	○
4.3.2	Intensity of local competition†	68.0	68	◆
4.3.3	Domestic market scale, bn PPP$	60.0	93	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**20.2**	**119**	
5.1	**Knowledge workers**	**9.1**	**123**	○
5.1.1	Knowledge-intensive employment, % ◷	6.4	106	
5.1.2	Firms offering formal training, % firms	17.4	81	
5.1.3	GERD performed by business, % GDP ◷	0.0	87	○
5.1.4	GERD financed by business, % ◷	2.1	88	
5.1.5	Females employed w/advanced degrees, % ◷	1.8	102	
5.2	**Innovation linkages**	**21.5**	**78**	
5.2.1	University/industry research collaboration†	39.8	71	
5.2.2	State of cluster development†	40.3	92	
5.2.3	GERD financed by abroad, % ◷	7.9	49	
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	93	○ ◇
5.3	**Knowledge absorption**	**29.9**	**83**	
5.3.1	Intellectual property payments, % total trade	0.1	95	
5.3.2	High-tech imports, % total trade	5.9	93	
5.3.3	ICT services imports, % total trade	2.6	12	● ◆
5.3.4	FDI net inflows, % GDP	2.4	71	
5.3.5	Research talent, % in business enterprise ◷	0.1	86	○ ◇
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**19.4**	**77**	◆
6.1	**Knowledge creation**	**5.1**	**96**	
6.1.1	Patents by origin/bn PPP$ GDP	0.4	80	◆
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	71	◆
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.0	93	
6.1.5	Citable documents H-index	5.9	90	
6.2	**Knowledge impact**	**34.7**	**75**	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.4	19	●
6.2.2	New businesses/th pop. 15–64	0.4	90	
6.2.3	Computer software spending, % GDP	0.3	40	● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.9	108	
6.2.5	High- & medium-high-tech manufactures, % ◷	0.2	63	◆
6.3	**Knowledge diffusion**	**18.3**	**58**	◆
6.3.1	Intellectual property receipts, % total trade	0.1	61	
6.3.2	High-tech net exports, % total trade	0.3	89	◆
6.3.3	ICT services exports, % total trade	4.4	12	● ◆
6.3.4	FDI net outflows, % GDP	0.5	65	
	CREATIVE OUTPUTS	**20.8**	**92**	
7.1	**Intangible assets**	**36.9**	**85**	
7.1.1	Trademarks by origin/bn PPP$ GDP	11.4	103	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.8	75	
7.1.3	ICTs & business model creation†	65.3	51	● ◆
7.1.4	ICTs & organizational model creation†	58.1	52	◆
7.2	**Creative goods & services**	**9.0**	**90**	
7.2.1	Cultural & creative services exports, % total trade	0.9	30	● ◆
7.2.2	National feature films/mn pop. 15–69	0.2	104	○ ◇
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing ◷	0.8	74	◇
7.2.5	Creative goods exports, % total trade	0.1	102	
7.3	**Online creativity**	**0.4**	**109**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.0	95	◆
7.3.2	Country-code TLDs/th pop. 15–69	0.1	111	
7.3.3	Wikipedia edits/mn pop. 15–69 ◷	0.2	114	
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.

SERBIA

GII 2019 rank

57

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
57	62	Upper middle	EUR	8.8	112.5	17,555.2	55

		Score/Value	Rank	
	INSTITUTIONS	**68.7**	**47**	◆
1.1	**Political environment**	**58.7**	**55**	
1.1.1	Political and operational stability*	73.7	50	
1.1.2	Government effectiveness*	51.2	59	
1.2	**Regulatory environment**	**70.9**	**49**	
1.2.1	Regulatory quality*	42.2	70	
1.2.2	Rule of law*	41.3	72	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	**Business environment**	**76.7**	**40**	
1.3.1	Ease of starting a business*	92.6	37	
1.3.2	Ease of resolving insolvency*	60.8	45	
	HUMAN CAPITAL & RESEARCH	**32.4**	**59**	
2.1	**Education**	**43.3**	**77**	
2.1.1	Expenditure on education, % GDP	3.9	83	
2.1.2	Government funding/pupil, secondary, % GDP/cap	11.9	89	○
2.1.3	School life expectancy, years	14.8	57	
2.1.4	PISA scales in reading, maths, & science ⓘ	446.6	43	
2.1.5	Pupil-teacher ratio, secondary	8.1	9	● ◆
2.2	**Tertiary education**	**41.7**	**30**	
2.2.1	Tertiary enrolment, % gross	66.5	35	
2.2.2	Graduates in science & engineering, %	26.6	22	
2.2.3	Tertiary inbound mobility, %	4.4	46	
2.3	**Research & development (R&D)**	**12.0**	**50**	
2.3.1	Researchers, FTE/mn pop	2,079.1	39	◆
2.3.2	Gross expenditure on R&D, % GDP	0.9	38	
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*	2.9	76	
	INFRASTRUCTURE	**49.9**	**54**	
3.1	**Information & communication technologies(ICTs)**	**73.2**	**50**	
3.1.1	ICT access*	76.6	37	◆
3.1.2	ICT use*	61.0	56	
3.1.3	Government's online service*	73.6	57	
3.1.4	E-participation*	81.5	48	
3.2	**General infrastructure**	**30.8**	**84**	
3.2.1	Electricity output, kWh/mn pop	5,469.4	39	◆
3.2.2	Logistics performance*	36.4	64	
3.2.3	Gross capital formation, % GDP	21.3	84	
3.3	**Ecological sustainability**	**45.6**	**43**	
3.3.1	GDP/unit of energy use	6.0	100	○ ◇
3.3.2	Environmental performance*	57.5	73	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	11.1	5	● ◆
	MARKET SOPHISTICATION	**39.6**	**103**	○ ◇
4.1	**Credit**	**28.0**	**98**	○
4.1.1	Ease of getting credit*	65.0	54	
4.1.2	Domestic credit to private sector, % GDP	43.0	77	
4.1.3	Microfinance gross loans, % GDP	0.0	65	○
4.2	**Investment**	**38.8**	**82**	
4.2.1	Ease of protecting minority investors*	56.7	79	
4.2.2	Market capitalization, % GDP ⓘ	11.5	69	○
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	n/a	
4.3	**Trade, competition, & market scale**	**52.0**	**101**	○ ◇
4.3.1	Applied tariff rate, weighted avg., %	n/a	n/a	
4.3.2	Intensity of local competition†	64.1	84	
4.3.3	Domestic market scale, bn PPP$	112.5	73	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**31.9**	**63**	
5.1	**Knowledge workers**	**36.4**	**67**	
5.1.1	Knowledge-intensive employment, %	28.5	48	
5.1.2	Firms offering formal training, % firms	37.8	36	
5.1.3	GERD performed by business, % GDP	0.3	45	
5.1.4	GERD financed by business, %	10.0	75	○
5.1.5	Females employed w/advanced degrees, %	14.2	45	
5.2	**Innovation linkages**	**26.5**	**61**	
5.2.1	University/industry research collaboration†	38.5	76	
5.2.2	State of cluster development†	42.9	81	
5.2.3	GERD financed by abroad, %	19.9	18	●
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	63	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	57	
5.3	**Knowledge absorption**	**32.9**	**66**	
5.3.1	Intellectual property payments, % total trade	1.0	38	
5.3.2	High-tech imports, % total trade	5.4	99	○
5.3.3	ICT services imports, % total trade	2.1	26	● ◆
5.3.4	FDI net inflows, % GDP	6.5	20	● ◆
5.3.5	Research talent, % in business enterprise	10.6	64	○
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**26.7**	**48**	
6.1	**Knowledge creation**	**21.0**	**40**	
6.1.1	Patents by origin/bn PPP$ GDP	1.7	49	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.2	54	
6.1.3	Utility models by origin/bn PPP$ GDP	0.7	32	
6.1.4	Scientific & technical articles/bn PPP$ GDP	33.1	4	● ◆
6.1.5	Citable documents H-index	10.8	60	
6.2	**Knowledge impact**	**37.8**	**59**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.0	87	○
6.2.2	New businesses/th pop. 15-64	1.8	53	
6.2.3	Computer software spending, % GDP	0.0	108	○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	27.0	6	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.2	47	
6.3	**Knowledge diffusion**	**21.1**	**48**	
6.3.1	Intellectual property receipts, % total trade	0.2	36	◆
6.3.2	High-tech net exports, % total trade	1.6	59	
6.3.3	ICT services exports, % total trade	4.3	13	● ◆
6.3.4	FDI net outflows, % GDP	0.6	62	
	CREATIVE OUTPUTS	**27.2**	**65**	
7.1	**Intangible assets**	**36.0**	**93**	
7.1.1	Trademarks by origin/bn PPP$ GDP	29.1	76	
7.1.2	Industrial designs by origin/bn PPP$ GDP	2.0	51	
7.1.3	ICTs & business model creation†	57.7	77	
7.1.4	ICTs & organizational model creation†	51.7	74	
7.2	**Creative goods & services**	**22.7**	**47**	
7.2.1	Cultural & creative services exports, % total trade	1.4	17	● ◆
7.2.2	National feature films/mn pop. 15-69	5.7	39	
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	1.6	28	
7.2.5	Creative goods exports, % total trade	0.7	51	
7.3	**Online creativity**	**14.2**	**42**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1.4	90	
7.3.2	Country-code TLDs/th pop. 15-69	4.5	54	
7.3.3	Wikipedia edits/mn pop. 15-69	40.2	35	◆
7.3.4	Mobile app creation/bn PPP$ GDP	23.6	21	◆

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.

SINGAPORE

GII 2019 rank

8

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
15	1	High	SEAO	5.8	556.2	100,344.7	5

		Score/Value	Rank	
	INSTITUTIONS	**94.9**	**1**	● ◆
1.1	**Political environment**	**100.0**	**1**	● ◆
1.1.1	Political and operational stability*	100.0	1	● ◆
1.1.2	Government effectiveness*	100.0	1	● ◆
1.2	**Regulatory environment**	**98.3**	**2**	●
1.2.1	Regulatory quality*	98.7	2	● ◆
1.2.2	Rule of law*	94.6	8	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	**Business environment**	**86.3**	**17**	
1.3.1	Ease of starting a business*	98.2	3	● ◆
1.3.2	Ease of resolving insolvency*	74.3	25	
	HUMAN CAPITAL & RESEARCH	**63.0**	**5**	◆
2.1	**Education**	**50.3**	**57**	○ ◇
2.1.1	Expenditure on education, % GDP	2.9	104	○ ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	16.7	73	○ ◇
2.1.3	School life expectancy, years	16.3	26	
2.1.4	PISA scales in reading, maths, & science	551.6	1	● ◆
2.1.5	Pupil-teacher ratio, secondary	11.7	47	○
2.2	**Tertiary education**	**77.1**	**1**	● ◆
2.2.1	Tertiary enrolment, % gross	83.9	13	
2.2.2	Graduates in science & engineering, %	34.5	5	◆
2.2.3	Tertiary inbound mobility, %	27.2	1	● ◆
2.3	**Research & development (R&D)**	**61.6**	**13**	
2.3.1	Researchers, FTE/mn pop.	6,729.7	5	
2.3.2	Gross expenditure on R&D, % GDP	2.2	13	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	48.8	30	
2.3.4	QS university ranking, average score top 3*	68.9	12	
	INFRASTRUCTURE	**65.4**	**7**	
3.1	**Information & communication technologies(ICTs)**	**89.6**	**11**	
3.1.1	ICT access*	87.2	9	
3.1.2	ICT use*	75.8	26	
3.1.3	Government's online service*	98.6	2	●
3.1.4	E-participation*	96.6	13	
3.2	**General infrastructure**	**54.7**	**11**	
3.2.1	Electricity output, kWh/mn pop.	9,209.8	17	
3.2.2	Logistics performance*	90.4	7	
3.2.3	Gross capital formation, % GDP	27.8	30	
3.3	**Ecological sustainability**	**52.1**	**22**	
3.3.1	GDP/unit of energy use	16.4	9	
3.3.2	Environmental performance*	64.2	45	○ ◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.4	43	
	MARKET SOPHISTICATION	**73.6**	**5**	◆
4.1	**Credit**	**68.4**	**13**	
4.1.1	Ease of getting credit*	75.0	29	
4.1.2	Domestic credit to private sector, % GDP	128.2	17	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**76.7**	**5**	◆
4.2.1	Ease of protecting minority investors*	80.0	6	◆
4.2.2	Market capitalization, % GDP	220.1	4	◆
4.2.3	Venture capital deals/bn PPP$ GDP	0.2	7	
4.3	**Trade, competition, & market scale**	**75.6**	**19**	
4.3.1	Applied tariff rate, weighted avg., %	0.1	3	● ◆
4.3.2	Intensity of local competition†	78.4	15	
4.3.3	Domestic market scale, bn PPP$	556.2	35	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**63.9**	**4**	● ◆
5.1	**Knowledge workers**	**71.0**	**9**	
5.1.1	Knowledge-intensive employment, %	56.1	1	● ◆
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	1.3	16	
5.1.4	GERD financed by business, %	54.1	19	
5.1.5	Females employed w/advanced degrees, %	17.1	36	◇
5.2	**Innovation linkages**	**49.3**	**14**	
5.2.1	University/industry research collaboration†	70.0	10	
5.2.2	State of cluster development†	68.6	11	
5.2.3	GERD financed by abroad, %	6.8	54	○
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.2	1	● ◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	2.2	18	
5.3	**Knowledge absorption**	**71.3**	**1**	● ◆
5.3.1	Intellectual property payments, % total trade	3.3	5	◆
5.3.2	High-tech imports, % total trade	21.2	7	◆
5.3.3	ICT services imports, % total trade	2.7	11	
5.3.4	FDI net inflows, % GDP	22.3	8	◆
5.3.5	Research talent, % in business enterprise	50.5	24	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**50.9**	**11**	
6.1	**Knowledge creation**	**33.4**	**27**	◇
6.1.1	Patents by origin/bn PPP$ GDP	3.0	33	◇
6.1.2	PCT patents by origin/bn PPP$ GDP	1.7	20	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	17.5	28	
6.1.5	Citable documents H-index	36.5	23	
6.2	**Knowledge impact**	**53.9**	**11**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.5	33	
6.2.2	New businesses/th pop. 15-64	8.6	16	
6.2.3	Computer software spending, % GDP	0.3	41	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.0	46	○
6.2.5	High- & medium-high-tech manufactures, %	0.8	1	● ◆
6.3	**Knowledge diffusion**	**65.2**	**5**	◆
6.3.1	Intellectual property receipts, % total trade	1.6	15	
6.3.2	High-tech net exports, % total trade	27.4	1	● ◆
6.3.3	ICT services exports, % total trade	2.4	44	
6.3.4	FDI net outflows, % GDP	9.0	8	◆
	CREATIVE OUTPUTS	**38.3**	**34**	◇
7.1	**Intangible assets**	**47.3**	**46**	○ ◇
7.1.1	Trademarks by origin/bn PPP$ GDP	20.1	88	○ ◇
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.1	62	○
7.1.3	ICTs & business model creation†	80.4	7	
7.1.4	ICTs & organizational model creation†	74.6	14	
7.2	**Creative goods & services**	**32.2**	**20**	
7.2.1	Cultural & creative services exports, % total trade	1.9	8	
7.2.2	National feature films/mn pop. 15-69	2.9	57	○
7.2.3	Entertainment & Media market/th pop. 15-69	42.3	20	
7.2.4	Printing & other media, % manufacturing	0.7	80	○
7.2.5	Creative goods exports, % total trade	4.4	11	
7.3	**Online creativity**	**26.4**	**28**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	25.6	23	
7.3.2	Country-code TLDs/th pop. 15-69	11.2	38	◇
7.3.3	Wikipedia edits/mn pop. 15-69	23.8	45	○ ◇
7.3.4	Mobile app creation/bn PPP$ GDP	52.9	10	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

SLOVAKIA

GII 2019 rank

37

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
33	42	High	EUR	5.4	191.1	35,129.8	36

		Score/Value	Rank	
	INSTITUTIONS	**73.1**	**38**	
1.1	**Political environment**	**71.6**	**38**	
1.1.1	Political and operational stability*	82.5	32	
1.1.2	Government effectiveness*	66.1	38	
1.2	**Regulatory environment**	**73.2**	**40**	
1.2.1	Regulatory quality*	64.1	37	
1.2.2	Rule of law*	61.5	39	
1.2.3	Cost of redundancy dismissal, salary weeks	18.8	78	
1.3	**Business environment**	**74.5**	**51**	
1.3.1	Ease of starting a business*	82.0	98	○ ◇
1.3.2	Ease of resolving insolvency*	66.9	39	

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**32.4**	**58**	◇
2.1	**Education**	**48.9**	**63**	
2.1.1	Expenditure on education, % GDP	4.6	58	
2.1.2	Government funding/pupil, secondary, % GDP/cap	19.2	53	
2.1.3	School life expectancy, years	14.5	63	◇
2.1.4	PISA scales in reading, maths, & science	462.8	41	
2.1.5	Pupil-teacher ratio, secondary ⊙	11.2	39	
2.2	**Tertiary education**	**31.8**	**61**	
2.2.1	Tertiary enrolment, % gross ⊙	47.8	61	
2.2.2	Graduates in science & engineering, % ⊙	21.1	57	
2.2.3	Tertiary inbound mobility, %	6.0	37	
2.3	**Research & development (R&D)**	**16.7**	**47**	
2.3.1	Researchers, FTE/mn pop.	2,795.0	34	
2.3.2	Gross expenditure on R&D, % GDP	0.9	40	
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*	13.8	58	

		Score/Value	Rank	
	INFRASTRUCTURE	**54.2**	**36**	
3.1	**Information & communication technologies(ICTs)**	**74.4**	**47**	
3.1.1	ICT access*	73.9	53	◇
3.1.2	ICT use*	69.1	36	
3.1.3	Government's online service*	73.6	57	◇
3.1.4	E-participation*	80.9	50	
3.2	**General infrastructure**	**34.7**	**65**	
3.2.1	Electricity output, kWh/mn pop.	4,843.8	47	
3.2.2	Logistics performance*	45.1	52	◇
3.2.3	Gross capital formation, % GDP	23.5	60	
3.3	**Ecological sustainability**	**53.5**	**15**	●
3.3.1	GDP/unit of energy use	9.6	59	
3.3.2	Environmental performance*	70.6	27	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	9.0	8	● ◆

		Score/Value	Rank	
	MARKET SOPHISTICATION	**47.4**	**67**	
4.1	**Credit**	**48.7**	**35**	
4.1.1	Ease of getting credit*	70.0	40	
4.1.2	Domestic credit to private sector, % GDP	59.9	55	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**27.0**	**125**	○ ◇
4.2.1	Ease of protecting minority investors*	53.3	87	○
4.2.2	Market capitalization, % GDP ⊙	5.1	73	○
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	67	○
4.3	**Trade, competition, & market scale**	**66.6**	**47**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	73.7	35	
4.3.3	Domestic market scale, bn PPP$	191.1	63	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**35.6**	**46**	
5.1	**Knowledge workers**	**47.3**	**40**	
5.1.1	Knowledge-intensive employment, %	32.0	41	
5.1.2	Firms offering formal training, % firms	43.5	28	
5.1.3	GERD performed by business, % GDP	0.5	39	
5.1.4	GERD financed by business, %	46.2	34	
5.1.5	Females employed w/advanced degrees, %	13.9	46	
5.2	**Innovation linkages**	**23.4**	**70**	◇
5.2.1	University/industry research collaboration†	38.3	79	○ ◇
5.2.2	State of cluster development†	46.6	63	
5.2.3	GERD financed by abroad, %	10.7	38	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	71	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.3	38	
5.3	**Knowledge absorption**	**35.9**	**51**	
5.3.1	Intellectual property payments, % total trade	0.8	50	
5.3.2	High-tech imports, % total trade	13.4	15	●
5.3.3	ICT services imports, % total trade	1.0	72	
5.3.4	FDI net inflows, % GDP	4.4	38	
5.3.5	Research talent, % in business enterprise	21.9	54	○

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**34.0**	**29**	
6.1	**Knowledge creation**	**20.2**	**44**	
6.1.1	Patents by origin/bn PPP$ GDP	1.2	58	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.3	46	
6.1.3	Utility models by origin/bn PPP$ GDP	1.9	12	● ◆
6.1.4	Scientific & technical articles/bn PPP$ GDP	13.6	38	
6.1.5	Citable documents H-index	16.3	44	
6.2	**Knowledge impact**	**51.5**	**13**	●
6.2.1	Growth rate of PPP$ GDP/worker, %	1.2	58	
6.2.2	New businesses/th pop. 15–64	4.7	28	
6.2.3	Computer software spending, % GDP	0.3	37	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	21.6	15	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.6	4	● ◆
6.3	**Knowledge diffusion**	**30.3**	**29**	
6.3.1	Intellectual property receipts, % total trade	0.0	71	○
6.3.2	High-tech net exports, % total trade	9.2	17	●
6.3.3	ICT services exports, % total trade	1.7	62	
6.3.4	FDI net outflows, % GDP	3.5	19	●

		Score/Value	Rank	
	CREATIVE OUTPUTS	**37.1**	**36**	
7.1	**Intangible assets**	**46.6**	**47**	
7.1.1	Trademarks by origin/bn PPP$ GDP	55.7	41	
7.1.2	Industrial designs by origin/bn PPP$ GDP	3.1	41	
7.1.3	ICTs & business model creation†	66.9	41	
7.1.4	ICTs & organizational model creation†	65.0	28	
7.2	**Creative goods & services**	**41.0**	**7**	● ◆
7.2.1	Cultural & creative services exports, % total trade	0.4	57	
7.2.2	National feature films/mn pop. 15–69	6.6	34	
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	0.5	91	○ ◇
7.2.5	Creative goods exports, % total trade	8.5	7	● ◆
7.3	**Online creativity**	**14.4**	**41**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.0	65	◇
7.3.2	Country-code TLDs/th pop. 15–69	26.6	21	●
7.3.3	Wikipedia edits/mn pop. 15–69	26.8	40	
7.3.4	Mobile app creation/bn PPP$ GDP	10.1	43	

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.

SLOVENIA

GII 2019 rank

31

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
30	33	High	EUR	2.1	76.1	36,745.9	30

		Score/Value	Rank	
	INSTITUTIONS	**82.3**	**20**	
1.1	**Political environment**	**78.0**	**26**	
1.1.1	Political and operational stability*	84.2	25	
1.1.2	Government effectiveness*	74.9	25	
1.2	**Regulatory environment**	**80.7**	**29**	
1.2.1	Regulatory quality*	57.5	44	
1.2.2	Rule of law*	73.5	27	
1.2.3	Cost of redundancy dismissal, salary weeks	10.7	34	
1.3	**Business environment**	**88.3**	**10**	●
1.3.1	Ease of starting a business*	92.9	35	
1.3.2	Ease of resolving insolvency*	83.7	9	●

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**46.6**	**27**	
2.1	**Education**	**60.0**	**25**	
2.1.1	Expenditure on education, % GDP	4.9	51	
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.9	29	
2.1.3	School life expectancy, years	17.4	16	
2.1.4	PISA scales in reading, maths, & science	509.3	9	●
2.1.5	Pupil-teacher ratio, secondary	9.7	25	
2.2	**Tertiary education**	**40.7**	**35**	
2.2.1	Tertiary enrolment, % gross	77.6	20	
2.2.2	Graduates in science & engineering, %	25.0	30	
2.2.3	Tertiary inbound mobility, %	3.3	61	
2.3	**Research & development (R&D)**	**39.3**	**25**	
2.3.1	Researchers, FTE/mn pop	4,467.8	17	
2.3.2	Gross expenditure on R&D, % GDP	1.9	19	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	52.3	28	
2.3.4	QS university ranking, average score top 3*	10.5	63	

		Score/Value	Rank	
	INFRASTRUCTURE	**53.9**	**37**	
3.1	**Information & communication technologies(ICTs)**	**76.9**	**39**	
3.1.1	ICT access*	80.6	24	
3.1.2	ICT use*	65.7	43	
3.1.3	Government's online service*	79.9	45	
3.1.4	E-participation*	81.5	48	
3.2	**General infrastructure**	**37.2**	**56**	
3.2.1	Electricity output, kWh/mn pop	7,721.7	26	
3.2.2	Logistics performance*	58.5	34	
3.2.3	Gross capital formation, % GDP	20.3	92	○
3.3	**Ecological sustainability**	**47.5**	**41**	
3.3.1	GDP/unit of energy use	9.1	64	
3.3.2	Environmental performance*	67.6	33	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.3	16	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**43.6**	**87**	○ ◇
4.1	**Credit**	**32.4**	**81**	○ ◇
4.1.1	Ease of getting credit*	45.0	94	○
4.1.2	Domestic credit to private sector, % GDP	44.8	75	○ ◇
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**36.7**	**92**	○
4.2.1	Ease of protecting minority investors*	70.0	27	
4.2.2	Market capitalization, % GDP	12.9	67	○
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	50	○
4.3	**Trade, competition, & market scale**	**61.6**	**60**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	
4.3.2	Intensity of local competition†	73.0	38	
4.3.3	Domestic market scale, bn PPP$	76.1	87	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**44.1**	**27**	
5.1	**Knowledge workers**	**63.3**	**20**	
5.1.1	Knowledge-intensive employment, %	43.1	20	
5.1.2	Firms offering formal training, % firms	41.5	32	
5.1.3	GERD performed by business, % GDP	1.4	15	
5.1.4	GERD financed by business, %	69.2	6	● ◆
5.1.5	Females employed w/advanced degrees, %	21.8	20	
5.2	**Innovation linkages**	**27.4**	**56**	
5.2.1	University/industry research collaboration†	47.1	46	
5.2.2	State of cluster development†	47.3	57	
5.2.3	GERD financed by abroad, %	10.2	41	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	66	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	1.1	26	
5.3	**Knowledge absorption**	**41.7**	**35**	
5.3.1	Intellectual property payments, % total trade	0.7	58	
5.3.2	High-tech imports, % total trade	5.4	103	○
5.3.3	ICT services imports, % total trade	1.5	41	
5.3.4	FDI net inflows, % GDP	3.2	53	
5.3.5	Research talent, % in business enterprise	61.8	10	●

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**30.7**	**40**	
6.1	**Knowledge creation**	**31.8**	**29**	
6.1.1	Patents by origin/bn PPP$ GDP	10.2	11	●
6.1.2	PCT patents by origin/bn PPP$ GDP	1.5	23	
6.1.3	Utility models by origin/bn PPP$ GDP	0.2	47	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	35.4	2	● ◆
6.1.5	Citable documents H-index	17.5	42	
6.2	**Knowledge impact**	**41.1**	**44**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.5	49	
6.2.2	New businesses/th pop. 15-64	3.1	40	
6.2.3	Computer software spending, % GDP	0.1	91	○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	24.1	11	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.3	46	
6.3	**Knowledge diffusion**	**19.3**	**52**	
6.3.1	Intellectual property receipts, % total trade	0.2	40	
6.3.2	High-tech net exports, % total trade	4.5	33	
6.3.3	ICT services exports, % total trade	1.6	66	
6.3.4	FDI net outflows, % GDP	1.0	53	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**42.1**	**24**	
7.1	**Intangible assets**	**55.3**	**18**	
7.1.1	Trademarks by origin/bn PPP$ GDP	111.2	9	● ◆
7.1.2	Industrial designs by origin/bn PPP$ GDP	6.4	23	
7.1.3	ICTs & business model creation†	68.0	36	
7.1.4	ICTs & organizational model creation†	61.9	38	
7.2	**Creative goods & services**	**27.3**	**36**	
7.2.1	Cultural & creative services exports, % total trade	0.9	32	
7.2.2	National feature films/mn pop. 15-69	14.2	8	●
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	1.7	27	
7.2.5	Creative goods exports, % total trade	1.0	44	
7.3	**Online creativity**	**30.3**	**25**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	21.0	28	
7.3.2	Country-code TLDs/th pop. 15-69	24.5	25	
7.3.3	Wikipedia edits/mn pop. 15-69	83.0	12	●
7.3.4	Mobile app creation/bn PPP$ GDP	19.9	22	

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.

SOUTH AFRICA

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
68	51	Upper middle	SSF	57.4	790.9	13,675.3	58

		Score/Value	Rank	
	INSTITUTIONS	**65.9**	**55**	
1.1	**Political environment**	**57.2**	**61**	
1.1.1	Political and operational stability*	64.9	79	
1.1.2	Government effectiveness*	53.3	51	
1.2	**Regulatory environment**	**72.6**	**43**	◆
1.2.1	Regulatory quality*	48.2	59	
1.2.2	Rule of law*	46.1	65	
1.2.3	Cost of redundancy dismissal, salary weeks	9.3	25	●
1.3	**Business environment**	**67.9**	**70**	
1.3.1	Ease of starting a business*	81.2	102	○
1.3.2	Ease of resolving insolvency*	54.5	61	
	HUMAN CAPITAL & RESEARCH	**30.4**	**65**	
2.1	**Education**	**44.4**	**71**	
2.1.1	Expenditure on education, % GDP	6.1	20	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	19.5	51	
2.1.3	School life expectancy, years	13.7	71	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ⊙	26.8	101	○ ◇
2.2	**Tertiary education**	**21.0**	**92**	
2.2.1	Tertiary enrolment, % gross ⊙	20.5	93	◇
2.2.2	Graduates in science & engineering, %	18.5	70	
2.2.3	Tertiary inbound mobility, %	4.3	49	
2.3	**Research & development (R&D)**	**25.8**	**43**	
2.3.1	Researchers, FTE/mn pop. ⊙	473.1	69	
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.8	44	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	46.6	33	◆
2.3.4	QS university ranking, average score top 3*	33.6	33	
	INFRASTRUCTURE	**41.1**	**83**	
3.1	**Information & communication technologies(ICTs)**	**66.3**	**67**	
3.1.1	ICT access*	53.8	80	
3.1.2	ICT use*	43.1	81	
3.1.3	Government's online service*	83.3	37	
3.1.4	E-participation*	84.8	39	
3.2	**General infrastructure**	**32.6**	**71**	
3.2.1	Electricity output, kWh/mn pop.	4,461.7	49	
3.2.2	Logistics performance*	61.4	32	◆
3.2.3	Gross capital formation, % GDP	18.1	102	○
3.3	**Ecological sustainability**	**24.4**	**119**	○ ◇
3.3.1	GDP/unit of energy use	4.8	111	○ ◇
3.3.2	Environmental performance*	44.7	110	○ ◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.6	53	
	MARKET SOPHISTICATION	**58.6**	**19**	● ◆
4.1	**Credit**	**44.0**	**48**	
4.1.1	Ease of getting credit*	60.0	66	
4.1.2	Domestic credit to private sector, % GDP	147.7	9	● ◆
4.1.3	Microfinance gross loans, % GDP ⊙	0.0	64	○
4.2	**Investment**	**62.7**	**19**	● ◆
4.2.1	Ease of protecting minority investors*	73.3	21	●
4.2.2	Market capitalization, % GDP	302.1	1	● ◆
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	46	
4.3	**Trade, competition, & market scale**	**69.2**	**36**	
4.3.1	Applied tariff rate, weighted avg., %	4.6	80	
4.3.2	Intensity of local competition†	71.2	48	
4.3.3	Domestic market scale, bn PPP$	790.9	29	●

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**32.7**	**55**	
5.1	**Knowledge workers**	**33.9**	**74**	
5.1.1	Knowledge-intensive employment, %	23.2	64	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP ⊙	0.3	46	
5.1.4	GERD financed by business, % ⊙	38.9	48	
5.1.5	Females employed w/advanced degrees, %	10.2	64	
5.2	**Innovation linkages**	**29.9**	**48**	◆
5.2.1	University/industry research collaboration†	54.2	33	◆
5.2.2	State of cluster development†	56.4	32	◆
5.2.3	GERD financed by abroad, % ⊙	13.0	32	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	45	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.3	40	
5.3	**Knowledge absorption**	**34.4**	**60**	
5.3.1	Intellectual property payments, % total trade	2.0	13	● ◆
5.3.2	High-tech imports, % total trade	9.9	32	●
5.3.3	ICT services imports, % total trade	1.2	60	
5.3.4	FDI net inflows, % GDP	0.5	117	○ ◇
5.3.5	Research talent, % in business enterprise ⊙	17.7	59	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**23.9**	**57**	
6.1	**Knowledge creation**	**19.3**	**48**	
6.1.1	Patents by origin/bn PPP$ GDP	0.9	63	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.3	44	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	10.3	45	
6.1.5	Citable documents H-index	28.4	32	● ◆
6.2	**Knowledge impact**	**37.9**	**58**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.4	97	○
6.2.2	New businesses/th pop. 15–64	10.2	12	● ◆
6.2.3	Computer software spending, % GDP	0.3	48	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.5	56	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.3	40	
6.3	**Knowledge diffusion**	**14.4**	**80**	
6.3.1	Intellectual property receipts, % total trade	0.1	49	
6.3.2	High-tech net exports, % total trade	2.0	55	
6.3.3	ICT services exports, % total trade	0.7	91	
6.3.4	FDI net outflows, % GDP	1.8	32	
	CREATIVE OUTPUTS	**20.8**	**91**	
7.1	**Intangible assets**	**36.3**	**89**	
7.1.1	Trademarks by origin/bn PPP$ GDP	20.9	86	
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.3	60	
7.1.3	ICTs & business model creation†	57.2	80	
7.1.4	ICTs & organizational model creation†	58.7	48	
7.2	**Creative goods & services**	**6.9**	**95**	
7.2.1	Cultural & creative services exports, % total trade ⊙	0.2	70	
7.2.2	National feature films/mn pop. 15–69 ⊙	0.8	90	○
7.2.3	Entertainment & Media market/th pop. 15–69	8.8	38	◆
7.2.4	Printing & other media, % manufacturing	n/a	n/a	
7.2.5	Creative goods exports, % total trade	0.8	48	
7.3	**Online creativity**	**3.7**	**73**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.0	63	
7.3.2	Country-code TLDs/th pop. 15–69	8.6	42	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	4.2	87	
7.3.4	Mobile app creation/bn PPP$ GDP	0.3	75	○

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.

SPAIN

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
28	**25**	**High**	**EUR**	**46.4**	**1,867.9**	**40,138.8**	**28**

		Score/Value	Rank
	INSTITUTIONS	**78.1**	**30**
1.1	**Political environment**	**73.5**	**33**
1.1.1	Political and operational stability*	77.2	44
1.1.2	Government effectiveness*	71.6	29
1.2	**Regulatory environment**	**77.9**	**34**
1.2.1	Regulatory quality*	67.2	34
1.2.2	Rule of law*	73.1	30
1.2.3	Cost of redundancy dismissal, salary weeks	17.4	74 ○
1.3	**Business environment**	**83.0**	**25**
1.3.1	Ease of starting a business*	86.9	69 ○
1.3.2	Ease of resolving insolvency*	79.1	18
	HUMAN CAPITAL & RESEARCH	**47.0**	**26**
2.1	**Education**	**54.3**	**46**
2.1.1	Expenditure on education, % GDP	4.3	71 ○
2.1.2	Government funding/pupil, secondary, % GDP/cap	18.5	57 ○
2.1.3	School life expectancy, years	17.9	13 ●
2.1.4	PISA scales in reading, maths, & science	491.4	27
2.1.5	Pupil-teacher ratio, secondary ⊙	11.6	46
2.2	**Tertiary education**	**41.2**	**33**
2.2.1	Tertiary enrolment, % gross ⊙	91.2	6 ● ◆
2.2.2	Graduates in science & engineering, %	23.9	34
2.2.3	Tertiary inbound mobility, %	2.7	68 ○
2.3	**Research & development (R&D)**	**45.5**	**21**
2.3.1	Researchers, FTE/mn pop.	2,873.4	32
2.3.2	Gross expenditure on R&D, % GDP	1.2	31
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	74.2	14 ●
2.3.4	QS university ranking, average score top 3*	47.0	23
	INFRASTRUCTURE	**63.1**	**10 ●**
3.1	**Information & communication technologies(ICTs)**	**87.4**	**17**
3.1.1	ICT access*	80.5	25
3.1.2	ICT use*	77.2	23
3.1.3	Government's online service*	93.8	16
3.1.4	E-participation*	98.3	5 ● ◆
3.2	**General infrastructure**	**43.2**	**36**
3.2.1	Electricity output, kWh/mn pop.	5,853.6	35
3.2.2	Logistics performance*	82.7	17
3.2.3	Gross capital formation, % GDP	21.8	77 ○
3.3	**Ecological sustainability**	**58.8**	**8 ●**
3.3.1	GDP/unit of energy use	12.5	26
3.3.2	Environmental performance*	78.4	12 ●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	7.3	13 ● ◆
	MARKET SOPHISTICATION	**59.5**	**18**
4.1	**Credit**	**55.3**	**24**
4.1.1	Ease of getting credit*	60.0	66 ○
4.1.2	Domestic credit to private sector, % GDP	105.7	22
4.1.3	Microfinance gross loans, % GDP	n/a	n/a
4.2	**Investment**	**44.6**	**58**
4.2.1	Ease of protecting minority investors*	70.0	27
4.2.2	Market capitalization, % GDP	63.5	26
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	29
4.3	**Trade, competition, & market scale**	**78.6**	**14 ● ◆**
4.3.1	Applied tariff rate, weighted avg., %	1.8	23
4.3.2	Intensity of local competition†	75.8	22
4.3.3	Domestic market scale, bn PPP$	1,867.9	15 ● ◆

		Score/Value	Rank
	BUSINESS SOPHISTICATION	**38.7**	**37**
5.1	**Knowledge workers**	**52.1**	**34**
5.1.1	Knowledge-intensive employment, %	33.2	40
5.1.2	Firms offering formal training, % firms	n/a	n/a
5.1.3	GERD performed by business, % GDP	0.7	32
5.1.4	GERD financed by business, %	46.7	33
5.1.5	Females employed w/advanced degrees, %	22.1	19
5.2	**Innovation linkages**	**26.5**	**60**
5.2.1	University/industry research collaboration†	42.2	59
5.2.2	State of cluster development†	54.4	36
5.2.3	GERD financed by abroad, %	8.1	47
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	55
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.6	32
5.3	**Knowledge absorption**	**37.5**	**46**
5.3.1	Intellectual property payments, % total trade	1.2	28
5.3.2	High-tech imports, % total trade	6.8	74 ○
5.3.3	ICT services imports, % total trade	1.6	38
5.3.4	FDI net inflows, % GDP	1.9	81 ○
5.3.5	Research talent, % in business enterprise	37.2	35
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**37.2**	**24**
6.1	**Knowledge creation**	**34.2**	**25**
6.1.1	Patents by origin/bn PPP$ GDP	2.2	41
6.1.2	PCT patents by origin/bn PPP$ GDP	0.8	31
6.1.3	Utility models by origin/bn PPP$ GDP	1.3	20
6.1.4	Scientific & technical articles/bn PPP$ GDP	20.0	25
6.1.5	Citable documents H-index	59.3	12 ●
6.2	**Knowledge impact**	**48.5**	**18**
6.2.1	Growth rate of PPP$ GDP/worker, %	0.5	74 ○
6.2.2	New businesses/th pop. 15–64	3.2	39
6.2.3	Computer software spending, % GDP	0.7	6 ● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	18.0	18
6.2.5	High- & medium-high-tech manufactures, %	0.4	28
6.3	**Knowledge diffusion**	**28.9**	**32**
6.3.1	Intellectual property receipts, % total trade	0.5	27
6.3.2	High-tech net exports, % total trade	3.9	36
6.3.3	ICT services exports, % total trade	2.9	35
6.3.4	FDI net outflows, % GDP	3.7	17
	CREATIVE OUTPUTS	**39.7**	**31**
7.1	**Intangible assets**	**56.7**	**14 ●**
7.1.1	Trademarks by origin/bn PPP$ GDP	52.8	46
7.1.2	Industrial designs by origin/bn PPP$ GDP	14.2	7 ● ◆
7.1.3	ICTs & business model creation†	74.3	22
7.1.4	ICTs & organizational model creation†	63.4	34
7.2	**Creative goods & services**	**21.2**	**54**
7.2.1	Cultural & creative services exports, % total trade	1.0	28
7.2.2	National feature films/mn pop. 15–69	7.3	25
7.2.3	Entertainment & Media market/th pop. 15–69	28.2	24
7.2.4	Printing & other media, % manufacturing	1.3	41
7.2.5	Creative goods exports, % total trade	0.9	46
7.3	**Online creativity**	**24.0**	**30**
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	28.0	22
7.3.2	Country-code TLDs/th pop. 15–69	16.4	30
7.3.3	Wikipedia edits/mn pop. 15–69	58.8	17
7.3.4	Mobile app creation/bn PPP$ GDP	12.0	38

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.

SRI LANKA

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
77	94	Lower middle	CSA	21.0	292.8	13,397.5	88

		Score/Value	Rank	
	INSTITUTIONS	**50.7**	**107**	
1.1	**Political environment**	**52.6**	**72**	
1.1.1	Political and operational stability*	71.9	58	◆
1.1.2	Government effectiveness*	42.9	80	
1.2	**Regulatory environment**	**33.1**	**127**	○ ◇
1.2.1	Regulatory quality*	38.4	78	
1.2.2	Rule of law*	47.8	60	◆
1.2.3	Cost of redundancy dismissal, salary weeks	58.5	126	○ ◇
1.3	**Business environment**	**66.5**	**77**	
1.3.1	Ease of starting a business*	87.9	67	
1.3.2	Ease of resolving insolvency*	45.1	82	
	HUMAN CAPITAL & RESEARCH	**14.0**	**111**	○
2.1	**Education**	**32.3**	**103**	
2.1.1	Expenditure on education, % GDP	2.8	107	○
2.1.2	Government funding/pupil, secondary, % GDP/cap	10.4	96	○
2.1.3	School life expectancy, years	14.0	70	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	17.4	78	
2.2	**Tertiary education**	**8.0**	**113**	○ ◇
2.2.1	Tertiary enrolment, % gross	19.0	96	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.5	96	○
2.3	**Research & development (R&D)**	**1.6**	**95**	
2.3.1	Researchers, FTE/mn pop. ⊙	107.0	85	
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.1	105	○
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*	3.2	75	
	INFRASTRUCTURE	**48.5**	**57**	◆
3.1	**Information & communication technologies(ICTs)**	**50.3**	**94**	
3.1.1	ICT access*	49.7	88	
3.1.2	ICT use*	22.1	103	
3.1.3	Government's online service*	66.7	75	
3.1.4	E-participation*	62.9	82	
3.2	**General infrastructure**	**40.5**	**43**	● ◆
3.2.1	Electricity output, kWh/mn pop.	673.8	102	
3.2.2	Logistics performance*	25.0	89	
3.2.3	Gross capital formation, % GDP	36.8	10	● ◆
3.3	**Ecological sustainability**	**54.7**	**12**	● ◆
3.3.1	GDP/unit of energy use	20.4	5	● ◆
3.3.2	Environmental performance*	60.6	63	◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.8	73	
	MARKET SOPHISTICATION	**38.7**	**108**	
4.1	**Credit**	**22.5**	**113**	○
4.1.1	Ease of getting credit*	40.0	104	○ ◇
4.1.2	Domestic credit to private sector, % GDP ⊙	45.7	74	
4.1.3	Microfinance gross loans, % GDP	0.4	33	●
4.2	**Investment**	**36.5**	**95**	
4.2.1	Ease of protecting minority investors*	66.7	35	●
4.2.2	Market capitalization, % GDP	23.5	55	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	45	
4.3	**Trade, competition, & market scale**	**57.0**	**80**	
4.3.1	Applied tariff rate, weighted avg., %	8.7	107	
4.3.2	Intensity of local competition†	65.3	80	
4.3.3	Domestic market scale, bn PPP$	292.8	57	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**28.5**	**77**	
5.1	**Knowledge workers**	**26.2**	**95**	
5.1.1	Knowledge-intensive employment, %	20.4	73	
5.1.2	Firms offering formal training, % firms ⊙	18.4	78	○ ◇
5.1.3	GERD performed by business, % GDP ⊙	0.0	74	
5.1.4	GERD financed by business, % ⊙	34.4	55	
5.1.5	Females employed w/advanced degrees, %	9.6	67	
5.2	**Innovation linkages**	**21.8**	**73**	
5.2.1	University/industry research collaboration†	37.9	82	
5.2.2	State of cluster development†	47.1	58	
5.2.3	GERD financed by abroad, % ⊙	1.5	87	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	20	● ◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	73	
5.3	**Knowledge absorption**	**37.4**	**47**	●
5.3.1	Intellectual property payments, % total trade	n/a	n/a	
5.3.2	High-tech imports, % total trade	7.6	61	
5.3.3	ICT services imports, % total trade	2.0	27	● ◆
5.3.4	FDI net inflows, % GDP	1.2	103	
5.3.5	Research talent, % in business enterprise ⊙	22.5	52	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**19.9**	**73**	
6.1	**Knowledge creation**	**5.9**	**92**	
6.1.1	Patents by origin/bn PPP$ GDP	1.0	61	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	72	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.2	111	○
6.1.5	Citable documents H-index	8.7	75	
6.2	**Knowledge impact**	**32.0**	**85**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.2	40	●
6.2.2	New businesses/th pop. 15–64 ⊙	0.5	87	
6.2.3	Computer software spending, % GDP	0.3	32	● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.4	83	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.1	87	
6.3	**Knowledge diffusion**	**21.6**	**46**	●
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	0.2	92	
6.3.3	ICT services exports, % total trade	4.2	16	●
6.3.4	FDI net outflows, % GDP	0.1	95	
	CREATIVE OUTPUTS	**21.8**	**87**	
7.1	**Intangible assets**	**33.5**	**99**	
7.1.1	Trademarks by origin/bn PPP$ GDP ⊙	26.3	78	
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.0	66	
7.1.3	ICTs & business model creation†	56.9	81	
7.1.4	ICTs & organizational model creation†	47.5	90	
7.2	**Creative goods & services**	**18.8**	**[58]**	
7.2.1	Cultural & creative services exports, % total trade	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69 ⊙	1.0	82	
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing ⊙	2.1	17	●
7.2.5	Creative goods exports, % total trade	0.4	64	
7.3	**Online creativity**	**1.5**	**94**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.8	100	
7.3.2	Country-code TLDs/th pop. 15–69	0.6	89	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	6.2	72	
7.3.4	Mobile app creation/bn PPP$ GDP	0.5	69	

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.

SWEDEN

GII 2019 rank

2

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
3	4	High	EUR	10.0	542.8	52,984.1	3

		Score/Value	Rank	
1	**INSTITUTIONS**	**90.1**	**9**	
1.1	**Political environment**	**91.1**	**9**	
1.1.1	Political and operational stability*	91.2	12	
1.1.2	Government effectiveness*	91.1	8	
1.2	**Regulatory environment**	**92.0**	**13**	
1.2.1	Regulatory quality*	90.2	10	
1.2.2	Rule of law*	97.6	3	●
1.2.3	Cost of redundancy dismissal, salary weeks	14.4	57	○
1.3	**Business environment**	**87.1**	**14**	
1.3.1	Ease of starting a business*	94.7	16	
1.3.2	Ease of resolving insolvency*	79.5	16	

		Score/Value	Rank	
2	**HUMAN CAPITAL & RESEARCH**	**62.1**	**6**	◆
2.1	**Education**	**67.8**	**6**	◆
2.1.1	Expenditure on education, % GDP	7.6	5	◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.6	32	
2.1.3	School life expectancy, years	18.8	8	
2.1.4	PISA scales in reading, maths, & science	495.8	23	
2.1.5	Pupil-teacher ratio, secondary ⊙	12.9	56	○
2.2	**Tertiary education**	**43.1**	**28**	
2.2.1	Tertiary enrolment, % gross ⊙	63.5	39	
2.2.2	Graduates in science & engineering, %	26.6	23	
2.2.3	Tertiary inbound mobility, %	6.6	35	
2.3	**Research & development (R&D)**	**75.3**	**6**	
2.3.1	Researchers, FTE/mn pop.	7,268.2	4	● ◆
2.3.2	Gross expenditure on R&D, % GDP	3.4	3	●
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	80.2	10	
2.3.4	QS university ranking, average score top 3*	59.1	14	

		Score/Value	Rank	
3	**INFRASTRUCTURE**	**69.1**	**2**	● ◆
3.1	**Information & communication technologies(ICTs)**	**89.5**	**12**	
3.1.1	ICT access*	82.7	17	
3.1.2	ICT use*	87.1	6	◆
3.1.3	Government's online service*	94.4	14	
3.1.4	E-participation*	93.8	19	
3.2	**General infrastructure**	**59.8**	**4**	● ◆
3.2.1	Electricity output, kWh/mn pop.	15,902.8	7	
3.2.2	Logistics performance*	93.1	2	●
3.2.3	Gross capital formation, % GDP	26.4	39	
3.3	**Ecological sustainability**	**58.1**	**10**	
3.3.1	GDP/unit of energy use	9.7	57	○
3.3.2	Environmental performance*	80.5	5	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	9.3	7	◆

		Score/Value	Rank	
4	**MARKET SOPHISTICATION**	**62.1**	**14**	
4.1	**Credit**	**59.4**	**19**	
4.1.1	Ease of getting credit*	55.0	77	○
4.1.2	Domestic credit to private sector, % GDP	132.2	15	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**54.6**	**30**	
4.2.1	Ease of protecting minority investors*	68.3	30	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital deals/bn PPP$ GDP	0.1	17	
4.3	**Trade, competition, & market scale**	**72.3**	**29**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	○
4.3.2	Intensity of local competition†	75.1	25	
4.3.3	Domestic market scale, bn PPP$	542.8	38	

		Score/Value	Rank	
5	**BUSINESS SOPHISTICATION**	**68.8**	**1**	● ◆
5.1	**Knowledge workers**	**81.8**	**2**	● ◆
5.1.1	Knowledge-intensive employment, %	52.3	5	
5.1.2	Firms offering formal training, % firms	70.3	3	●
5.1.3	GERD performed by business, % GDP	2.4	4	
5.1.4	GERD financed by business, % ⊙	57.3	14	
5.1.5	Females employed w/advanced degrees, %	24.8	12	
5.2	**Innovation linkages**	**66.1**	**2**	● ◆
5.2.1	University/industry research collaboration†	71.8	9	
5.2.2	State of cluster development†	67.6	12	
5.2.3	GERD financed by abroad, % ⊙	6.7	55	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.2	5	◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	7.2	1	● ◆
5.3	**Knowledge absorption**	**58.4**	**6**	
5.3.1	Intellectual property payments, % total trade	1.7	16	
5.3.2	High-tech imports, % total trade	7.8	59	○
5.3.3	ICT services imports, % total trade	3.3	6	◆
5.3.4	FDI net inflows, % GDP	3.0	55	○
5.3.5	Research talent, % in business enterprise	72.0	4	◆

		Score/Value	Rank	
6	**KNOWLEDGE & TECHNOLOGY OUTPUTS**	**61.8**	**2**	● ◆
6.1	**Knowledge creation**	**73.5**	**2**	● ◆
6.1.1	Patents by origin/bn PPP$ GDP	11.2	10	
6.1.2	PCT patents by origin/bn PPP$ GDP	7.7	1	● ◆
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	30.2	7	◆
6.1.5	Citable documents H-index	59.5	11	
6.2	**Knowledge impact**	**48.0**	**20**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.4	80	○
6.2.2	New businesses/th pop. 15–64	8.1	19	
6.2.3	Computer software spending, % GDP	0.6	11	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.9	38	
6.2.5	High- & medium-high-tech manufactures, %	0.5	14	
6.3	**Knowledge diffusion**	**63.9**	**6**	◆
6.3.1	Intellectual property receipts, % total trade	3.7	1	● ◆
6.3.2	High-tech net exports, % total trade	7.3	23	
6.3.3	ICT services exports, % total trade	6.2	6	◆
6.3.4	FDI net outflows, % GDP	3.9	15	

		Score/Value	Rank	
7	**CREATIVE OUTPUTS**	**51.9**	**7**	
7.1	**Intangible assets**	**56.7**	**15**	
7.1.1	Trademarks by origin/bn PPP$ GDP	55.6	42	
7.1.2	Industrial designs by origin/bn PPP$ GDP	4.1	30	
7.1.3	ICTs & business model creation†	81.9	4	●
7.1.4	ICTs & organizational model creation†	82.7	2	● ◆
7.2	**Creative goods & services**	**31.8**	**23**	
7.2.1	Cultural & creative services exports, % total trade	1.1	26	
7.2.2	National feature films/mn pop. 15–69	10.1	19	
7.2.3	Entertainment & Media market/th pop. 15–69	71.8	5	
7.2.4	Printing & other media, % manufacturing	1.2	47	○
7.2.5	Creative goods exports, % total trade	1.8	30	
7.3	**Online creativity**	**62.5**	**3**	● ◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	43.2	17	
7.3.2	Country-code TLDs/th pop. 15–69	70.9	8	
7.3.3	Wikipedia edits/mn pop. 15–69	106.6	3	● ◆
7.3.4	Mobile app creation/bn PPP$ GDP	64.2	8	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

SWITZERLAND

GII 2019 rank

1

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
1	2	High	EUR	8.5	551.4	64,649.1	1

		Score/Value	Rank	
	INSTITUTIONS	**89.1**	**12**	
1.1	**Political environment**	**95.8**	**2**	● ◆
1.1.1	Political and operational stability*	94.7	4	
1.1.2	Government effectiveness*	96.4	2	● ◆
1.2	**Regulatory environment**	**95.9**	**6**	
1.2.1	Regulatory quality*	92.5	7	
1.2.2	Rule of law*	97.4	4	
1.2.3	Cost of redundancy dismissal, salary weeks	10.1	31	
1.3	**Business environment**	**75.5**	**44**	◇
1.3.1	Ease of starting a business*	88.4	62	○ ◇
1.3.2	Ease of resolving insolvency*	62.7	43	◇
	HUMAN CAPITAL & RESEARCH	**61.9**	**7**	◆
2.1	**Education**	**58.8**	**30**	
2.1.1	Expenditure on education, % GDP	5.1	44	○
2.1.2	Government funding/pupil, secondary, % GDP/cap	24.5	27	
2.1.3	School life expectancy, years	16.2	31	
2.1.4	PISA scales in reading, maths, & science	506.3	13	
2.1.5	Pupil-teacher ratio, secondary ⊙	9.8	27	
2.2	**Tertiary education**	**49.2**	**17**	
2.2.1	Tertiary enrolment, % gross ⊙	57.9	49	○
2.2.2	Graduates in science & engineering, %	24.5	32	
2.2.3	Tertiary inbound mobility, %	17.6	7	
2.3	**Research & development (R&D)**	**77.9**	**4**	◆
2.3.1	Researchers, FTE/mn pop. ⊙	5,257.4	11	
2.3.2	Gross expenditure on R&D, % GDP ⊙	3.4	4	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	92.6	3	●
2.3.4	QS university ranking, average score top 3*	81.6	4	
	INFRASTRUCTURE	**68.2**	**3**	● ◆
3.1	**Information & communication technologies(ICTs)**	**86.5**	**19**	
3.1.1	ICT access*	87.1	10	
3.1.2	ICT use*	89.7	2	● ◆
3.1.3	Government's online service*	84.7	35	
3.1.4	E-participation*	84.3	41	◇
3.2	**General infrastructure**	**47.6**	**28**	
3.2.1	Electricity output, kWh/mn pop.	7,096.9	30	
3.2.2	Logistics performance*	86.0	13	
3.2.3	Gross capital formation, % GDP	24.0	55	○
3.3	**Ecological sustainability**	**70.5**	**3**	● ◆
3.3.1	GDP/unit of energy use	19.2	6	◆
3.3.2	Environmental performance*	87.4	1	● ◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	5.5	21	
	MARKET SOPHISTICATION	**68.4**	**7**	
4.1	**Credit**	**72.8**	**9**	
4.1.1	Ease of getting credit*	60.0	66	○
4.1.2	Domestic credit to private sector, % GDP ⊙	175.3	4	◆
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**59.9**	**21**	
4.2.1	Ease of protecting minority investors*	50.0	93	○ ◇
4.2.2	Market capitalization, % GDP	227.3	1	● ◆
4.2.3	Venture capital deals/bn PPP$ GDP	0.2	10	
4.3	**Trade, competition, & market scale**	**72.6**	**26**	
4.3.1	Applied tariff rate, weighted avg., %	1.7	20	
4.3.2	Intensity of local competition†	75.5	23	
4.3.3	Domestic market scale, bn PPP$	551.4	36	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**67.5**	**2**	● ◆
5.1	**Knowledge workers**	**77.4**	**3**	● ◆
5.1.1	Knowledge-intensive employment, %	52.9	3	● ◆
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP ⊙	2.4	5	
5.1.4	GERD financed by business, % ⊙	63.5	10	
5.1.5	Females employed w/advanced degrees, %	18.5	28	
5.2	**Innovation linkages**	**63.0**	**3**	● ◆
5.2.1	University/industry research collaboration†	79.1	3	● ◆
5.2.2	State of cluster development†	74.8	3	● ◆
5.2.3	GERD financed by abroad, % ⊙	10.2	41	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	13	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	9.6	4	◆
5.3	**Knowledge absorption**	**62.2**	**3**	● ◆
5.3.1	Intellectual property payments, % total trade	3.1	6	◆
5.3.2	High-tech imports, % total trade	6.1	90	○
5.3.3	ICT services imports, % total trade	4.2	1	● ◆
5.3.4	FDI net inflows, % GDP	10.6	13	
5.3.5	Research talent, % in business enterprise ⊙	50.1	25	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**70.3**	**1**	● ◆
6.1	**Knowledge creation**	**84.7**	**1**	● ◆
6.1.1	Patents by origin/bn PPP$ GDP	16.5	5	◆
6.1.2	PCT patents by origin/bn PPP$ GDP	8.3	1	● ◆
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	34.1	3	● ◆
6.1.5	Citable documents H-index	66.6	9	
6.2	**Knowledge impact**	**57.7**	**4**	◆
6.2.1	Growth rate of PPP$ GDP/worker, %	0.8	66	○
6.2.2	New businesses/th pop. 15–64	4.3	30	
6.2.3	Computer software spending, % GDP	0.8	3	● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	19.7	17	◆
6.2.5	High- & medium-high-tech manufactures, %	0.6	3	● ◆
6.3	**Knowledge diffusion**	**68.6**	**3**	● ◆
6.3.1	Intellectual property receipts, % total trade	5.2	1	● ◆
6.3.2	High-tech net exports, % total trade	7.2	24	
6.3.3	ICT services exports, % total trade	3.3	27	
6.3.4	FDI net outflows, % GDP	9.6	1	● ◆
	CREATIVE OUTPUTS	**56.6**	**1**	● ◆
7.1	**Intangible assets**	**62.2**	**7**	
7.1.1	Trademarks by origin/bn PPP$ GDP	80.3	26	
7.1.2	Industrial designs by origin/bn PPP$ GDP	8.2	14	
7.1.3	ICTs & business model creation†	84.7	1	● ◆
7.1.4	ICTs & organizational model creation†	77.4	9	
7.2	**Creative goods & services**	**45.5**	**4**	◆
7.2.1	Cultural & creative services exports, % total trade	0.8	37	
7.2.2	National feature films/mn pop. 15–69	19.4	5	◆
7.2.3	Entertainment & Media market/th pop. 15–69	94.1	2	● ◆
7.2.4	Printing & other media, % manufacturing ⊙	1.2	50	○
7.2.5	Creative goods exports, % total trade	3.8	15	
7.3	**Online creativity**	**56.4**	**7**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	59.2	13	
7.3.2	Country-code TLDs/th pop. 15–69	100.0	1	● ◆
7.3.3	Wikipedia edits/mn pop. 15–69	47.4	27	
7.3.4	Mobile app creation/bn PPP$ GDP	34.4	15	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

TAJIKISTAN

GII 2019 rank

100

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
83	107	Low	CSA	9.1	30.5	3,415.8	101

		Score/Value	Rank	
	INSTITUTIONS	**46.0**	**122**	
1.1	**Political environment**	**31.6**	**125**	○
1.1.1	Political and operational stability*	56.1	105	
1.1.2	Government effectiveness*	19.4	124	
1.2	**Regulatory environment**	**45.6**	**116**	◇
1.2.1	Regulatory quality*	13.5	125	○
1.2.2	Rule of law*	10.5	126	○ ◇
1.2.3	Cost of redundancy dismissal, salary weeks	21.7	92	
1.3	**Business environment**	**60.8**	**102**	
1.3.1	Ease of starting a business*	90.7	51	●
1.3.2	Ease of resolving insolvency*	30.9	116	
	HUMAN CAPITAL & RESEARCH	**24.0**	**87**	◆
2.1	**Education**	**46.3**	**[69]**	
2.1.1	Expenditure on education, % GDP	5.2	40	●
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	11.2	97	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	15.4	70	◆
2.2	**Tertiary education**	**24.9**	**80**	◆
2.2.1	Tertiary enrolment, % gross	30.9	83	◆
2.2.2	Graduates in science & engineering, %	22.0	49	
2.2.3	Tertiary inbound mobility, %	0.8	91	
2.3	**Research & development (R&D)**	**0.7**	**110**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	0.1	103	
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	**29.8**	**115**	
3.1	**Information & communication technologies(ICTs)**	**36.4**	**[112]**	
3.1.1	ICT access*	n/a	n/a	
3.1.2	ICT use*	n/a	n/a	
3.1.3	Government's online service*	34.0	115	
3.1.4	E-participation*	38.8	112	
3.2	**General infrastructure**	**23.4**	**109**	
3.2.1	Electricity output, kWh/mn pop.	1,971.6	77	◆
3.2.2	Logistics performance*	12.9	116	
3.2.3	Gross capital formation, % GDP	22.8	67	
3.3	**Ecological sustainability**	**29.5**	**99**	
3.3.1	GDP/unit of energy use	8.2	73	
3.3.2	Environmental performance*	47.9	102	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	85	
	MARKET SOPHISTICATION	**43.7**	**86**	
4.1	**Credit**	**15.4**	**121**	
4.1.1	Ease of getting credit*	40.0	104	
4.1.2	Domestic credit to private sector, % GDP	13.7	121	
4.1.3	Microfinance gross loans, % GDP	0.1	51	
4.2	**Investment**	**66.7**	**[12]**	
4.2.1	Ease of protecting minority investors*	66.7	35	● ◆
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**	**48.9**	**111**	
4.3.1	Applied tariff rate, weighted avg., %	5.0	85	◆
4.3.2	Intensity of local competition†	61.2	103	
4.3.3	Domestic market scale, bn PPP$	30.5	114	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**22.2**	**114**	
5.1	**Knowledge workers**	**24.4**	**98**	
5.1.1	Knowledge-intensive employment, %	16.1	87	◆
5.1.2	Firms offering formal training, % firms	33.1	44	●
5.1.3	GERD performed by business, % GDP	n/a	n/a	
5.1.4	GERD financed by business, %	1.6	89	
5.1.5	Females employed w/advanced degrees, %	4.0	93	◆
5.2	**Innovation linkages**	**18.2**	**104**	
5.2.1	University/industry research collaboration†	46.5	47	●
5.2.2	State of cluster development†	40.2	93	
5.2.3	GERD financed by abroad, %	0.2	98	◇
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	93	○ ◇
5.3	**Knowledge absorption**	**23.9**	**[107]**	
5.3.1	Intellectual property payments, % total trade	0.0	119	○
5.3.2	High-tech imports, % total trade	n/a	n/a	
5.3.3	ICT services imports, % total trade	0.2	122	◇
5.3.4	FDI net inflows, % GDP	3.5	49	●
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**21.4**	**68**	◆
6.1	**Knowledge creation**	**20.0**	**45**	● ◆
6.1.1	Patents by origin/bn PPP$ GDP	0.1	113	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	3.7	5	● ◆
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.6	119	◇
6.1.5	Citable documents H-index	0.0	128	○ ◇
6.2	**Knowledge impact**	**31.2**	**89**	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.1	6	● ◆
6.2.2	New businesses/th pop. 15–64	0.2	94	
6.2.3	Computer software spending, % GDP	0.1	93	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.1	128	○ ◇
6.2.5	High- & medium-high-tech manufactures, %	0.0	102	○ ◇
6.3	**Knowledge diffusion**	**13.0**	**85**	
6.3.1	Intellectual property receipts, % total trade	0.0	83	
6.3.2	High-tech net exports, % total trade	n/a	n/a	
6.3.3	ICT services exports, % total trade	0.3	113	
6.3.4	FDI net outflows, % GDP	1.7	37	●
	CREATIVE OUTPUTS	**18.1**	**103**	
7.1	**Intangible assets**	**27.6**	**112**	
7.1.1	Trademarks by origin/bn PPP$ GDP	6.1	112	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.0	115	○
7.1.3	ICTs & business model creation†	50.7	102	
7.1.4	ICTs & organizational model creation†	44.4	97	
7.2	**Creative goods & services**	**16.5**	**[65]**	
7.2.1	Cultural & creative services exports, % total trade	0.0	102	
7.2.2	National feature films/mn pop. 15–69	1.8	70	◆
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	1.5	30	●
7.2.5	Creative goods exports, % total trade	n/a	n/a	
7.3	**Online creativity**	**0.7**	**105**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	125	○
7.3.2	Country-code TLDs/th pop. 15–69	0.3	103	
7.3.3	Wikipedia edits/mn pop. 15–69	2.6	96	◆
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.

THAILAND

GII 2019 rank

43

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
43	47	Upper middle	SEAO	69.2	1,323.2	19,476.5	44

		Score/Value	Rank	
	INSTITUTIONS	**65.8**	**57**	
1.1	**Political environment**	**60.6**	**50**	
1.1.1	Political and operational stability*	70.2	61	
1.1.2	Government effectiveness*	55.9	49	
1.2	**Regulatory environment**	**52.0**	**105**	○
1.2.1	Regulatory quality*	45.7	65	
1.2.2	Rule of law*	47.5	61	
1.2.3	Cost of redundancy dismissal, salary weeks	36.0	120	○ ◇
1.3	**Business environment**	**84.7**	**20**	● ◆
1.3.1	Ease of starting a business*	92.7	36	
1.3.2	Ease of resolving insolvency*	76.6	22	◆
	HUMAN CAPITAL & RESEARCH	**34.7**	**52**	
2.1	**Education**	**40.6**	**81**	
2.1.1	Expenditure on education, % GDP ⊙	4.1	74	
2.1.2	Government funding/pupil, secondary, % GDP/cap ⊙	18.0	62	
2.1.3	School life expectancy, years	15.4	40	
2.1.4	PISA scales in reading, maths, & science	415.3	56	○
2.1.5	Pupil-teacher ratio, secondary	24.2	97	○ ◇
2.2	**Tertiary education**	**37.1**	**45**	
2.2.1	Tertiary enrolment, % gross ⊙	49.3	57	
2.2.2	Graduates in science & engineering, %	27.9	20	
2.2.3	Tertiary inbound mobility, %	1.3	83	
2.3	**Research & development (R&D)**	**26.4**	**41**	◆
2.3.1	Researchers, FTE/mn pop. ⊙	1,210.4	48	
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.8	46	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	46.0	35	◆
2.3.4	QS university ranking, average score top 3*	28.0	39	
	INFRASTRUCTURE	**43.6**	**77**	
3.1	**Information & communication technologies(ICTs)**	**60.8**	**77**	
3.1.1	ICT access*	56.8	77	
3.1.2	ICT use*	57.2	61	
3.1.3	Government's online service*	63.9	85	
3.1.4	E-participation*	65.2	80	
3.2	**General infrastructure**	**37.3**	**54**	
3.2.1	Electricity output, kWh/mn pop.	2,778.4	65	
3.2.2	Logistics performance*	63.0	31	◆
3.2.3	Gross capital formation, % GDP	23.4	61	
3.3	**Ecological sustainability**	**32.7**	**85**	
3.3.1	GDP/unit of energy use	7.6	81	
3.3.2	Environmental performance*	49.9	98	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.8	36	
	MARKET SOPHISTICATION	**56.5**	**32**	◆
4.1	**Credit**	**46.6**	**42**	◆
4.1.1	Ease of getting credit*	70.0	40	
4.1.2	Domestic credit to private sector, % GDP	143.8	12	● ◆
4.1.3	Microfinance gross loans, % GDP ⊙	0.0	80	○
4.2	**Investment**	**48.9**	**41**	
4.2.1	Ease of protecting minority investors*	75.0	14	● ◆
4.2.2	Market capitalization, % GDP	104.2	10	● ◆
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	71	○
4.3	**Trade, competition, & market scale**	**74.0**	**22**	◆
4.3.1	Applied tariff rate, weighted avg., % ⊙	3.5	68	
4.3.2	Intensity of local competition†	74.2	34	
4.3.3	Domestic market scale, bn PPP$	1,323.2	19	●

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**32.3**	**60**	
5.1	**Knowledge workers**	**32.2**	**80**	
5.1.1	Knowledge-intensive employment, % ⊙	14.3	90	◇
5.1.2	Firms offering formal training, % firms	18.0	79	○ ◇
5.1.3	GERD performed by business, % GDP ⊙	0.6	35	
5.1.4	GERD financed by business, %	75.2	4	● ◆
5.1.5	Females employed w/advanced degrees, % ⊙	9.5	69	
5.2	**Innovation linkages**	**21.0**	**81**	
5.2.1	University/industry research collaboration†	52.2	36	◆
5.2.2	State of cluster development†	48.8	53	
5.2.3	GERD financed by abroad, %	0.9	92	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	53	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.1	58	
5.3	**Knowledge absorption**	**43.8**	**30**	◆
5.3.1	Intellectual property payments, % total trade	1.6	20	● ◆
5.3.2	High-tech imports, % total trade ⊙	15.3	12	● ◆
5.3.3	ICT services imports, % total trade	0.2	123	○ ◇
5.3.4	FDI net inflows, % GDP	1.6	95	
5.3.5	Research talent, % in business enterprise ⊙	56.8	17	◆
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**31.3**	**38**	◆
6.1	**Knowledge creation**	**16.7**	**54**	
6.1.1	Patents by origin/bn PPP$ GDP	0.8	69	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	69	
6.1.3	Utility models by origin/bn PPP$ GDP	1.9	13	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.5	86	
6.1.5	Citable documents H-index	20.2	38	
6.2	**Knowledge impact**	**43.6**	**34**	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.9	14	● ◆
6.2.2	New businesses/th pop. 15–64	1.0	71	
6.2.3	Computer software spending, % GDP	0.2	61	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.4	42	
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.4	18	◆
6.3	**Knowledge diffusion**	**33.8**	**25**	◆
6.3.1	Intellectual property receipts, % total trade	0.0	72	
6.3.2	High-tech net exports, % total trade ⊙	15.0	8	● ◆
6.3.3	ICT services exports, % total trade	0.2	119	○
6.3.4	FDI net outflows, % GDP	2.9	25	◆
	CREATIVE OUTPUTS	**30.0**	**54**	
7.1	**Intangible assets**	**41.5**	**61**	
7.1.1	Trademarks by origin/bn PPP$ GDP	25.2	80	
7.1.2	Industrial designs by origin/bn PPP$ GDP	3.0	42	
7.1.3	ICTs & business model creation†	67.3	39	◆
7.1.4	ICTs & organizational model creation†	60.3	43	◆
7.2	**Creative goods & services**	**33.5**	**18**	● ◆
7.2.1	Cultural & creative services exports, % total trade	0.0	117	○
7.2.2	National feature films/mn pop. 15–69 ⊙	1.0	83	
7.2.3	Entertainment & Media market/th pop. 15–69	5.9	44	
7.2.4	Printing & other media, % manufacturing ⊙	0.8	76	
7.2.5	Creative goods exports, % total trade ⊙	8.7	1	● ◆
7.3	**Online creativity**	**3.5**	**74**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	5.4	52	
7.3.2	Country-code TLDs/th pop. 15–69	0.4	99	
7.3.3	Wikipedia edits/mn pop. 15–69	5.6	80	
7.3.4	Mobile app creation/bn PPP$ GDP	4.4	51	

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.

TOGO

GII 2019 rank

126

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
128	121	Low	SSF	8.0	13.9	1,745.6	n/a

		Score/Value	Rank	
	INSTITUTIONS	**53.4**	**97**	
1.1	**Political environment**	**34.5**	**121**	
1.1.1	Political and operational stability*	64.9	79	
1.1.2	Government effectiveness*	19.3	125	○
1.2	**Regulatory environment**	**58.1**	**87**	
1.2.1	Regulatory quality*	20.8	115	
1.2.2	Rule of law*	27.5	108	
1.2.3	Cost of redundancy dismissal, salary weeks	13.1	49	●
1.3	**Business environment**	**67.7**	**71**	
1.3.1	Ease of starting a business*	88.7	60	●
1.3.2	Ease of resolving insolvency*	46.7	78	◆

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**16.0**	**108**	
2.1	**Education**	**36.9**	**95**	
2.1.1	Expenditure on education, % GDP	5.1	46	●
2.1.2	Government funding/pupil, secondary, % GDP/cap ◷	15.9	78	
2.1.3	School life expectancy, years	12.6	86	◆
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ◷	26.2	99	
2.2	**Tertiary education**	**9.6**	**[111]**	
2.2.1	Tertiary enrolment, % gross	12.9	102	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**1.5**	**99**	
2.3.1	Researchers, FTE/mn pop.	38.3	97	
2.3.2	Gross expenditure on R&D, % GDP ◷	0.3	82	
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	○ ◇

		Score/Value	Rank	
	INFRASTRUCTURE	**29.8**	**114**	
3.1	**Information & communication technologies(ICTs)**	**41.3**	**102**	
3.1.1	ICT access*	33.5	113	
3.1.2	ICT use*	21.6	104	◆
3.1.3	Government's online service*	55.6	98	
3.1.4	E-participation*	54.5	98	
3.2	**General infrastructure**	**28.9**	**87**	
3.2.1	Electricity output, kWh/mn pop.	30.5	120	○
3.2.2	Logistics performance*	18.0	108	
3.2.3	Gross capital formation, % GDP	28.2	28	●
3.3	**Ecological sustainability**	**19.2**	**127**	○
3.3.1	GDP/unit of energy use	2.9	117	○
3.3.2	Environmental performance*	41.8	118	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.9	66	◆

		Score/Value	Rank	
	MARKET SOPHISTICATION	**30.6**	**126**	○
4.1	**Credit**	**31.2**	**88**	
4.1.1	Ease of getting credit*	30.0	115	
4.1.2	Domestic credit to private sector, % GDP	39.7	83	◆
4.1.3	Microfinance gross loans, % GDP	2.7	10	● ◆
4.2	**Investment**	**40.0**	**[72]**	
4.2.1	Ease of protecting minority investors*	40.0	114	
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**	**20.7**	**129**	○ ◇
4.3.1	Applied tariff rate, weighted avg., %	13.4	126	○ ◇
4.3.2	Intensity of local competition†	n/a	n/a	
4.3.3	Domestic market scale, bn PPP$	13.9	127	○ ◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**19.0**	**[124]**	
5.1	**Knowledge workers**	**22.2**	**[103]**	
5.1.1	Knowledge-intensive employment, % ◷	7.7	104	
5.1.2	Firms offering formal training, % firms	33.7	43	
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, % ◷	2.5	98	
5.2	**Innovation linkages**	**11.3**	**[127]**	
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	GERD financed by abroad, % ◷	5.5	62	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	51	●
5.2.5	Patent families 2+ offices/bn PPP$ GDP	n/a	n/a	
5.3	**Knowledge absorption**	**23.7**	**109**	
5.3.1	Intellectual property payments, % total trade	0.0	108	
5.3.2	High-tech imports, % total trade	4.3	115	
5.3.3	ICT services imports, % total trade	0.8	87	
5.3.4	FDI net inflows, % GDP	2.7	60	●
5.3.5	Research talent, % in business enterprise	n/a	n/a	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**10.1**	**119**	
6.1	**Knowledge creation**	**2.5**	**119**	
6.1.1	Patents by origin/bn PPP$ GDP	0.2	104	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	99	○ ◇
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.8	94	
6.1.5	Citable documents H-index	0.7	126	○ ◇
6.2	**Knowledge impact**	**3.5**	**[127]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64 ◷	0.3	93	
6.2.3	Computer software spending, % GDP	0.1	94	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.3	102	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**24.4**	**41**	● ◆
6.3.1	Intellectual property receipts, % total trade ◷	0.0	104	
6.3.2	High-tech net exports, % total trade	0.0	123	○ ◇
6.3.3	ICT services exports, % total trade	2.0	55	●
6.3.4	FDI net outflows, % GDP	6.9	9	● ◆

		Score/Value	Rank	
	CREATIVE OUTPUTS	**4.5**	**[128]**	
7.1	**Intangible assets**	**3.8**	**[128]**	
7.1.1	Trademarks by origin/bn PPP$ GDP	11.4	102	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.8	78	
7.1.3	ICTs & business model creation†	n/a	n/a	
7.1.4	ICTs & organizational model creation†	n/a	n/a	
7.2	**Creative goods & services**	**9.9**	**[86]**	
7.2.1	Cultural & creative services exports, % total trade	1.5	16	● ◆
7.2.2	National feature films/mn pop. 15–69	0.7	92	
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	112	
7.3	**Online creativity**	**0.3**	**118**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.6	104	◆
7.3.2	Country-code TLDs/th pop. 15–69	0.1	120	
7.3.3	Wikipedia edits/mn pop. 15–69 ◷	0.2	118	
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.

TRINIDAD AND TOBAGO

GII 2019 rank

91

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
99	88	High	LCN	1.4	44.3	32,253.8	96

		Score/Value	Rank	
	INSTITUTIONS	**63.4**	**63**	◇
1.1	**Political environment**	**59.8**	**52**	● ◇
1.1.1	Political and operational stability*	73.7	50	● ◇
1.1.2	Government effectiveness*	52.8	54	● ◇
1.2	**Regulatory environment**	**62.0**	**75**	◇
1.2.1	Regulatory quality*	42.6	68	◇
1.2.2	Rule of law*	43.5	67	◇
1.2.3	Cost of redundancy dismissal, salary weeks	20.5	84	
1.3	**Business environment**	**68.5**	**69**	
1.3.1	Ease of starting a business*	88.6	61	
1.3.2	Ease of resolving insolvency*	48.5	69	
	HUMAN CAPITAL & RESEARCH	**20.5**	**[94]**	
2.1	**Education**	**40.4**	**[84]**	
2.1.1	Expenditure on education, % GDP	n/a	n/a	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	423.0	50	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**n/a**	**[n/a]**	
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**0.6**	**114**	◇
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.1	108	○ ◇
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	**37.5**	**92**	◇
3.1	**Information & communication technologies(ICTs)**	**62.7**	**73**	◇
3.1.1	ICT access*	74.6	45	●
3.1.2	ICT use*	54.4	65	◇
3.1.3	Government's online service*	63.9	85	◇
3.1.4	E-participation*	57.9	93	◇
3.2	**General infrastructure**	**22.1**	**112**	◇
3.2.1	Electricity output, kWh/mn pop.	7,819.0	23	●
3.2.2	Logistics performance*	16.5	111	◇
3.2.3	Gross capital formation, % GDP	n/a	n/a	
3.3	**Ecological sustainability**	**27.7**	**107**	◇
3.3.1	GDP/unit of energy use	2.2	121	○ ◇
3.3.2	Environmental performance*	67.4	34	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	84	◇
	MARKET SOPHISTICATION	**45.6**	**77**	◇
4.1	**Credit**	**27.5**	**100**	◇
4.1.1	Ease of getting credit*	65.0	54	
4.1.2	Domestic credit to private sector, % GDP	40.5	81	◇
4.1.3	Microfinance gross loans, % GDP ⊙	0.0	77	○
4.2	**Investment**	**61.7**	**[20]**	
4.2.1	Ease of protecting minority investors*	61.7	54	●
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**	**47.5**	**112**	◇
4.3.1	Applied tariff rate, weighted avg., % ⊙	8.6	106	◇
4.3.2	Intensity of local competition†	66.9	74	
4.3.3	Domestic market scale, bn PPP$	44.3	99	◇

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**26.2**	**92**	◇
5.1	**Knowledge workers**	**34.7**	**70**	◇
5.1.1	Knowledge-intensive employment, % ⊙	29.9	44	●
5.1.2	Firms offering formal training, % firms ⊙	28.0	56	
5.1.3	GERD performed by business, % GDP ⊙	0.0	89	○ ◇
5.1.4	GERD financed by business, %	n/a	n/a	
5.1.5	Females employed w/advanced degrees, % ⊙	12.8	53	●
5.2	**Innovation linkages**	**20.3**	**85**	◇
5.2.1	University/industry research collaboration†	29.7	107	◇
5.2.2	State of cluster development†	43.3	79	◇
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	76	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**23.5**	**110**	◇
5.3.1	Intellectual property payments, % total trade	0.6	59	
5.3.2	High-tech imports, % total trade ⊙	6.3	89	
5.3.3	ICT services imports, % total trade	0.5	108	◇
5.3.4	FDI net inflows, % GDP	-0.4	123	○
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**14.9**	**103**	◇
6.1	**Knowledge creation**	**2.5**	**118**	◇
6.1.1	Patents by origin/bn PPP$ GDP ⊙	0.1	118	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	62	
6.1.3	Utility models by origin/bn PPP$ GDP ⊙	0.0	63	○ ◇
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.7	106	◇
6.1.5	Citable documents H-index	4.0	102	◇
6.2	**Knowledge impact**	**35.2**	**[71]**	
6.2.1	Growth rate of PPP$ GDP/worker, %	-2.0	109	○ ◇
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.5	81	◇
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**6.9**	**124**	○ ◇
6.3.1	Intellectual property receipts, % total trade	0.0	84	
6.3.2	High-tech net exports, % total trade ⊙	0.0	119	◇
6.3.3	ICT services exports, % total trade	0.1	121	◇
6.3.4	FDI net outflows, % GDP	0.4	70	
	CREATIVE OUTPUTS	**20.2**	**95**	◇
7.1	**Intangible assets**	**36.1**	**91**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	13.9	97	◇
7.1.2	Industrial designs by origin/bn PPP$ GDP	6.9	19	●
7.1.3	ICTs & business model creation†	52.7	95	◇
7.1.4	ICTs & organizational model creation†	49.8	82	◇
7.2	**Creative goods & services**	**4.9**	**[102]**	
7.2.1	Cultural & creative services exports, % total trade	0.0	101	◇
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 ⊙	0.7	83	
7.2.5	Creative goods exports, % total trade ⊙	0.1	92	
7.3	**Online creativity**	**3.7**	**72**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.3	58	●
7.3.2	Country-code TLDs/th pop. 15–69	1.4	71	◇
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	8.0	67	◇
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.

TUNISIA

GII 2019 rank

70

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
65	74	Lower middle	NAWA	11.7	144.2	12,371.7	66

		Score/Value	Rank	
	INSTITUTIONS	**61.1**	**73**	◆
1.1	**Political environment**	**51.6**	**76**	
1.1.1	Political and operational stability*	64.9	79	
1.1.2	Government effectiveness*	44.9	75	
1.2	**Regulatory environment**	**59.4**	**83**	
1.2.1	Regulatory quality*	30.9	98	
1.2.2	Rule of law*	48.3	58	◆
1.2.3	Cost of redundancy dismissal, salary weeks	21.6	90	
1.3	**Business environment**	**72.2**	**56**	◆
1.3.1	Ease of starting a business*	90.2	53	
1.3.2	Ease of resolving insolvency*	54.2	62	
	HUMAN CAPITAL & RESEARCH	**44.4**	**32**	● ◆
2.1	**Education**	**66.9**	**8**	● ◆
2.1.1	Expenditure on education, % GDP	6.6	13	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	52.8	1	● ◆
2.1.3	School life expectancy, years	15.1	50	◆
2.1.4	PISA scales in reading, maths, & science	371.4	67	○
2.1.5	Pupil-teacher ratio, secondary ⊙	13.6	60	
2.2	**Tertiary education**	**57.3**	**7**	● ◆
2.2.1	Tertiary enrolment, % gross	32.1	81	
2.2.2	Graduates in science & engineering, %	44.1	2	● ◆
2.2.3	Tertiary inbound mobility, %	2.3	71	
2.3	**Research & development (R&D)**	**9.1**	**60**	
2.3.1	Researchers, FTE/mn pop. ⊙	1,965.0	41	◆
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.6	53	◆
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	**44.2**	**74**	◆
3.1	**Information & communication technologies(ICTs)**	**65.4**	**69**	◆
3.1.1	ICT access*	57.1	76	
3.1.2	ICT use*	44.0	80	
3.1.3	Government's online service*	80.6	44	● ◆
3.1.4	E-participation*	79.8	53	
3.2	**General infrastructure**	**26.2**	**96**	
3.2.1	Electricity output, kWh/mn pop.	1,737.5	83	
3.2.2	Logistics performance*	23.7	98	
3.2.3	Gross capital formation, % GDP	23.1	65	
3.3	**Ecological sustainability**	**41.2**	**51**	◆
3.3.1	GDP/unit of energy use	10.9	43	
3.3.2	Environmental performance*	62.4	51	◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.6	55	◆
	MARKET SOPHISTICATION	**39.6**	**104**	
4.1	**Credit**	**33.0**	**76**	
4.1.1	Ease of getting credit*	50.0	87	
4.1.2	Domestic credit to private sector, % GDP	86.2	33	● ◆
4.1.3	Microfinance gross loans, % GDP	0.5	30	
4.2	**Investment**	**33.2**	**107**	○
4.2.1	Ease of protecting minority investors*	56.7	79	
4.2.2	Market capitalization, % GDP	21.0	60	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	28	◆
4.3	**Trade, competition, & market scale**	**52.4**	**99**	
4.3.1	Applied tariff rate, weighted avg., % ⊙	9.4	109	○
4.3.2	Intensity of local competition†	65.0	82	
4.3.3	Domestic market scale, bn PPP$	144.2	72	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**21.3**	**115**	○ ◇
5.1	**Knowledge workers**	**26.7**	**90**	
5.1.1	Knowledge-intensive employment, % ⊙	21.0	72	
5.1.2	Firms offering formal training, % firms	28.9	52	
5.1.3	GERD performed by business, % GDP ⊙	0.1	59	
5.1.4	GERD financed by business, % ⊙	18.9	68	
5.1.5	Females employed w/advanced degrees, % ⊙	6.7	82	
5.2	**Innovation linkages**	**16.0**	**115**	○
5.2.1	University/industry research collaboration†	38.2	80	
5.2.2	State of cluster development†	37.0	100	
5.2.3	GERD financed by abroad, % ⊙	3.9	66	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	105	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	87	
5.3	**Knowledge absorption**	**21.3**	**118**	○
5.3.1	Intellectual property payments, % total trade	0.1	100	○
5.3.2	High-tech imports, % total trade	8.7	48	
5.3.3	ICT services imports, % total trade	0.4	110	○
5.3.4	FDI net inflows, % GDP	1.9	82	
5.3.5	Research talent, % in business enterprise ⊙	4.0	73	○
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**23.0**	**60**	
6.1	**Knowledge creation**	**18.7**	**49**	
6.1.1	Patents by origin/bn PPP$ GDP	1.2	56	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	74	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	23.8	15	● ◆
6.1.5	Citable documents H-index	9.6	71	
6.2	**Knowledge impact**	**34.5**	**76**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.4	52	
6.2.2	New businesses/th pop. 15–64 ⊙	1.7	57	
6.2.3	Computer software spending, % GDP	0.3	34	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.6	40	● ◆
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.1	65	
6.3	**Knowledge diffusion**	**15.8**	**75**	
6.3.1	Intellectual property receipts, % total trade	0.1	51	
6.3.2	High-tech net exports, % total trade	3.7	39	●
6.3.3	ICT services exports, % total trade	1.5	69	
6.3.4	FDI net outflows, % GDP	0.3	85	
	CREATIVE OUTPUTS	**24.1**	**75**	
7.1	**Intangible assets**	**42.1**	**59**	
7.1.1	Trademarks by origin/bn PPP$ GDP	n/a	n/a	
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.1	63	
7.1.3	ICTs & business model creation†	59.6	67	
7.1.4	ICTs & organizational model creation†	42.7	104	
7.2	**Creative goods & services**	**10.5**	**82**	
7.2.1	Cultural & creative services exports, % total trade	0.0	109	○
7.2.2	National feature films/mn pop. 15–69 ⊙	1.4	74	
7.2.3	Entertainment & Media market/th pop. 15–69	0.9	57	○
7.2.4	Printing & other media, % manufacturing	n/a	n/a	
7.2.5	Creative goods exports, % total trade	2.0	28	●
7.3	**Online creativity**	**1.6**	**93**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.7	70	◆
7.3.2	Country-code TLDs/th pop. 15–69	1.4	72	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	2.9	94	
7.3.4	Mobile app creation/bn PPP$ GDP	0.2	79	

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.

TURKEY

GII 2019 rank

49

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
49	56	Upper middle	NAWA	81.9	2,314.4	27,956.1	50

		Score/Value	Rank	
	INSTITUTIONS	**57.4**	**85**	
1.1	**Political environment**	**53.8**	**69**	
1.1.1	Political and operational stability*	64.9	79	
1.1.2	Government effectiveness*	48.2	67	
1.2	**Regulatory environment**	**54.1**	**102**	○
1.2.1	Regulatory quality*	42.9	67	
1.2.2	Rule of law*	39.8	76	
1.2.3	Cost of redundancy dismissal, salary weeks	29.8	115	○
1.3	**Business environment**	**64.5**	**82**	
1.3.1	Ease of starting a business*	88.2	63	
1.3.2	Ease of resolving insolvency*	40.7	96	

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**36.3**	**46**	
2.1	**Education**	**44.0**	**73**	
2.1.1	Expenditure on education, % GDP	4.3	70	
2.1.2	Government funding/pupil, secondary, % GDP/cap	11.5	90	○
2.1.3	School life expectancy, years	17.7	14	● ◆
2.1.4	PISA scales in reading, maths, & science	424.8	49	
2.1.5	Pupil-teacher ratio, secondary ⊙	18.5	81	
2.2	**Tertiary education**	**37.3**	**43**	
2.2.1	Tertiary enrolment, % gross ⊙	103.7	3	● ◆
2.2.2	Graduates in science & engineering, % ⊙	20.2	65	
2.2.3	Tertiary inbound mobility, %	1.3	82	
2.3	**Research & development (R&D)**	**27.7**	**39**	◆
2.3.1	Researchers, FTE/mn pop.	1,385.8	44	
2.3.2	Gross expenditure on R&D, % GDP	1.0	37	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	48.5	31	◆
2.3.4	QS university ranking, average score top 3*	24.8	44	

		Score/Value	Rank	
	INFRASTRUCTURE	**52.2**	**41**	◆
3.1	**Information & communication technologies(ICTs)**	**73.3**	**49**	
3.1.1	ICT access*	65.1	69	
3.1.2	ICT use*	53.3	68	
3.1.3	Government's online service*	88.9	27	◆
3.1.4	E-participation*	86.0	37	
3.2	**General infrastructure**	**43.0**	**38**	◆
3.2.1	Electricity output, kWh/mn pop.	3,761.1	54	
3.2.2	Logistics performance*	50.6	46	◆
3.2.3	Gross capital formation, % GDP	30.7	20	●
3.3	**Ecological sustainability**	**40.4**	**52**	
3.3.1	GDP/unit of energy use	13.3	19	●
3.3.2	Environmental performance*	53.0	88	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.9	67	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**50.8**	**52**	
4.1	**Credit**	**36.0**	**66**	
4.1.1	Ease of getting credit*	75.0	29	
4.1.2	Domestic credit to private sector, % GDP	70.9	44	
4.1.3	Microfinance gross loans, % GDP ⊙	0.0	78	○
4.2	**Investment**	**37.9**	**87**	
4.2.1	Ease of protecting minority investors*	71.7	24	
4.2.2	Market capitalization, % GDP	22.9	56	○
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	78	○ ◇
4.3	**Trade, competition, & market scale**	**78.5**	**15**	● ◆
4.3.1	Applied tariff rate, weighted avg., %	3.5	67	
4.3.2	Intensity of local competition†	80.5	6	● ◆
4.3.3	Domestic market scale, bn PPP$	2,314.4	13	● ◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**29.5**	**71**	
5.1	**Knowledge workers**	**34.6**	**72**	
5.1.1	Knowledge-intensive employment, %	21.0	71	
5.1.2	Firms offering formal training, % firms	28.4	53	
5.1.3	GERD performed by business, % GDP	0.5	37	
5.1.4	GERD financed by business, %	49.4	27	
5.1.5	Females employed w/advanced degrees, %	8.9	72	
5.2	**Innovation linkages**	**18.5**	**97**	
5.2.1	University/industry research collaboration†	37.0	88	
5.2.2	State of cluster development†	44.4	76	
5.2.3	GERD financed by abroad, %	3.5	68	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	95	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.2	43	
5.3	**Knowledge absorption**	**35.4**	**57**	
5.3.1	Intellectual property payments, % total trade	0.3	74	
5.3.2	High-tech imports, % total trade	9.9	33	
5.3.3	ICT services imports, % total trade	0.2	124	○ ◇
5.3.4	FDI net inflows, % GDP	1.6	89	
5.3.5	Research talent, % in business enterprise	55.7	19	◆

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**23.0**	**59**	
6.1	**Knowledge creation**	**22.2**	**38**	
6.1.1	Patents by origin/bn PPP$ GDP	4.2	27	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.7	32	◆
6.1.3	Utility models by origin/bn PPP$ GDP	1.5	17	
6.1.4	Scientific & technical articles/bn PPP$ GDP	7.8	60	
6.1.5	Citable documents H-index	26.5	35	◆
6.2	**Knowledge impact**	**38.1**	**57**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.7	46	
6.2.2	New businesses/th pop. 15–64	1.2	66	
6.2.3	Computer software spending, % GDP	0.5	20	● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.8	80	
6.2.5	High- & medium-high-tech manufactures, %	0.3	44	
6.3	**Knowledge diffusion**	**8.8**	**112**	○
6.3.1	Intellectual property receipts, % total trade	0.0	96	○
6.3.2	High-tech net exports, % total trade	1.4	63	
6.3.3	ICT services exports, % total trade	0.1	122	○
6.3.4	FDI net outflows, % GDP	0.4	73	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**34.2**	**40**	◆
7.1	**Intangible assets**	**55.1**	**20**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP	98.5	13	●
7.1.2	Industrial designs by origin/bn PPP$ GDP	18.0	1	● ◆
7.1.3	ICTs & business model creation†	58.2	72	
7.1.4	ICTs & organizational model creation†	44.2	98	○
7.2	**Creative goods & services**	**17.8**	**60**	
7.2.1	Cultural & creative services exports, % total trade	0.5	46	
7.2.2	National feature films/mn pop. 15–69	2.6	59	
7.2.3	Entertainment & Media market/th pop. 15–69	5.8	46	
7.2.4	Printing & other media, % manufacturing	0.9	71	
7.2.5	Creative goods exports, % total trade	2.9	21	●
7.3	**Online creativity**	**8.9**	**55**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	11.7	36	◆
7.3.2	Country-code TLDs/th pop. 15–69	1.9	68	
7.3.3	Wikipedia edits/mn pop. 15–69	4.4	85	
7.3.4	Mobile app creation/bn PPP$ GDP	19.0	23	

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.

UGANDA

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
107	96	Low	SSF	44.3	96.7	2,497.6	103

		Score/Value	Rank	
	INSTITUTIONS	**55.2**	**91**	
1.1	**Political environment**	**41.5**	**99**	
1.1.1	Political and operational stability*	59.6	98	
1.1.2	Government effectiveness*	32.4	100	
1.2	**Regulatory environment**	**68.1**	**61**	● ◆
1.2.1	Regulatory quality*	36.0	85	◆
1.2.2	Rule of law*	38.5	79	
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	21	● ◆
1.3	**Business environment**	**56.1**	**114**	
1.3.1	Ease of starting a business*	72.3	118	◇
1.3.2	Ease of resolving insolvency*	39.9	98	
	HUMAN CAPITAL & RESEARCH	**13.4**	**114**	
2.1	**Education**	**18.1**	**[125]**	
2.1.1	Expenditure on education, % GDP	2.6	113	○ ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**21.2**	**91**	
2.2.1	Tertiary enrolment, % gross ◷	4.6	119	○
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, % ◷	10.7	19	● ◆
2.3	**Research & development (R&D)**	**0.9**	**106**	
2.3.1	Researchers, FTE/mn pop. ◷	26.5	101	○
2.3.2	Gross expenditure on R&D, % GDP ◷	0.2	92	
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	**36.6**	**96**	◆
3.1	**Information & communication technologies(ICTs)**	**40.5**	**105**	
3.1.1	ICT access*	26.9	120	○
3.1.2	ICT use*	15.9	113	
3.1.3	Government's online service*	56.9	92	
3.1.4	E-participation*	62.4	84	◆
3.2	**General infrastructure**	**38.9**	**48**	●
3.2.1	Electricity output, kWh/mn pop.	n/a	n/a	
3.2.2	Logistics performance*	23.9	96	
3.2.3	Gross capital formation, % GDP	27.2	33	●
3.3	**Ecological sustainability**	**30.2**	**93**	
3.3.1	GDP/unit of energy use	n/a	n/a	
3.3.2	Environmental performance*	44.3	111	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	101	
	MARKET SOPHISTICATION	**45.8**	**74**	◆
4.1	**Credit**	**32.6**	**80**	
4.1.1	Ease of getting credit*	60.0	66	
4.1.2	Domestic credit to private sector, % GDP	15.0	116	○
4.1.3	Microfinance gross loans, % GDP	1.9	13	●
4.2	**Investment**	**50.0**	**[39]**	
4.2.1	Ease of protecting minority investors*	50.0	93	
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**	**55.0**	**89**	◆
4.3.1	Applied tariff rate, weighted avg., % ◷	7.3	99	
4.3.2	Intensity of local competition†	72.4	44	● ◆
4.3.3	Domestic market scale, bn PPP$	96.7	78	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**27.3**	**82**	
5.1	**Knowledge workers**	**19.0**	**109**	
5.1.1	Knowledge-intensive employment, %	10.1	100	◆
5.1.2	Firms offering formal training, % firms	34.7	41	●
5.1.3	GERD performed by business, % GDP ◷	0.0	83	◆
5.1.4	GERD financed by business, % ◷	3.4	84	
5.1.5	Females employed w/advanced degrees, %	4.6	91	◆
5.2	**Innovation linkages**	**41.7**	**25**	● ◆
5.2.1	University/industry research collaboration†	42.6	57	●
5.2.2	State of cluster development†	43.1	80	
5.2.3	GERD financed by abroad, % ◷	52.4	1	● ◆
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	83	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	93	○ ◇
5.3	**Knowledge absorption**	**21.2**	**119**	○ ◇
5.3.1	Intellectual property payments, % total trade	0.3	79	
5.3.2	High-tech imports, % total trade	6.4	87	
5.3.3	ICT services imports, % total trade	0.6	98	
5.3.4	FDI net inflows, % GDP	2.7	61	●
5.3.5	Research talent, % in business enterprise ◷	4.0	74	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**13.6**	**108**	
6.1	**Knowledge creation**	**6.8**	**83**	
6.1.1	Patents by origin/bn PPP$ GDP ◷	0.2	99	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	95	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.1	80	
6.1.5	Citable documents H-index	9.5	72	◆
6.2	**Knowledge impact**	**26.6**	**103**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.4	76	
6.2.2	New businesses/th pop. 15–64 ◷	0.7	79	
6.2.3	Computer software spending, % GDP	0.0	123	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.1	105	
6.2.5	High- & medium-high-tech manufactures, %	n/a	n/a	
6.3	**Knowledge diffusion**	**7.5**	**115**	
6.3.1	Intellectual property receipts, % total trade	0.0	67	
6.3.2	High-tech net exports, % total trade	0.1	102	
6.3.3	ICT services exports, % total trade	0.6	93	
6.3.4	FDI net outflows, % GDP	0.0	114	
	CREATIVE OUTPUTS	**17.5**	**106**	
7.1	**Intangible assets**	**32.6**	**101**	
7.1.1	Trademarks by origin/bn PPP$ GDP	15.2	95	
7.1.2	Industrial designs by origin/bn PPP$ GDP	n/a	n/a	
7.1.3	ICTs & business model creation†	49.8	106	
7.1.4	ICTs & organizational model creation†	42.7	103	
7.2	**Creative goods & services**	**4.5**	**[104]**	
7.2.1	Cultural & creative services exports, % total trade	0.1	83	
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	n/a	n/a	
7.2.5	Creative goods exports, % total trade ◷	0.5	62	● ◆
7.3	**Online creativity**	**0.2**	**119**	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.2	115	
7.3.2	Country-code TLDs/th pop. 15–69	0.1	119	○
7.3.3	Wikipedia edits/mn pop. 15–69 ◷	0.6	107	
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.

UKRAINE

GII 2019 rank

47

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
36	82	Lower middle	EUR	44.0	391.5	9,283.4	43

		Score/Value	Rank	
	INSTITUTIONS	**53.9**	**96**	
1.1	**Political environment**	**38.8**	**110**	○
1.1.1	Political and operational stability*	45.6	125	○ ◇
1.1.2	Government effectiveness*	35.4	95	
1.2	**Regulatory environment**	**61.4**	**78**	
1.2.1	Regulatory quality*	33.3	94	
1.2.2	Rule of law*	27.6	107	○
1.2.3	Cost of redundancy dismissal, salary weeks	13.0	42	
1.3	**Business environment**	**61.4**	**99**	
1.3.1	Ease of starting a business*	91.1	48	
1.3.2	Ease of resolving insolvency*	31.7	115	○ ◇
	HUMAN CAPITAL & RESEARCH	**35.6**	**51**	◆
2.1	**Education**	**55.1**	**43**	◆
2.1.1	Expenditure on education, % GDP	5.0	48	
2.1.2	Government funding/pupil, secondary, % GDP/cap	25.7	23	
2.1.3	School life expectancy, years ⊙	15.0	52	◆
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	7.2	3	● ◆
2.2	**Tertiary education**	**40.6**	**37**	◆
2.2.1	Tertiary enrolment, % gross ⊙	83.4	14	● ◆
2.2.2	Graduates in science & engineering, %	24.2	33	
2.2.3	Tertiary inbound mobility, %	3.2	62	
2.3	**Research & development (R&D)**	**11.2**	**54**	
2.3.1	Researchers, FTE/mn pop	1,119.5	50	◆
2.3.2	Gross expenditure on R&D, % GDP	0.4	67	
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*	22.0	46	◆
	INFRASTRUCTURE	**36.0**	**97**	
3.1	**Information & communication technologies(ICTs)**	**58.0**	**81**	
3.1.1	ICT access*	66.5	65	◆
3.1.2	ICT use*	39.9	90	
3.1.3	Government's online service*	56.9	92	
3.1.4	E-participation*	68.5	73	
3.2	**General infrastructure**	**26.2**	**95**	
3.2.1	Electricity output, kWh/mn pop	3,620.1	55	◆
3.2.2	Logistics performance*	35.9	65	
3.2.3	Gross capital formation, % GDP	18.8	99	
3.3	**Ecological sustainability**	**23.9**	**120**	○ ◇
3.3.1	GDP/unit of energy use	3.4	115	○ ◇
3.3.2	Environmental performance*	52.9	89	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.6	80	
	MARKET SOPHISTICATION	**43.3**	**90**	
4.1	**Credit**	**30.5**	**91**	
4.1.1	Ease of getting credit*	75.0	29	
4.1.2	Domestic credit to private sector, % GDP	38.4	86	
4.1.3	Microfinance gross loans, % GDP ⊙	0.0	79	○
4.2	**Investment**	**31.6**	**115**	○
4.2.1	Ease of protecting minority investors*	58.3	68	
4.2.2	Market capitalization, % GDP ⊙	22.2	58	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	62	○
4.3	**Trade, competition, & market scale**	**67.8**	**42**	
4.3.1	Applied tariff rate, weighted avg., %	1.9	51	◆
4.3.2	Intensity of local competition†	64.4	83	
4.3.3	Domestic market scale, bn PPP$	391.5	47	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**34.8**	**47**	◆
5.1	**Knowledge workers**	**45.4**	**45**	◆
5.1.1	Knowledge-intensive employment, %	36.9	33	◆
5.1.2	Firms offering formal training, % firms	22.6	69	
5.1.3	GERD performed by business, % GDP	0.3	50	◆
5.1.4	GERD financed by business, %	30.1	59	
5.1.5	Females employed w/advanced degrees, %	29.9	2	● ◆
5.2	**Innovation linkages**	**27.4**	**55**	
5.2.1	University/industry research collaboration†	41.3	64	
5.2.2	State of cluster development†	37.3	98	
5.2.3	GERD financed by abroad, %	24.4	15	● ◆
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	88	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.2	41	◆
5.3	**Knowledge absorption**	**31.7**	**73**	
5.3.1	Intellectual property payments, % total trade	0.7	52	
5.3.2	High-tech imports, % total trade	8.8	46	
5.3.3	ICT services imports, % total trade	0.9	79	
5.3.4	FDI net inflows, % GDP	3.2	52	
5.3.5	Research talent, % in business enterprise	25.1	49	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**34.6**	**28**	◆
6.1	**Knowledge creation**	**42.5**	**17**	● ◆
6.1.1	Patents by origin/bn PPP$ GDP	6.2	17	● ◆
6.1.2	PCT patents by origin/bn PPP$ GDP	0.4	38	◆
6.1.3	Utility models by origin/bn PPP$ GDP	24.3	1	● ◆
6.1.4	Scientific & technical articles/bn PPP$ GDP	9.2	54	
6.1.5	Citable documents H-index	15.0	49	
6.2	**Knowledge impact**	**40.1**	**47**	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.2	22	
6.2.2	New businesses/th pop. 15-64	1.5	60	
6.2.3	Computer software spending, % GDP	0.5	19	● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.5	70	
6.2.5	High- & medium-high-tech manufactures, %	0.2	56	
6.3	**Knowledge diffusion**	**21.3**	**47**	
6.3.1	Intellectual property receipts, % total trade	0.2	43	
6.3.2	High-tech net exports, % total trade	2.0	53	
6.3.3	ICT services exports, % total trade	4.8	11	● ◆
6.3.4	FDI net outflows, % GDP	0.1	96	
	CREATIVE OUTPUTS	**33.5**	**42**	◆
7.1	**Intangible assets**	**55.8**	**17**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP	128.6	6	● ◆
7.1.2	Industrial designs by origin/bn PPP$ GDP	13.4	8	● ◆
7.1.3	ICTs & business model creation†	49.1	109	○
7.1.4	ICTs & organizational model creation†	55.6	58	
7.2	**Creative goods & services**	**8.8**	**91**	
7.2.1	Cultural & creative services exports, % total trade	0.4	58	
7.2.2	National feature films/mn pop. 15-69	0.6	94	○
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing	1.0	62	
7.2.5	Creative goods exports, % total trade	0.2	82	
7.3	**Online creativity**	**13.6**	**43**	◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	4.5	57	◆
7.3.2	Country-code TLDs/th pop. 15-69	4.7	51	◆
7.3.3	Wikipedia edits/mn pop. 15-69	31.1	38	◆
7.3.4	Mobile app creation/bn PPP$ GDP	24.3	19	◆

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.

UNITED ARAB EMIRATES (THE)

GII 2019 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
58	**24**	**High**	**NAWA**	**9.5**	**732.9**	**69,381.7**	**38**

		Score/Value	Rank	
	INSTITUTIONS	**78.8**	**28**	
1.1	**Political environment**	**80.5**	**20**	
1.1.1	Political and operational stability*	80.7	35	
1.1.2	Government effectiveness*	80.4	19	
1.2	**Regulatory environment**	**84.2**	**24**	
1.2.1	Regulatory quality*	69.1	32	
1.2.2	Rule of law*	67.5	34	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	● ◆
1.3	**Business environment**	**71.9**	**58**	
1.3.1	Ease of starting a business*	94.1	22	
1.3.2	Ease of resolving insolvency*	49.7	67	
	HUMAN CAPITAL & RESEARCH	**52.4**	**18**	
2.1	**Education**	**61.9**	**[17]**	
2.1.1	Expenditure on education, % GDP	n/a	n/a	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	13.6	72	○ ◇
2.1.4	PISA scales in reading, maths, & science	474.3	37	
2.1.5	Pupil-teacher ratio, secondary ⊙	9.5	23	
2.2	**Tertiary education**	**57.5**	**6**	● ◆
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	22.0	50	
2.2.3	Tertiary inbound mobility, %	48.6	1	● ◆
2.3	**Research & development (R&D)**	**37.7**	**28**	
2.3.1	Researchers, FTE/mn pop. ⊙	2,406.6	35	
2.3.2	Gross expenditure on R&D, % GDP ⊙	1.0	36	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	69.7	18	
2.3.4	QS university ranking, average score top 3*	31.2	37	
	INFRASTRUCTURE	**59.4**	**21**	
3.1	**Information & communication technologies(ICTs)**	**88.7**	**14**	●
3.1.1	ICT access*	84.8	15	
3.1.2	ICT use*	81.3	13	●
3.1.3	Government's online service*	94.4	14	●
3.1.4	E-participation*	94.4	17	
3.2	**General infrastructure**	**52.7**	**12**	●
3.2.1	Electricity output, kWh/mn pop.	13,980.2	8	●
3.2.2	Logistics performance*	88.5	11	● ◆
3.2.3	Gross capital formation, % GDP	22.5	69	
3.3	**Ecological sustainability**	**36.8**	**71**	◇
3.3.1	GDP/unit of energy use	8.2	72	○
3.3.2	Environmental performance*	58.9	67	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.5	40	
	MARKET SOPHISTICATION	**56.1**	**34**	
4.1	**Credit**	**53.5**	**27**	
4.1.1	Ease of getting credit*	70.0	40	
4.1.2	Domestic credit to private sector, % GDP	78.8	38	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**46.2**	**53**	
4.2.1	Ease of protecting minority investors*	75.0	14	◆
4.2.2	Market capitalization, % GDP	60.4	29	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	32	
4.3	**Trade, competition, & market scale**	**68.6**	**39**	
4.3.1	Applied tariff rate, weighted avg., %	4.8	81	○ ◇
4.3.2	Intensity of local competition†	71.0	49	
4.3.3	Domestic market scale, bn PPP$	732.9	32	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**41.5**	**30**	
5.1	**Knowledge workers**	**40.7**	**55**	
5.1.1	Knowledge-intensive employment, %	18.4	79	○ ◇
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP ⊙	0.7	26	
5.1.4	GERD financed by business, % ⊙	74.3	5	● ◆
5.1.5	Females employed w/advanced degrees, %	8.8	73	○ ◇
5.2	**Innovation linkages**	**41.9**	**24**	
5.2.1	University/industry research collaboration†	55.7	28	
5.2.2	State of cluster development†	69.1	10	● ◆
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	16	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	67	
5.3	**Knowledge absorption**	**42.0**	**34**	
5.3.1	Intellectual property payments, % total trade	0.7	54	
5.3.2	High-tech imports, % total trade ⊙	9.4	38	
5.3.3	ICT services imports, % total trade	0.9	74	
5.3.4	FDI net inflows, % GDP	2.6	67	
5.3.5	Research talent, % in business enterprise ⊙	62.2	8	●
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**22.2**	**63**	
6.1	**Knowledge creation**	**6.4**	**88**	○ ◇
6.1.1	Patents by origin/bn PPP$ GDP	0.1	106	○
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	60	
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	101	○ ◇
6.1.5	Citable documents H-index	10.5	62	
6.2	**Knowledge impact**	**34.9**	**73**	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.6	48	
6.2.2	New businesses/th pop. 15–64	2.6	42	
6.2.3	Computer software spending, % GDP	0.3	50	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.0	52	
6.2.5	High- & medium-high-tech manufactures, %	0.2	57	
6.3	**Knowledge diffusion**	**25.2**	**37**	
6.3.1	Intellectual property receipts, % total trade	1.0	19	
6.3.2	High-tech net exports, % total trade ⊙	0.1	107	○ ◇
6.3.3	ICT services exports, % total trade	1.8	59	
6.3.4	FDI net outflows, % GDP	4.0	13	●
	CREATIVE OUTPUTS	**31.2**	**50**	
7.1	**Intangible assets**	**40.5**	**66**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	8.7	107	○ ◇
7.1.2	Industrial designs by origin/bn PPP$ GDP ⊙	0.1	108	○
7.1.3	ICTs & business model creation†	71.7	29	
7.1.4	ICTs & organizational model creation†	67.3	24	
7.2	**Creative goods & services**	**35.9**	**13**	●
7.2.1	Cultural & creative services exports, % total trade	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	10.6	16	
7.2.3	Entertainment & Media market/th pop. 15–69	19.5	28	
7.2.4	Printing & other media, % manufacturing	1.5	32	
7.2.5	Creative goods exports, % total trade ⊙	4.2	13	● ◆
7.3	**Online creativity**	**7.9**	**57**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	10.8	38	
7.3.2	Country-code TLDs/th pop. 15–69	7.3	43	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	9.9	63	◇
7.3.4	Mobile app creation/bn PPP$ GDP	6.7	47	

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.

UNITED KINGDOM (THE)

GII 2019 rank

5

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
4	**6**	**High**	**EUR**	**66.6**	**3,033.7**	**45,704.6**	**4**

		Score/Value	Rank	
	INSTITUTIONS	**87.1**	**14**	
1.1	**Political environment**	**80.2**	**23**	
1.1.1	Political and operational stability*	78.9	42	○ ◇
1.1.2	Government effectiveness*	80.8	18	
1.2	**Regulatory environment**	**93.7**	**11**	
1.2.1	Regulatory quality*	88.0	12	
1.2.2	Rule of law*	90.8	14	
1.2.3	Cost of redundancy dismissal, salary weeks	9.3	25	
1.3	**Business environment**	**87.4**	**13**	
1.3.1	Ease of starting a business*	94.6	17	
1.3.2	Ease of resolving insolvency*	80.3	13	
	HUMAN CAPITAL & RESEARCH	**59.3**	**9**	
2.1	**Education**	**57.7**	**34**	
2.1.1	Expenditure on education, % GDP	5.5	26	
2.1.2	Government funding/pupil, secondary, % GDP/cap	19.0	55	○
2.1.3	School life expectancy, years	19.0	6	●
2.1.4	PISA scales in reading, maths, & science	499.9	21	
2.1.5	Pupil-teacher ratio, secondary ⏲	19.4	87	○ ◇
2.2	**Tertiary education**	**52.4**	**11**	
2.2.1	Tertiary enrolment, % gross ⏲	59.4	47	○
2.2.2	Graduates in science & engineering, %	26.3	25	
2.2.3	Tertiary inbound mobility, %	18.1	6	◆
2.3	**Research & development (R&D)**	**67.8**	**9**	
2.3.1	Researchers, FTE/mn pop	4,377.0	19	
2.3.2	Gross expenditure on R&D, % GDP	1.7	22	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	86.8	8	
2.3.4	QS university ranking, average score top 3*	95.2	2	● ◆
	INFRASTRUCTURE	**64.4**	**8**	
3.1	**Information & communication technologies(ICTs)**	**93.0**	**3**	● ◆
3.1.1	ICT access*	92.9	3	● ◆
3.1.2	ICT use*	82.7	9	
3.1.3	Government's online service*	97.9	4	●
3.1.4	E-participation*	98.3	5	
3.2	**General infrastructure**	**39.3**	**44**	○ ◇
3.2.1	Electricity output, kWh/mn pop	5,041.5	44	○
3.2.2	Logistics performance*	90.0	9	
3.2.3	Gross capital formation, % GDP	17.2	109	○ ◇
3.3	**Ecological sustainability**	**61.0**	**5**	● ◆
3.3.1	GDP/unit of energy use	14.7	14	
3.3.2	Environmental performance*	79.9	6	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.0	19	
	MARKET SOPHISTICATION	**76.0**	**4**	● ◆
4.1	**Credit**	**70.4**	**10**	
4.1.1	Ease of getting credit*	75.0	29	
4.1.2	Domestic credit to private sector, % GDP	136.2	14	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**75.4**	**6**	● ◆
4.2.1	Ease of protecting minority investors*	75.0	14	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital deals/bn PPP$ GDP	0.3	4	● ◆
4.3	**Trade, competition, & market scale**	**82.0**	**5**	●
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	○
4.3.2	Intensity of local competition†	79.9	9	
4.3.3	Domestic market scale, bn PPP$	3,033.7	9	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**54.3**	**16**	
5.1	**Knowledge workers**	**67.5**	**12**	
5.1.1	Knowledge-intensive employment, %	48.6	7	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	1.1	18	
5.1.4	GERD financed by business, %	51.8	25	
5.1.5	Females employed w/advanced degrees, %	22.8	16	
5.2	**Innovation linkages**	**50.1**	**13**	
5.2.1	University/industry research collaboration†	72.7	7	
5.2.2	State of cluster development†	69.8	9	
5.2.3	GERD financed by abroad, %	15.6	26	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.1	12	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	2.3	17	
5.3	**Knowledge absorption**	**45.4**	**27**	
5.3.1	Intellectual property payments, % total trade	1.5	23	
5.3.2	High-tech imports, % total trade	11.9	20	
5.3.3	ICT services imports, % total trade	1.8	30	
5.3.4	FDI net inflows, % GDP	4.7	34	
5.3.5	Research talent, % in business enterprise	37.9	33	○ ◇
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**56.6**	**8**	
6.1	**Knowledge creation**	**66.9**	**5**	●
6.1.1	Patents by origin/bn PPP$ GDP	6.4	16	
6.1.2	PCT patents by origin/bn PPP$ GDP	1.9	19	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	23.8	16	
6.1.5	Citable documents H-index	100.0	1	● ◆
6.2	**Knowledge impact**	**55.2**	**7**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.5	75	○
6.2.2	New businesses/th pop. 15-64	15.7	6	◆
6.2.3	Computer software spending, % GDP	0.7	4	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	12.8	26	
6.2.5	High- & medium-high-tech manufactures, %	0.4	21	
6.3	**Knowledge diffusion**	**47.7**	**12**	
6.3.1	Intellectual property receipts, % total trade	2.6	8	
6.3.2	High-tech net exports, % total trade	9.0	18	
6.3.3	ICT services exports, % total trade	3.2	28	
6.3.4	FDI net outflows, % GDP	1.8	31	
	CREATIVE OUTPUTS	**52.2**	**6**	●
7.1	**Intangible assets**	**58.3**	**12**	
7.1.1	Trademarks by origin/bn PPP$ GDP	56.2	40	○
7.1.2	Industrial designs by origin/bn PPP$ GDP	7.9	16	
7.1.3	ICTs & business model creation†	80.4	8	
7.1.4	ICTs & organizational model creation†	79.1	6	●
7.2	**Creative goods & services**	**40.4**	**8**	
7.2.1	Cultural & creative services exports, % total trade	2.0	6	● ◆
7.2.2	National feature films/mn pop. 15-69	6.3	35	
7.2.3	Entertainment & Media market/th pop. 15-69	62.0	9	
7.2.4	Printing & other media, % manufacturing	2.0	19	
7.2.5	Creative goods exports, % total trade	2.9	20	
7.3	**Online creativity**	**51.6**	**11**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	60.7	12	
7.3.2	Country-code TLDs/th pop. 15-69	73.1	7	
7.3.3	Wikipedia edits/mn pop. 15-69	69.3	13	
7.3.4	Mobile app creation/bn PPP$ GDP	25.9	18	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

UNITED REPUBLIC OF TANZANIA (THE)

GII 2019 rank

97

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
73	115	Low	SSF	59.1	175.9	3,443.7	92

		Score/Value	Rank	
	INSTITUTIONS	**53.4**	**98**	
1.1	**Political environment**	**40.2**	**104**	
1.1.1	Political and operational stability*	57.9	101	
1.1.2	Government effectiveness*	31.3	106	
1.2	**Regulatory environment**	**64.2**	**70**	
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	● ◆
1.3	**Business environment**	**55.8**	**115**	
1.3.1	Ease of starting a business*	72.7	117	◇
1.3.2	Ease of resolving insolvency*	39.0	103	

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**10.0**	**125**	◇
2.1	**Education**	**24.5**	**117**	
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	
2.2	**Tertiary education**	**2.5**	**[124]**	
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	
2.3	**Research & development (R&D)**	**2.8**	**88**	◆
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	○ ◇

		Score/Value	Rank	
	INFRASTRUCTURE	**33.2**	**108**	
3.1	**Information & communication technologies(ICTs)**	**38.3**	**110**	
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	
3.2	**General infrastructure**	**35.9**	**61**	●
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	●
3.3	**Ecological sustainability**	**25.5**	**114**	
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	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**35.7**	**117**	
4.1	**Credit**	**23.6**	**110**	
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	
4.2	**Investment**	**30.4**	**121**	◇
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	◇
4.3	**Trade, competition, & market scale**	**53.1**	**96**	◆
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	◆

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**25.1**	**99**	
5.1	**Knowledge workers**	**13.5**	**119**	
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	
5.2	**Innovation linkages**	**38.0**	**32**	●
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	○ ◇
5.3	**Knowledge absorption**	**23.8**	**108**	
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	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**14.9**	**102**	
6.1	**Knowledge creation**	**5.1**	**98**	
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	◆
6.2	**Knowledge impact**	**33.5**	**78**	
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	
6.3	**Knowledge diffusion**	**6.2**	**127**	○
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	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**28.7**	**[59]**	
7.1	**Intangible assets**	**50.3**	**[34]**	
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	
7.2	**Creative goods & services**	**13.9**	**[72]**	
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	
7.3	**Online creativity**	**0.1**	**122**	
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.

UNITED STATES OF AMERICA (THE)

GII 2019 rank

3

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
6	3	High	NAC	326.8	20,513.0	62,605.6	6

		Score/Value	Rank	
1	**INSTITUTIONS**	**89.7**	**11**	
1.1	**Political environment**	**84.2**	**16**	
1.1.1	Political and operational stability*	84.2	25	
1.1.2	Government effectiveness*	84.2	14	
1.2	**Regulatory environment**	**93.9**	**9**	
1.2.1	Regulatory quality*	85.6	15	
1.2.2	Rule of law*	89.9	15	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	**Business environment**	**91.1**	**2**	● ◆
1.3.1	Ease of starting a business*	91.2	47	
1.3.2	Ease of resolving insolvency*	90.9	3	● ◆
2	**HUMAN CAPITAL & RESEARCH**	**55.7**	**12**	
2.1	**Education**	**54.5**	**45**	
2.1.1	Expenditure on education, % GDP ⊙	5.0	50	
2.1.2	Government funding/pupil, secondary, % GDP/cap ⊙	22.5	39	
2.1.3	School life expectancy, years	16.3	29	
2.1.4	PISA scales in reading, maths, & science	487.6	29	◇
2.1.5	Pupil-teacher ratio, secondary ⊙	14.7	67	○ ◇
2.2	**Tertiary education**	**34.6**	**53**	
2.2.1	Tertiary enrolment, % gross ⊙	88.8	8	
2.2.2	Graduates in science & engineering, %	17.9	73	○
2.2.3	Tertiary inbound mobility, %	5.0	40	
2.3	**Research & development (R&D)**	**77.9**	**3**	● ◆
2.3.1	Researchers, FTE/mn pop. ⊙	4,256.3	23	
2.3.2	Gross expenditure on R&D, % GDP	2.8	9	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	100.0	1	● ◆
2.3.4	QS university ranking, average score top 3*	99.0	1	● ◆
3	**INFRASTRUCTURE**	**59.2**	**23**	
3.1	**Information & communication technologies(ICTs)**	**89.7**	**8**	
3.1.1	ICT access*	84.8	14	
3.1.2	ICT use*	77.2	21	
3.1.3	Government's online service*	98.6	2	●
3.1.4	E-participation*	98.3	5	
3.2	**General infrastructure**	**49.4**	**19**	
3.2.1	Electricity output, kWh/mn pop.	13,000.9	9	
3.2.2	Logistics performance*	85.2	14	
3.2.3	Gross capital formation, % GDP	21.1	87	○
3.3	**Ecological sustainability**	**38.4**	**64**	◇
3.3.1	GDP/unit of energy use	8.1	74	○
3.3.2	Environmental performance*	71.2	26	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	106	○ ◇
4	**MARKET SOPHISTICATION**	**87.0**	**1**	● ◆
4.1	**Credit**	**94.6**	**1**	● ◆
4.1.1	Ease of getting credit*	95.0	3	● ◆
4.1.2	Domestic credit to private sector, % GDP ⊙	192.2	3	● ◆
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**73.7**	**7**	◆
4.2.1	Ease of protecting minority investors*	64.7	47	
4.2.2	Market capitalization, % GDP	150.3	5	
4.2.3	Venture capital deals/bn PPP$ GDP	0.4	1	● ◆
4.3	**Trade, competition, & market scale**	**92.7**	**1**	● ◆
4.3.1	Applied tariff rate, weighted avg., %	1.7	18	
4.3.2	Intensity of local competition†	84.3	3	● ◆
4.3.3	Domestic market scale, bn PPP$	20,513.0	2	● ◆

		Score/Value	Rank	
5	**BUSINESS SOPHISTICATION**	**62.7**	**7**	
5.1	**Knowledge workers**	**76.4**	**4**	◆
5.1.1	Knowledge-intensive employment, %	47.3	11	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	2.0	8	
5.1.4	GERD financed by business, %	63.6	9	
5.1.5	Females employed w/advanced degrees, %	26.3	6	◆
5.2	**Innovation linkages**	**54.3**	**9**	● ◆
5.2.1	University/industry research collaboration†	80.9	1	● ◆
5.2.2	State of cluster development†	79.5	1	● ◆
5.2.3	GERD financed by abroad, %	6.2	58	○
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.1	9	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	3.3	15	
5.3	**Knowledge absorption**	**57.3**	**7**	
5.3.1	Intellectual property payments, % total trade	1.8	15	
5.3.2	High-tech imports, % total trade	17.2	9	◆
5.3.3	ICT services imports, % total trade	1.5	40	
5.3.4	FDI net inflows, % GDP	2.4	72	○
5.3.5	Research talent, % in business enterprise ⊙	71.0	5	◆
6	**KNOWLEDGE & TECHNOLOGY OUTPUTS**	**59.7**	**4**	◆
6.1	**Knowledge creation**	**72.3**	**3**	● ◆
6.1.1	Patents by origin/bn PPP$ GDP	15.1	6	◆
6.1.2	PCT patents by origin/bn PPP$ GDP	2.7	12	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	10.5	44	◇
6.1.5	Citable documents H-index	100.0	1	● ◆
6.2	**Knowledge impact**	**60.4**	**2**	● ◆
6.2.1	Growth rate of PPP$ GDP/worker, %	0.9	64	○
6.2.2	New businesses/th pop. 15-64	n/a	n/a	
6.2.3	Computer software spending, % GDP	1.1	1	● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.5	99	○ ◇
6.2.5	High- & medium-high-tech manufactures, %	0.5	10	
6.3	**Knowledge diffusion**	**46.5**	**15**	
6.3.1	Intellectual property receipts, % total trade	5.0	1	● ◆
6.3.2	High-tech net exports, % total trade	5.8	27	
6.3.3	ICT services exports, % total trade	1.6	65	
6.3.4	FDI net outflows, % GDP	1.8	33	
7	**CREATIVE OUTPUTS**	**45.5**	**15**	
7.1	**Intangible assets**	**50.3**	**32**	
7.1.1	Trademarks by origin/bn PPP$ GDP	22.0	85	○ ◇
7.1.2	Industrial designs by origin/bn PPP$ GDP	1.2	61	
7.1.3	ICTs & business model creation†	81.0	6	
7.1.4	ICTs & organizational model creation†	83.7	1	● ◆
7.2	**Creative goods & services**	**43.8**	**5**	◆
7.2.1	Cultural & creative services exports, % total trade	2.5	5	◆
7.2.2	National feature films/mn pop. 15-69	2.9	58	◇
7.2.3	Entertainment & Media market/th pop. 15-69	100.0	1	● ◆
7.2.4	Printing & other media, % manufacturing	1.5	31	
7.2.5	Creative goods exports, % total trade	3.3	17	
7.3	**Online creativity**	**37.5**	**19**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	100.0	1	● ◆
7.3.2	Country-code TLDs/th pop. 15-69	2.4	62	◇
7.3.3	Wikipedia edits/mn pop. 15-69	26.1	42	◇
7.3.4	Mobile app creation/bn PPP$ GDP	30.1	17	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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.

URUGUAY

GII 2019 rank

62

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
61	66	High	LCN	3.5	81.6	23,274.1	62

		Score/Value	Rank	
	INSTITUTIONS	**69.3**	**44**	
1.1	**Political environment**	**65.8**	**44**	
1.1.1	Political and operational stability*	84.2	25	●
1.1.2	Government effectiveness*	56.6	48	◇
1.2	**Regulatory environment**	**70.6**	**50**	
1.2.1	Regulatory quality*	59.6	41	
1.2.2	Rule of law*	61.9	38	
1.2.3	Cost of redundancy dismissal, salary weeks	20.8	87	
1.3	**Business environment**	**71.4**	**61**	
1.3.1	Ease of starting a business*	89.8	55	
1.3.2	Ease of resolving insolvency*	53.0	64	

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**28.7**	**71**	◇
2.1	**Education**	**54.8**	**44**	
2.1.1	Expenditure on education, % GDP ⊙	4.4	66	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	16.3	25	●
2.1.4	PISA scales in reading, maths, & science	430.0	48	
2.1.5	Pupil-teacher ratio, secondary ⊙	12.7	54	
2.2	**Tertiary education**	**24.1**	**83**	◇
2.2.1	Tertiary enrolment, % gross ⊙	62.4	43	
2.2.2	Graduates in science & engineering, %	13.2	95	○ ◇
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**7.1**	**69**	◇
2.3.1	Researchers, FTE/mn pop.	667.7	62	◇
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.4	69	◇
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*	12.0	61	

		Score/Value	Rank	
	INFRASTRUCTURE	**51.0**	**49**	◇
3.1	**Information & communication technologies(ICTs)**	**81.7**	**27**	●
3.1.1	ICT access*	75.1	42	
3.1.2	ICT use*	71.4	31	
3.1.3	Government's online service*	88.9	27	●
3.1.4	E-participation*	91.6	26	●
3.2	**General infrastructure**	**23.6**	**107**	○ ◇
3.2.1	Electricity output, kWh/mn pop.	3,848.3	53	
3.2.2	Logistics performance*	29.1	83	◇
3.2.3	Gross capital formation, % GDP	17.8	104	○ ◇
3.3	**Ecological sustainability**	**47.7**	**40**	
3.3.1	GDP/unit of energy use	13.0	24	●
3.3.2	Environmental performance*	64.7	43	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.0	32	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**39.9**	**101**	◇
4.1	**Credit**	**23.5**	**111**	○ ◇
4.1.1	Ease of getting credit*	60.0	66	
4.1.2	Domestic credit to private sector, % GDP	26.3	105	○ ◇
4.1.3	Microfinance gross loans, % GDP ⊙	0.0	67	○
4.2	**Investment**	**43.3**	**[61]**	
4.2.1	Ease of protecting minority investors*	43.3	105	○ ◇
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**	**52.8**	**97**	◇
4.3.1	Applied tariff rate, weighted avg., %	6.3	97	◇
4.3.2	Intensity of local competition†	61.5	101	◇
4.3.3	Domestic market scale, bn PPP$	81.6	86	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**27.7**	**81**	◇
5.1	**Knowledge workers**	**33.3**	**78**	◇
5.1.1	Knowledge-intensive employment, %	22.2	67	◇
5.1.2	Firms offering formal training, % firms ⊙	48.6	23	
5.1.3	GERD performed by business, % GDP ⊙	0.0	80	○ ◇
5.1.4	GERD financed by business, %	4.6	81	○ ◇
5.1.5	Females employed w/advanced degrees, %	10.1	65	◇
5.2	**Innovation linkages**	**18.3**	**101**	◇
5.2.1	University/industry research collaboration†	34.9	93	◇
5.2.2	State of cluster development†	37.0	101	◇
5.2.3	GERD financed by abroad, %	7.4	52	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	79	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.2	49	
5.3	**Knowledge absorption**	**31.4**	**77**	
5.3.1	Intellectual property payments, % total trade	0.8	48	
5.3.2	High-tech imports, % total trade	7.1	71	
5.3.3	ICT services imports, % total trade	2.5	15	●
5.3.4	FDI net inflows, % GDP	0.8	112	○
5.3.5	Research talent, % in business enterprise	0.7	80	○ ◇

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**21.5**	**67**	
6.1	**Knowledge creation**	**9.4**	**72**	◇
6.1.1	Patents by origin/bn PPP$ GDP	0.3	87	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP	0.3	38	
6.1.4	Scientific & technical articles/bn PPP$ GDP	9.2	52	
6.1.5	Citable documents H-index	9.9	68	
6.2	**Knowledge impact**	**36.3**	**66**	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.0	44	
6.2.2	New businesses/th pop. 15–64	2.1	50	
6.2.3	Computer software spending, % GDP	0.2	68	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	14.6	23	●
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.1	72	◇
6.3	**Knowledge diffusion**	**18.7**	**54**	
6.3.1	Intellectual property receipts, % total trade	0.2	32	
6.3.2	High-tech net exports, % total trade	0.9	70	
6.3.3	ICT services exports, % total trade	3.0	30	●
6.3.4	FDI net outflows, % GDP	1.4	43	

		Score/Value	Rank	
	CREATIVE OUTPUTS	**29.2**	**57**	
7.1	**Intangible assets**	**41.7**	**60**	
7.1.1	Trademarks by origin/bn PPP$ GDP	47.4	51	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.7	81	
7.1.3	ICTs & business model creation†	66.8	43	
7.1.4	ICTs & organizational model creation†	58.4	50	
7.2	**Creative goods & services**	**16.6**	**64**	
7.2.1	Cultural & creative services exports, % total trade	1.6	12	●
7.2.2	National feature films/mn pop. 15–69 ⊙	4.7	45	
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing & other media, % manufacturing ⊙	1.1	56	
7.2.5	Creative goods exports, % total trade	0.1	106	○
7.3	**Online creativity**	**16.7**	**39**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	6.4	50	
7.3.2	Country-code TLDs/th pop. 15–69	9.8	39	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	68.1	14	●
7.3.4	Mobile app creation/bn PPP$ GDP	4.6	50	

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.

VIET NAM

GII 2019 rank

42

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
37	63	Lower middle	SEAO	96.5	707.6	7,510.5	45

		Score/Value	Rank	
	INSTITUTIONS	**58.6**	**81**	
1.1	**Political environment**	**58.6**	**57**	◆
1.1.1	Political and operational stability*	82.5	32	◆
1.1.2	Government effectiveness*	46.6	71	◆
1.2	**Regulatory environment**	**57.3**	**90**	
1.2.1	Regulatory quality*	31.3	97	
1.2.2	Rule of law*	48.2	59	◆
1.2.3	Cost of redundancy dismissal, salary weeks	24.6	101	○
1.3	**Business environment**	**59.9**	**106**	○
1.3.1	Ease of starting a business*	84.8	80	
1.3.2	Ease of resolving insolvency*	34.9	110	○
	HUMAN CAPITAL & RESEARCH	**31.1**	**61**	
2.1	**Education**	**61.2**	**[18]**	
2.1.1	Expenditure on education, % GDP ⊙	5.7	24	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	502.0	20	◆
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**24.7**	**81**	
2.2.1	Tertiary enrolment, % gross ⊙	28.3	85	
2.2.2	Graduates in science & engineering, %	22.7	46	
2.2.3	Tertiary inbound mobility, %	0.2	104	○
2.3	**Research & development (R&D)**	**7.4**	**67**	
2.3.1	Researchers, FTE/mn pop.	700.8	58	
2.3.2	Gross expenditure on R&D, % GDP	0.5	61	
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*	9.9	64	
	INFRASTRUCTURE	**42.0**	**82**	
3.1	**Information & communication technologies(ICTs)**	**57.5**	**82**	
3.1.1	ICT access*	48.8	90	
3.1.2	ICT use*	38.7	92	
3.1.3	Government's online service*	73.6	57	
3.1.4	E-participation*	69.1	70	
3.2	**General infrastructure**	**39.3**	**45**	
3.2.1	Electricity output, kWh/mn pop.	1,778.1	81	
3.2.2	Logistics performance*	56.6	38	◆
3.2.3	Gross capital formation, % GDP	27.5	32	
3.3	**Ecological sustainability**	**29.2**	**100**	
3.3.1	GDP/unit of energy use	6.7	92	
3.3.2	Environmental performance*	47.0	104	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.2	45	◆
	MARKET SOPHISTICATION	**57.0**	**29**	◆
4.1	**Credit**	**68.6**	**11**	● ◆
4.1.1	Ease of getting credit*	75.0	29	
4.1.2	Domestic credit to private sector, % GDP	130.7	16	● ◆
4.1.3	Microfinance gross loans, % GDP	3.9	8	● ◆
4.2	**Investment**	**33.1**	**108**	○
4.2.1	Ease of protecting minority investors*	55.0	84	
4.2.2	Market capitalization, % GDP	36.9	41	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	37	
4.3	**Trade, competition, & market scale**	**69.3**	**35**	◆
4.3.1	Applied tariff rate, weighted avg., %	2.7	61	
4.3.2	Intensity of local competition†	63.2	90	
4.3.3	Domestic market scale, bn PPP$	707.6	33	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**30.0**	**69**	
5.1	**Knowledge workers**	**22.8**	**102**	○
5.1.1	Knowledge-intensive employment, %	1.1	117	○ ◇
5.1.2	Firms offering formal training, % firms	22.2	70	○
5.1.3	GERD performed by business, % GDP	0.4	42	◆
5.1.4	GERD financed by business, %	64.1	8	● ◆
5.1.5	Females employed w/advanced degrees, %	6.1	83	
5.2	**Innovation linkages**	**20.0**	**86**	
5.2.1	University/industry research collaboration†	38.6	75	
5.2.2	State of cluster development†	45.2	74	
5.2.3	GERD financed by abroad, %	4.5	64	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	49	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	84	
5.3	**Knowledge absorption**	**47.1**	**23**	● ◆
5.3.1	Intellectual property payments, % total trade	n/a	n/a	
5.3.2	High-tech imports, % total trade	26.5	1	● ◆
5.3.3	ICT services imports, % total trade	0.0	126	○ ◇
5.3.4	FDI net inflows, % GDP	6.2	23	●
5.3.5	Research talent, % in business enterprise	24.1	51	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**35.6**	**27**	◆
6.1	**Knowledge creation**	**8.1**	**80**	
6.1.1	Patents by origin/bn PPP$ GDP	0.9	65	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	82	
6.1.3	Utility models by origin/bn PPP$ GDP	0.4	35	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.6	74	
6.1.5	Citable documents H-index	11.7	57	
6.2	**Knowledge impact**	**56.5**	**5**	● ◆
6.2.1	Growth rate of PPP$ GDP/worker, %	6.0	3	● ◆
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.3	38	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	8.3	37	◆
6.2.5	High- & medium-high-tech manufactures, %	0.4	27	◆
6.3	**Knowledge diffusion**	**42.1**	**18**	● ◆
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	32.9	1	● ◆
6.3.3	ICT services exports, % total trade	0.1	125	○ ◇
6.3.4	FDI net outflows, % GDP	0.4	71	
	CREATIVE OUTPUTS	**32.3**	**47**	◆
7.1	**Intangible assets**	**43.7**	**53**	
7.1.1	Trademarks by origin/bn PPP$ GDP	85.3	24	●
7.1.2	Industrial designs by origin/bn PPP$ GDP	2.7	43	
7.1.3	ICTs & business model creation†	56.1	83	
7.1.4	ICTs & organizational model creation†	54.4	63	
7.2	**Creative goods & services**	**28.8**	**32**	◆
7.2.1	Cultural & creative services exports, % total trade	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69 ⊙	1.2	78	
7.2.3	Entertainment & Media market/th pop. 15–69	1.3	56	○
7.2.4	Printing & other media, % manufacturing	0.9	70	
7.2.5	Creative goods exports, % total trade	5.9	10	● ◆
7.3	**Online creativity**	**13.0**	**44**	◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.4	74	◆
7.3.2	Country-code TLDs/th pop. 15–69	1.8	69	
7.3.3	Wikipedia edits/mn pop. 15–69	7.1	70	
7.3.4	Mobile app creation/bn PPP$ GDP	42.9	13	● ◆

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.

YEMEN

GII 2019 rank

129

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
129	129	Low	NAWA	28.9	73.3	2,377.2	n/a

		Score/Value	Rank	
	INSTITUTIONS	**27.5**	**129**	○ ◇
1.1	**Political environment**	**0.0**	**129**	○ ◇
1.1.1	Political and operational stability*	0.0	129	○ ◇
1.1.2	Government effectiveness*	0.0	129	○ ◇
1.2	**Regulatory environment**	**36.0**	**124**	◇
1.2.1	Regulatory quality*	3.0	128	◇
1.2.2	Rule of law*	0.0	129	○ ◇
1.2.3	Cost of redundancy dismissal, salary weeks	27.4	107	◇
1.3	**Business environment**	**46.5**	**127**	◇
1.3.1	Ease of starting a business*	67.0	125	◇
1.3.2	Ease of resolving insolvency*	25.9	125	◇
	HUMAN CAPITAL & RESEARCH	**12.5**	**[117]**	
2.1	**Education**	**26.0**	**[116]**	
2.1.1	Expenditure on education, % GDP ⊕	5.2	42	●
2.1.2	Government funding/pupil, secondary, % GDP/cap ⊕	12.0	88	
2.1.3	School life expectancy, years ⊕	9.0	110	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**11.4**	**109**	
2.2.1	Tertiary enrolment, % gross ⊕	10.0	109	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, % ⊕	4.3	50	●
2.3	**Research & development (R&D)**	**0.0**	**[120]**	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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	**21.5**	**128**	◇
3.1	**Information & communication technologies(ICTs)**	**10.8**	**[129]**	
3.1.1	ICT access*	n/a	n/a	
3.1.2	ICT use*	n/a	n/a	
3.1.3	Government's online service*	9.7	128	○ ◇
3.1.4	E-participation*	11.8	128	○ ◇
3.2	**General infrastructure**	**2.5**	**128**	◇
3.2.1	Electricity output, kWh/mn pop.	182.9	114	
3.2.2	Logistics performance*	9.4	117	
3.2.3	Gross capital formation, % GDP	5.9	125	○ ◇
3.3	**Ecological sustainability**	**51.2**	**26**	● ◆
3.3.1	GDP/unit of energy use	21.3	4	● ◆
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.0	128	○ ◇
	MARKET SOPHISTICATION	**35.0**	**119**	
4.1	**Credit**	**0.4**	**129**	○ ◇
4.1.1	Ease of getting credit*	0.0	129	○ ◇
4.1.2	Domestic credit to private sector, % GDP ⊕	5.6	126	○ ◇
4.1.3	Microfinance gross loans, % GDP	0.1	56	●
4.2	**Investment**	**53.3**	**[32]**	
4.2.1	Ease of protecting minority investors*	53.3	87	●
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**	**51.2**	**102**	
4.3.1	Applied tariff rate, weighted avg., %	5.0	87	● ◆
4.3.2	Intensity of local competition†	50.4	123	◇
4.3.3	Domestic market scale, bn PPP$	73.3	89	●

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**16.3**	**[129]**	
5.1	**Knowledge workers**	**6.7**	**[127]**	
5.1.1	Knowledge-intensive employment, % ⊕	1.6	116	
5.1.2	Firms offering formal training, % firms	14.3	85	◇
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, % ⊕	1.1	106	
5.2	**Innovation linkages**	**15.8**	**[117]**	
5.2.1	University/industry research collaboration†	19.5	125	○ ◇
5.2.2	State of cluster development†	29.9	121	◇
5.2.3	GERD financed by abroad, %	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	93	○ ◇
5.3	**Knowledge absorption**	**26.3**	**98**	
5.3.1	Intellectual property payments, % total trade	1.6	21	● ◆
5.3.2	High-tech imports, % total trade ⊕	6.3	88	●
5.3.3	ICT services imports, % total trade	0.4	109	
5.3.4	FDI net inflows, % GDP	-0.8	124	◇
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**3.8**	**128**	◇
6.1	**Knowledge creation**	**2.1**	**122**	
6.1.1	Patents by origin/bn PPP$ GDP	0.2	98	
6.1.2	PCT patents by origin/bn PPP$ GDP	n/a	n/a	
6.1.3	Utility models by origin/bn PPP$ GDP ⊕	0.0	65	○ ◇
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.1	103	
6.1.5	Citable documents H-index	1.9	119	
6.2	**Knowledge impact**	**0.6**	**129**	○ ◇
6.2.1	Growth rate of PPP$ GDP/worker, %	-11.1	112	○ ◇
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.0	110	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.0	129	○ ◇
6.2.5	High- & medium-high-tech manufactures, % ⊕	0.0	104	○ ◇
6.3	**Knowledge diffusion**	**8.8**	**111**	
6.3.1	Intellectual property receipts, % total trade ⊕	0.2	35	● ◆
6.3.2	High-tech net exports, % total trade ⊕	0.1	117	
6.3.3	ICT services exports, % total trade	0.7	89	
6.3.4	FDI net outflows, % GDP	0.0	110	
	CREATIVE OUTPUTS	**9.0**	**127**	
7.1	**Intangible assets**	**17.9**	**126**	
7.1.1	Trademarks by origin/bn PPP$ GDP	39.9	66	● ◆
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.3	94	
7.1.3	ICTs & business model creation†	24.3	125	○ ◇
7.1.4	ICTs & organizational model creation†	21.7	125	○ ◇
7.2	**Creative goods & services**	**0.0**	**[129]**	
7.2.1	Cultural & creative services exports, % total trade	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Entertainment & Media market/th pop. 15–69	0.0	63	○ ◇
7.2.4	Printing & other media, % manufacturing	n/a	n/a	
7.2.5	Creative goods exports, % total trade ⊕	0.0	123	
7.3	**Online creativity**	**0.4**	**113**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.4	113	
7.3.2	Country-code TLDs/th pop. 15–69	0.0	126	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊕	1.1	102	
7.3.4	Mobile app creation/bn PPP$ GDP	0.3	76	

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.

ZAMBIA

GII 2019 rank

124

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
121	126	Lower middle	SSF	17.6	73.2	4,103.5	n/a

		Score/Value	Rank	
	INSTITUTIONS	**47.1**	**120**	
1.1	**Political environment**	**43.2**	**97**	●
1.1.1	Political and operational stability*	66.7	74	●
1.1.2	Government effectiveness*	31.5	105	
1.2	**Regulatory environment**	**34.4**	**125**	○ ◇
1.2.1	Regulatory quality*	29.4	101	
1.2.2	Rule of law*	37.7	81	●
1.2.3	Cost of redundancy dismissal, salary weeks	50.6	124	○ ◇
1.3	**Business environment**	**63.7**	**86**	
1.3.1	Ease of starting a business*	85.1	78	●
1.3.2	Ease of resolving insolvency*	42.4	87	

		Score/Value	Rank	
	HUMAN CAPITAL & RESEARCH	**1.4**	**[129]**	
2.1	**Education**	**0.0**	**[129]**	
2.1.1	Expenditure on education, % GDP ⊙	1.1	119	○ ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**2.6**	**[123]**	
2.2.1	Tertiary enrolment, % gross ⊙	4.0	121	○ ◇
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**1.5**	**98**	
2.3.1	Researchers, FTE/mn pop. ⊙	41.0	94	
2.3.2	Gross expenditure on R&D, % GDP ⊙	0.3	81	
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	○ ◇

		Score/Value	Rank	
	INFRASTRUCTURE	**36.6**	**95**	
3.1	**Information & communication technologies(ICTs)**	**35.8**	**114**	◇
3.1.1	ICT access*	31.1	116	◇
3.1.2	ICT use*	24.5	101	
3.1.3	Government's online service*	47.9	106	
3.1.4	E-participation*	39.9	110	◇
3.2	**General infrastructure**	**48.0**	**25**	● ◆
3.2.1	Electricity output, kWh/mn pop.	704.9	101	
3.2.2	Logistics performance*	21.6	103	
3.2.3	Gross capital formation, % GDP	44.4	3	● ◆
3.3	**Ecological sustainability**	**25.9**	**113**	
3.3.1	GDP/unit of energy use	5.3	105	
3.3.2	Environmental performance*	51.0	95	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	95	

		Score/Value	Rank	
	MARKET SOPHISTICATION	**37.7**	**112**	◇
4.1	**Credit**	**32.7**	**79**	●
4.1.1	Ease of getting credit*	95.0	3	● ◆
4.1.2	Domestic credit to private sector, % GDP	11.2	123	○ ◇
4.1.3	Microfinance gross loans, % GDP	0.0	63	
4.2	**Investment**	**26.8**	**126**	○ ◇
4.2.1	Ease of protecting minority investors*	50.0	93	
4.2.2	Market capitalization, % GDP ⊙	13.6	65	
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	49	●
4.3	**Trade, competition, & market scale**	**53.5**	**94**	
4.3.1	Applied tariff rate, weighted avg., % ⊙	6.2	96	
4.3.2	Intensity of local competition†	66.4	75	●
4.3.3	Domestic market scale, bn PPP$	73.2	90	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**17.1**	**127**	○ ◇
5.1	**Knowledge workers**	**12.9**	**121**	◇
5.1.1	Knowledge-intensive employment, %	2.0	115	○ ◇
5.1.2	Firms offering formal training, % firms	28.2	55	●
5.1.3	GERD performed by business, % GDP ⊙	0.0	85	
5.1.4	GERD financed by business, % ⊙	3.2	86	
5.1.5	Females employed w/advanced degrees, %	5.8	86	
5.2	**Innovation linkages**	**17.4**	**111**	
5.2.1	University/industry research collaboration†	31.6	102	
5.2.2	State of cluster development†	42.1	85	
5.2.3	GERD financed by abroad, % ⊙	1.6	83	
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	93	○ ◇
5.3	**Knowledge absorption**	**21.1**	**121**	
5.3.1	Intellectual property payments, % total trade	0.0	112	◇
5.3.2	High-tech imports, % total trade	5.7	95	
5.3.3	ICT services imports, % total trade	0.7	94	
5.3.4	FDI net inflows, % GDP	4.7	35	●
5.3.5	Research talent, % in business enterprise ⊙	4.9	71	

		Score/Value	Rank	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**12.1**	**115**	◇
6.1	**Knowledge creation**	**3.9**	**107**	
6.1.1	Patents by origin/bn PPP$ GDP	0.2	102	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	86	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.7	107	
6.1.5	Citable documents H-index	5.7	92	
6.2	**Knowledge impact**	**23.6**	**108**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.0	88	◇
6.2.2	New businesses/th pop. 15-64	1.1	68	
6.2.3	Computer software spending, % GDP	0.0	112	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.6	118	◇
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.1	78	
6.3	**Knowledge diffusion**	**8.8**	**110**	
6.3.1	Intellectual property receipts, % total trade	n/a	n/a	
6.3.2	High-tech net exports, % total trade	0.4	85	
6.3.3	ICT services exports, % total trade	0.4	104	
6.3.4	FDI net outflows, % GDP	-0.2	120	○ ◇

		Score/Value	Rank	
	CREATIVE OUTPUTS	**13.4**	**121**	◇
7.1	**Intangible assets**	**25.4**	**120**	◇
7.1.1	Trademarks by origin/bn PPP$ GDP	15.6	94	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.4	88	
7.1.3	ICTs & business model creation†	45.2	115	◇
7.1.4	ICTs & organizational model creation†	37.3	118	◇
7.2	**Creative goods & services**	**2.5**	**[113]**	
7.2.1	Cultural & creative services exports, % total trade	0.3	63	●
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	n/a	n/a	
7.2.5	Creative goods exports, % total trade	0.0	116	
7.3	**Online creativity**	**0.1**	**125**	○
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	115	
7.3.3	Wikipedia edits/mn pop. 15-69 ⊙	0.1	120	
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.

ZIMBABWE

GII 2019 rank

122

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
110	123	Low	SSF	16.9	36.3	2,787.6	113

		Score/Value	Rank	
	INSTITUTIONS	**37.6**	**127**	○ ◇
1.1	**Political environment**	**27.6**	**127**	○
1.1.1	Political and operational stability*	47.4	123	
1.1.2	Government effectiveness*	17.7	127	○
1.2	**Regulatory environment**	**39.3**	**122**	◇
1.2.1	Regulatory quality*	0.0	129	○ ◇
1.2.2	Rule of law*	9.9	127	○ ◇
1.2.3	Cost of redundancy dismissal, salary weeks	25.3	102	◇
1.3	**Business environment**	**45.9**	**128**	○ ◇
1.3.1	Ease of starting a business*	66.5	126	◇
1.3.2	Ease of resolving insolvency*	25.3	127	○ ◇
	HUMAN CAPITAL & RESEARCH	**27.8**	**76**	◆
2.1	**Education**	**51.4**	**56**	● ◆
2.1.1	Expenditure on education, % GDP ⊙	7.5	6	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap ⊙	31.0	12	● ◆
2.1.3	School life expectancy, years ⊙	10.2	106	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ⊙	22.5	93	
2.2	**Tertiary education**	**31.6**	**62**	● ◆
2.2.1	Tertiary enrolment, % gross ⊙	8.5	111	
2.2.2	Graduates in science & engineering, % ⊙	30.2	13	● ◆
2.2.3	Tertiary inbound mobility, % ⊙	0.5	95	
2.3	**Research & development (R&D)**	**0.3**	**115**	
2.3.1	Researchers, FTE/mn pop. ⊙	88.7	87	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
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	**21.7**	**127**	○ ◇
3.1	**Information & communication technologies(ICTs)**	**29.9**	**120**	
3.1.1	ICT access*	36.0	108	◆
3.1.2	ICT use*	23.4	102	◆
3.1.3	Government's online service*	32.6	116	
3.1.4	E-participation*	27.5	120	
3.2	**General infrastructure**	**15.0**	**124**	
3.2.1	Electricity output, kWh/mn pop.	436.8	107	
3.2.2	Logistics performance*	2.6	120	○ ◇
3.2.3	Gross capital formation, % GDP	18.7	100	
3.3	**Ecological sustainability**	**20.2**	**123**	
3.3.1	GDP/unit of energy use	2.7	119	○
3.3.2	Environmental performance*	43.4	114	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.5	58	● ◆
	MARKET SOPHISTICATION	**38.4**	**109**	
4.1	**Credit**	**27.6**	**99**	
4.1.1	Ease of getting credit*	55.0	77	
4.1.2	Domestic credit to private sector, % GDP	n/a	n/a	
4.1.3	Microfinance gross loans, % GDP	0.0	70	
4.2	**Investment**	**n/a**	**[n/a]**	
4.2.1	Ease of protecting minority investors*	n/a	n/a	
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**	**49.2**	**109**	
4.3.1	Applied tariff rate, weighted avg., % ⊙	5.0	86	◆
4.3.2	Intensity of local competition†	58.4	111	
4.3.3	Domestic market scale, bn PPP$	36.3	108	

		Score/Value	Rank	
	BUSINESS SOPHISTICATION	**20.6**	**117**	
5.1	**Knowledge workers**	**15.5**	**[117]**	
5.1.1	Knowledge-intensive employment, % ⊙	1.1	118	○ ◇
5.1.2	Firms offering formal training, % firms	26.4	59	
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, % ⊙	5.7	87	◆
5.2	**Innovation linkages**	**19.3**	**91**	
5.2.1	University/industry research collaboration†	26.7	118	◇
5.2.2	State of cluster development†	26.6	125	○ ◇
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.1	21	● ◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	74	
5.3	**Knowledge absorption**	**27.1**	**93**	
5.3.1	Intellectual property payments, % total trade	0.2	86	
5.3.2	High-tech imports, % total trade	6.8	75	
5.3.3	ICT services imports, % total trade	0.9	80	
5.3.4	FDI net inflows, % GDP	1.6	93	
5.3.5	Research talent, % in business enterprise	n/a	n/a	
	KNOWLEDGE & TECHNOLOGY OUTPUTS	**17.5**	**83**	
6.1	**Knowledge creation**	**6.8**	**84**	
6.1.1	Patents by origin/bn PPP$ GDP ⊙	0.2	90	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	85	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	7.0	62	● ◆
6.1.5	Citable documents H-index	6.5	86	
6.2	**Knowledge impact**	**38.7**	**54**	● ◆
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.3	95	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.4	22	● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4.3	62	● ◆
6.2.5	High- & medium-high-tech manufactures, % ⊙	0.2	49	● ◆
6.3	**Knowledge diffusion**	**7.0**	**123**	
6.3.1	Intellectual property receipts, % total trade ⊙	0.0	68	
6.3.2	High-tech net exports, % total trade	0.2	98	
6.3.3	ICT services exports, % total trade	0.2	114	
6.3.4	FDI net outflows, % GDP	0.1	94	
	CREATIVE OUTPUTS	**13.3**	**123**	
7.1	**Intangible assets**	**24.4**	**122**	
7.1.1	Trademarks by origin/bn PPP$ GDP ⊙	4.8	117	
7.1.2	Industrial designs by origin/bn PPP$ GDP	n/a	n/a	
7.1.3	ICTs & business model creation†	42.7	118	
7.1.4	ICTs & organizational model creation†	29.7	123	○ ◇
7.2	**Creative goods & services**	**4.0**	**[108]**	
7.2.1	Cultural & creative services exports, % total trade	0.2	71	
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	n/a	n/a	
7.2.5	Creative goods exports, % total trade	0.3	73	● ◆
7.3	**Online creativity**	**0.4**	**112**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.4	111	
7.3.2	Country-code TLDs/th pop. 15–69	0.7	88	
7.3.3	Wikipedia edits/mn pop. 15–69 ⊙	0.3	113	
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.