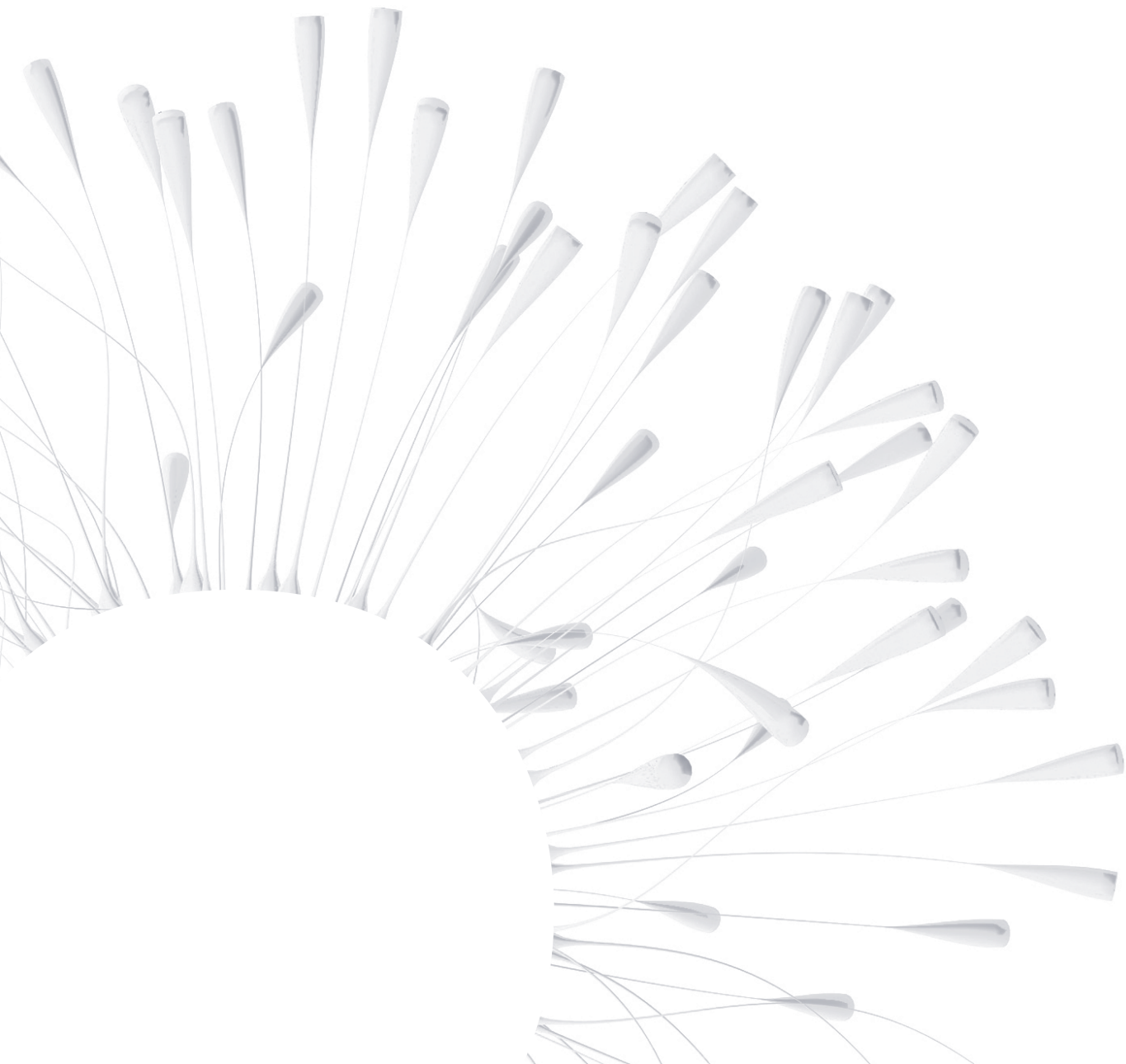
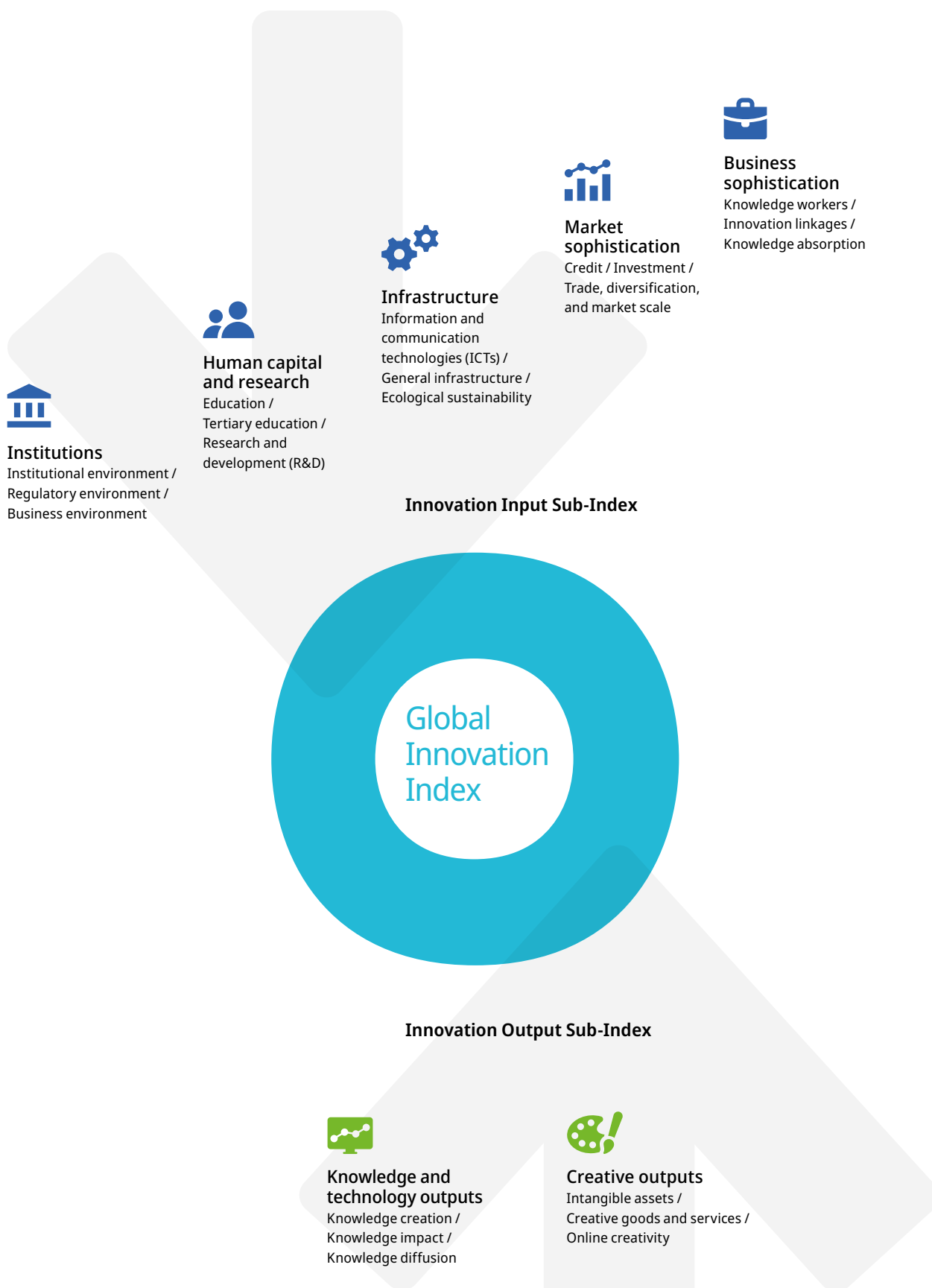


GII 2023 Economy profiles

The following tables provide detailed profiles for 132 economies.



Framework of the Global Innovation Index 2023



Source: Global Innovation Index Database, WIPO, 2023.


How to read the Economy profiles

The following tables provide detailed profiles for each of the 132 economies in the *Global Innovation Index 2023*. They are composed of four sections.

- 1 At the top is the overall Global Innovation Index (GII) rank for each economy.
- 2 Next are the key metrics for each profile which provide the specific context for that particular economy: namely, its Innovation Input and Output Sub-Index rankings, the income group to which the economy belongs, its geographical region,¹ population in millions,² GDP in billion USD purchasing power parity (PPP), and, lastly, GDP per capita in USD PPP.³

Because economies may either drop in or out of the GII, and due to adjustments made to the GII framework every year and other technical factors unrelated to actual performance (missing data, updates of data, and so on), the GII rankings are not directly comparable between one year and another. Appendix I provides further details.

The Innovation Input Sub-Index rank is computed based on a simple average of the scores in the first five pillars, while the Innovation Output Sub-Index rank is computed based on a simple average of the scores in the last two pillars. Scores are normalized values falling within the 0–100 range.

- 3 Pillars are identified by an illustrative icon, sub-pillars by two-digit and indicators by three-digit numbers. For example, under the pillar Institutions  is the sub-pillar 1.3, Business environment, under which is indicator 1.3.2, Entrepreneurship policies and culture.

The GII 2023 includes 80 indicators in total and three types of data. Composite (or index) indicators are identified with an asterisk (*), survey questions with a dagger (†). The remaining indicators are all hard data series.

As far as possible, we have provided the (scaled/unscaled) value of the indicators rather than the score. Indicators based on survey responses (five indicators) or an index (11 indicators) are always reported as scores, while nine of the 64 hard data indicators are likewise reported as scores. This means that, overall, 55 out of 80 indicators are reported as values in the economy profiles.

When data are either unavailable or out of date, “n/a” is used, with a cutoff year of 2013. To the right of an indicator name, a clock symbol ⌚ is used when the available economy data are older than the base year. For information on data exceptions and limitations and a detailed explanation of the GII framework, see Appendix I. For further details on indicator sources and definitions, see Appendix III.

- 4 On the far right of each column, the strengths of an economy are indicated by a solid circle ● and weaknesses by a hollow circle ○. The strengths of an economy within its income group are indicated by a solid diamond ◆ and weaknesses by a hollow diamond ◇. The exceptions to this are the top 25 high-income economies, whose strengths and weaknesses are instead computed within the top 25 group.⁴

Rankings of 1, 2 and 3 are highlighted as an economy’s strengths, except in particular instances at the sub-pillar level, when the desired data minimum coverage (DMC) is unmet for that sub-pillar. For the remaining indicators, the strengths and weaknesses of a specific economy are based on the percentage of economies whose scores fall either above or below its own score (i.e., percentile ranks) and where the data is no older than the indicator mode minus 5 years. In practice, this means that for indicators with a data year mode of 2022, an economy’s data year must date from 2017 or be more recent in order to classify as a strength or weakness.

For any given economy, strengths ● are those scores with percentile ranks greater than the 10th largest percentile rank among the 80 indicators for that economy.

For that same economy, weaknesses ○ are those scores with percentile ranks lower than the 10th smallest percentile rank among the 80 indicators for that economy.

Similarly, for any given economy, income group strengths ◆ are those scores above the income group average plus the standard deviation within that group.

For that same economy, income group weaknesses ◇ are those scores below the income group average minus the standard deviation within that group.

In addition, economies with a sub-pillar that does not meet the DMC requirement will show the score for that sub-pillar within square brackets. Those with more than one such sub-pillar also include the ranks for that pillar within square brackets. For these pillars and sub-pillars, neither strengths nor weaknesses are signaled.

A complete explanation of the methodology for the calculation of strengths and weaknesses is available in Appendix I.

Notes

- 1 Economies are classified according to the World Bank Income Group Classification (July 2022, see <https://unstats.un.org/unsd/methodology/m49>). Geographical regions correspond to the United Nations' publication on standard country or area codes for statistical use (M49), as follows: 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; SSA = Sub-Saharan Africa.
- 2 Data are from the United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects: 2022 Revision.
- 3 Data for GDP and GDP per capita are from the International Monetary Fund's World Economic Outlook Database: October 2022 edition.
- 4 As the only economy in the top 25 that does not fall within the high-income group, China's income group strengths and weaknesses are computed within the non-top 25 group.

Albania



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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
94	73	Upper middle	EUR	2.8	51.2	17,858	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		44.7	68	5.1 Knowledge workers		41.8	[45]
1.1.1	Operational stability for businesses*	52.8	65	5.1.1	Knowledge-intensive employment, %	⊙ 18.4	78
1.1.2	Government effectiveness*	36.7	70	5.1.2	Firms offering formal training, %	46.2	24 ●
1.2 Regulatory environment		57.1	80	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	47.1	60	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	32.2	79	5.1.5	Females employed w/advanced degrees, %	⊙ 12.9	59
1.2.3	Cost of redundancy dismissal	20.8	92	5.2 Innovation linkages		25.3	52
1.3 Business environment		54.0	[49]	5.2.1	University-industry R&D collaboration†	61.8	33 ◆
1.3.1	Policies for doing business†	54.0	52	5.2.2	State of cluster development†	34.0	85
1.3.2	Entrepreneurship policies and culture†	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	n/a	n/a
Human capital and research		21.5	96	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	82
2.1 Education		41.9	92	5.2.5	Patent families/bn PPP\$ GDP	0.0	64
2.1.1	Expenditure on education, % GDP	⊙ 3.3	97	5.3 Knowledge absorption		29.2	81
2.1.2	Government funding/pupil, secondary, % GDP/cap	9.8	91 ○◇	5.3.1	Intellectual property payments, % total trade	0.7	59
2.1.3	School life expectancy, years	14.3	67	5.3.2	High-tech imports, % total trade	⊙ 4.2	124 ○◇
2.1.4	PISA scales in reading, maths and science	419.8	56	5.3.3	ICT services imports, % total trade	1.1	79
2.1.5	Pupil-teacher ratio, secondary	10.1	33	5.3.4	FDI net inflows, % GDP	7.2	12 ●◆
2.2 Tertiary education		22.6	83	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	56.7	58	Knowledge and technology outputs		14.8	91
2.2.2	Graduates in science and engineering, %	18.5	85	6.1 Knowledge creation		5.6	109
2.2.3	Tertiary inbound mobility, %	1.7	81	6.1.1	Patents by origin/bn PPP\$ GDP	0.6	76
2.3 Research and development (R&D)		0.0	[119]	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	65
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	6.1.3	Utility models by origin/bn PPP\$ GDP	0.0	63
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	6.1.4	Scientific and technical articles/bn PPP\$ GDP	6.4	99
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.1.5	Citable documents H-index	2.9	121 ○
2.3.4	QS university ranking, top 3*	0.0	71 ○◇	6.2 Knowledge impact		20.3	103
Infrastructure		45.4	53	6.2.1	Labor productivity growth, %	2.2	29 ●
3.1 Information and communication technologies (ICTs)		75.9	47	6.2.2	Unicorn valuation, % GDP	0.0	48 ○◇
3.1.1	ICT access*	78.9	76	6.2.3	Software spending, % GDP	0.1	86
3.1.2	ICT use*	69.1	76	6.2.4	High-tech manufacturing, %	5.3	101 ○◇
3.1.3	Government's online service*	79.9	33 ●	6.3 Knowledge diffusion		18.6	80
3.1.4	E-participation*	75.6	22 ●	6.3.1	Intellectual property receipts, % total trade	0.3	34 ◆
3.2 General infrastructure		20.5	90	6.3.2	Production and export complexity	48.0	73
3.2.1	Electricity output, GWh/mn pop.	3,186.3	63	6.3.3	High-tech exports, % total trade	⊙ 0.1	123 ○◇
3.2.2	Logistics performance*	18.2	89 ○◇	6.3.4	ICT services exports, % total trade	1.7	64
3.2.3	Gross capital formation, % GDP	28.5	29 ●	6.3.5	ISO 9001 quality/bn PPP\$ GDP	8.1	34
3.3 Ecological sustainability		39.7	32 ●	Creative outputs		16.5	87
3.3.1	GDP/unit of energy use	17.1	15 ●◆	7.1 Intangible assets		16.2	95
3.3.2	Environmental performance*	47.8	48	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environment/bn PPP\$ GDP	3.6	27 ●	7.1.2	Trademarks by origin/bn PPP\$ GDP	39.7	58
Market sophistication		25.0	93 ○	7.1.3	Global brand value, top 5,000, % GDP	0.0	74 ○◇
4.1 Credit		9.6	114 ○	7.1.4	Industrial designs by origin/bn PPP\$ GDP	1.2	61
4.1.1	Finance for startups and scaleups†	n/a	n/a	7.2 Creative goods and services		15.4	58
4.1.2	Domestic credit to private sector, % GDP	38.0	86	7.2.1	Cultural and creative services exports, % total trade	1.4	21 ●◆
4.1.3	Loans from microfinance institutions, % GDP	0.5	37	7.2.2	National feature films/mn pop. 15-69	2.9	40
4.2 Investment		2.9	[93]	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	n/a	n/a	7.2.4	Creative goods exports, % total trade	⊙ 0.0	114
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a	7.3 Online creativity		18.3	76
4.2.3	VC recipients, deals/bn PPP\$ GDP	⊙ 0.0	78	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	7.7	48
4.2.4	VC received, value, % GDP	⊙ 0.0	93 ○	7.3.2	Country-code TLDs/th pop. 15-69	3.8	62
4.3 Trade, diversification and market scale		62.6	48	7.3.3	GitHub commits/mn pop. 15-69	6.0	67
4.3.1	Applied tariff rate, weighted avg., %	1.1	12 ●	7.3.4	Mobile app creation/bn PPP\$ GDP	55.6	94
4.3.2	Domestic industry diversification	93.9	35				
4.3.3	Domestic market scale, bn PPP\$	51.2	106				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Algeria

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
116	118	Lower middle	NAWA	44.9	600.7	13,324	
		Score/Value	Rank			Score/Value	Rank
 Institutions		38.7	97	 Business sophistication		16.6	120
1.1 Institutional environment		27.2	106	5.1 Knowledge workers		14.9	113
1.1.1 Operational stability for businesses*		34.7	111	5.1.1 Knowledge-intensive employment, %	☉	17.9	81
1.1.2 Government effectiveness*		19.6	106	5.1.2 Firms offering formal training, %		n/a	n/a
1.2 Regulatory environment		47.6	106	5.1.3 GERD performed by business, % GDP	☉	0.0	76
1.2.1 Regulatory quality*		11.7	130	5.1.4 GERD financed by business, %	☉	6.7	80
1.2.2 Rule of law*		15.8	110	5.1.5 Females employed w/advanced degrees, %	☉	8.1	83
1.2.3 Cost of redundancy dismissal		17.3	71	5.2 Innovation linkages		14.3	101
1.3 Business environment		41.3	[79]	5.2.1 University-industry R&D collaboration†	☉	28.9	98
1.3.1 Policies for doing business†	☉	41.3	82	5.2.2 State of cluster development†	☉	41.5	64
1.3.2 Entrepreneurship policies and culture†		n/a	n/a	5.2.3 GERD financed by abroad, % GDP	☉	0.0	95
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	121
				5.2.5 Patent families/bn PPP\$ GDP		0.0	93
 Human capital and research		16.0	113	5.3 Knowledge absorption		20.4	128
2.1 Education		11.3	[132]	5.3.1 Intellectual property payments, % total trade		0.3	79
2.1.1 Expenditure on education, % GDP		n/a	n/a	5.3.2 High-tech imports, % total trade	☉	8.9	53
2.1.2 Government funding/pupil, secondary, % GDP/cap		n/a	n/a	5.3.3 ICT services imports, % total trade		0.4	115
2.1.3 School life expectancy, years		n/a	n/a	5.3.4 FDI net inflows, % GDP		0.7	105
2.1.4 PISA scales in reading, maths and science	☉	361.7	77	5.3.5 Research talent, % in businesses	☉	0.5	81
2.1.5 Pupil-teacher ratio, secondary		n/a	n/a	 Knowledge and technology outputs		9.5	128
2.2 Tertiary education		32.1	60	6.1 Knowledge creation		8.8	86
2.2.1 Tertiary enrolment, % gross		53.7	64	6.1.1 Patents by origin/bn PPP\$ GDP		0.5	80
2.2.2 Graduates in science and engineering, %		30.1	19	6.1.2 PCT patents by origin/bn PPP\$ GDP		0.0	81
2.2.3 Tertiary inbound mobility, %		0.6	98	6.1.3 Utility models by origin/bn PPP\$ GDP		n/a	n/a
2.3 Research and development (R&D)		4.5	78	6.1.4 Scientific and technical articles/bn PPP\$ GDP		7.9	86
2.3.1 Researchers, FTE/mn pop.	☉	819.3	56	6.1.5 Citable documents H-index		10.7	73
2.3.2 Gross expenditure on R&D, % GDP	☉	0.5	58	6.2 Knowledge impact		11.9	126
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	40	6.2.1 Labor productivity growth, %		-0.0	97
2.3.4 QS university ranking, top 3*		0.0	71	6.2.2 Unicorn valuation, % GDP		0.0	48
				6.2.3 Software spending, % GDP		0.0	128
				6.2.4 High-tech manufacturing, %	☉	4.1	104
 Infrastructure		27.6	102	6.3 Knowledge diffusion		7.6	120
3.1 Information and communication technologies (ICTs)		47.7	102	6.3.1 Intellectual property receipts, % total trade		0.0	101
3.1.1 ICT access*		72.2	86	6.3.2 Production and export complexity		34.1	104
3.1.2 ICT use*		66.7	78	6.3.3 High-tech exports, % total trade	☉	0.0	131
3.1.3 Government's online service*		30.8	121	6.3.4 ICT services exports, % total trade		0.2	121
3.1.4 E-participation*		20.9	122	6.3.5 ISO 9001 quality/bn PPP\$ GDP		1.0	106
3.2 General infrastructure		22.7	79	 Creative outputs		9.9	107
3.2.1 Electricity output, GWh/mn pop.	☉	1,805.2	87	7.1 Intangible assets		13.5	102
3.2.2 Logistics performance*		18.2	89	7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
3.2.3 Gross capital formation, % GDP		36.8	11	7.1.2 Trademarks by origin/bn PPP\$ GDP		20.8	90
3.3 Ecological sustainability		12.4	117	7.1.3 Global brand value, top 5,000, % GDP		0.0	74
3.3.1 GDP/unit of energy use		8.1	87	7.1.4 Industrial designs by origin/bn PPP\$ GDP		1.6	48
3.3.2 Environmental performance*		18.1	113	7.2 Creative goods and services		0.2	128
3.3.3 ISO 14001 environment/bn PPP\$ GDP		0.3	103	7.2.1 Cultural and creative services exports, % total trade		0.0	102
				7.2.2 National feature films/mn pop. 15-69		0.1	79
				7.2.3 Entertainment and media market/th pop. 15-69		0.2	58
				7.2.4 Creative goods exports, % total trade	☉	0.0	124
 Market sophistication		13.9	125	7.3 Online creativity		12.5	106
4.1 Credit		9.6	[115]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		0.5	110
4.1.1 Finance for startups and scaleups†		n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69		0.1	116
4.1.2 Domestic credit to private sector, % GDP		29.7	97	7.3.3 GitHub commits/mn pop. 15-69		0.9	115
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP		48.5	102
4.2 Investment		1.8	104				
4.2.1 Market capitalization, % GDP	☉	0.2	78				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		n/a	n/a				
4.2.3 VC recipients, deals/bn PPP\$ GDP		0.0	101				
4.2.4 VC received, value, % GDP		0.0	63				
4.3 Trade, diversification and market scale		30.2	115				
4.3.1 Applied tariff rate, weighted avg., %		10.2	118				
4.3.2 Domestic industry diversification	☉	43.5	106				
4.3.3 Domestic market scale, bn PPP\$		600.7	40				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ☉ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Angola

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$		
132	132	Lower middle	SSA	35.6	245.4	7,455		
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank	
31.8		118	8.5		132			
1.1 Institutional environment	23.2	118	5.1 Knowledge workers	5.7	[127]			
1.1.1 Operational stability for businesses*	38.9	96 ●	5.1.1 Knowledge-intensive employment, %	⊙	7.5	113		
1.1.2 Government effectiveness*	7.5	128 ◇	5.1.2 Firms offering formal training, %		n/a	n/a		
1.2 Regulatory environment	49.4	101 ●	5.1.3 GERD performed by business, % GDP		n/a	n/a		
1.2.1 Regulatory quality*	24.9	111	5.1.4 GERD financed by business, %		n/a	n/a		
1.2.2 Rule of law*	11.8	119	5.1.5 Females employed w/advanced degrees, %	⊙	1.3	113		
1.2.3 Cost of redundancy dismissal	17.9	77 ●	5.2 Innovation linkages	0.7	132	◇◇		
1.3 Business environment	22.9	114	5.2.1 University–industry R&D collaboration†	0.0	129	◇◇		
1.3.1 Policies for doing business†	31.2	104 ●	5.2.2 State of cluster development†	1.6	128	◇◇		
1.3.2 Entrepreneurship policies and culture†	14.6	73 ◇	5.2.3 GERD financed by abroad, % GDP	n/a	n/a			
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	119			
			5.2.5 Patent families/bn PPP\$ GDP	0.0	95	◇◇		
Human capital and research		Score/Value	Rank	5.3 Knowledge absorption		Score/Value	Rank	
11.0		127	◇	19.0		131	◇◇	
2.1 Education	26.2	[124]	5.3.1 Intellectual property payments, % total trade	0.5	66 ●			
2.1.1 Expenditure on education, % GDP	2.1	116 ◇	5.3.2 High-tech imports, % total trade	3.8	125			
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	0.3	123			
2.1.3 School life expectancy, years	n/a	n/a	5.3.4 FDI net inflows, % GDP	-5.3	129	◇		
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	n/a	n/a			
2.1.5 Pupil–teacher ratio, secondary	⊙	26.8	114	◇				
2.2 Tertiary education	6.6	118	◇	Knowledge and technology outputs	1.6	132	◇◇	
2.2.1 Tertiary enrolment, % gross	⊙	10.6	112	6.1 Knowledge creation	0.4	132	◇◇	
2.2.2 Graduates in science and engineering, %	⊙	12.0	105	◇	0.0	130		
2.2.3 Tertiary inbound mobility, %	n/a	n/a		6.1.1 Patents by origin/bn PPP\$ GDP	⊙	0.0	101	◇◇
2.3 Research and development (R&D)	0.1	116		6.1.2 PCT patents by origin/bn PPP\$ GDP	⊙	0.0	101	◇◇
2.3.1 Researchers, FTE/mn pop.	⊙	18.8	105	6.1.3 Utility models by origin/bn PPP\$ GDP	⊙	0.0	65 ●	
2.3.2 Gross expenditure on R&D, % GDP	⊙	0.0	111	◇	6.1.4 Scientific and technical articles/bn PPP\$ GDP	0.6	131	◇◇
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	◇◇	6.1.5 Citable documents H-index	1.0	129	◇	
2.3.4 QS university ranking, top 3*	0.0	71	◇◇	6.2 Knowledge impact	3.3	131	◇◇	
				6.2.1 Labor productivity growth, %	-3.9	130	◇◇	
				6.2.2 Unicorn valuation, % GDP	0.0	48	◇◇	
				6.2.3 Software spending, % GDP	n/a	n/a		
				6.2.4 High-tech manufacturing, %	3.0	108	◇	
Infrastructure		Score/Value	Rank	6.3 Knowledge diffusion		Score/Value	Rank	
16.1		129	◇	1.1		131	◇◇	
3.1 Information and communication technologies (ICTs)	23.4	126	◇	6.3.1 Intellectual property receipts, % total trade	0.0	105		
3.1.1 ICT access*	14.3	128	◇	6.3.2 Production and export complexity	0.0	120	◇◇	
3.1.2 ICT use*	22.7	124	◇	6.3.3 High-tech exports, % total trade	0.2	110		
3.1.3 Government's online service*	41.6	106 ●		6.3.4 ICT services exports, % total trade	0.1	126		
3.1.4 E-participation*	15.1	128	◇	6.3.5 ISO 9001 quality/bn PPP\$ GDP	0.5	121		
3.2 General infrastructure	6.6	130	◇	6.4 Creative outputs	6.1	[121]		
3.2.1 Electricity output, GWh/mn pop.	⊙	498.4	111	7.1 Intangible assets	7.1	[112]		
3.2.2 Logistics performance*	0.0	111	◇◇	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a		
3.2.3 Gross capital formation, % GDP	22.6	78 ●		7.1.2 Trademarks by origin/bn PPP\$ GDP	⊙	12.0	106 ●	
3.3 Ecological sustainability	18.2	89 ●		7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a		
3.3.1 GDP/unit of energy use	14.0	32 ●		7.1.4 Industrial designs by origin/bn PPP\$ GDP	n/a	n/a		
3.3.2 Environmental performance*	19.7	109		7.2 Creative goods and services	0.1	[131]		
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.1	128		7.2.1 Cultural and 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 and media market/th pop. 15–69	n/a	n/a		
				7.2.4 Creative goods exports, % total trade	0.0	127		
Market sophistication		Score/Value	Rank	7.3 Online creativity		Score/Value	Rank	
16.6		119		9.9		115		
4.1 Credit	7.9	119		7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.0	130		
4.1.1 Finance for startups and scaleups†	20.8	79	◇	7.3.2 Country-code TLDs/th pop. 15–69	0.1	117		
4.1.2 Domestic credit to private sector, % GDP	12.9	125	◇	7.3.3 GitHub commits/mn pop. 15–69	0.2	126		
4.1.3 Loans from microfinance institutions, % GDP	⊙	0.0	56	7.3.4 Mobile app creation/bn PPP\$ GDP	39.3	113	◇	
4.2 Investment	n/a	[n/a]						
4.2.1 Market capitalization, % GDP	n/a	n/a						
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a						
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a						
4.2.4 VC received, value, % GDP	n/a	n/a						
4.3 Trade, diversification and market scale	25.3	120	◇					
4.3.1 Applied tariff rate, weighted avg., %	9.2	113						
4.3.2 Domestic industry diversification	30.3	110	◇					
4.3.3 Domestic market scale, bn PPP\$	245.4	64 ●						

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Argentina

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
59	84	Upper middle	LCN	45.5	1,207.2	26,074	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		36.0	89	5.1 Knowledge workers		34.3	61
1.1.1	Operational stability for businesses*	45.1	81	5.1.1	Knowledge-intensive employment, %	25.3	54
1.1.2	Government effectiveness*	26.9	92	5.1.2	Firms offering formal training, %	40.2	33
1.2 Regulatory environment		40.9	118	5.1.3	GERD performed by business, % GDP	0.2	54
1.2.1	Regulatory quality*	26.1	106	5.1.4	GERD financed by business, %	23.4	63
1.2.2	Rule of law*	26.2	91	5.1.5	Females employed w/advanced degrees, %	16.3	45
1.2.3	Cost of redundancy dismissal	30.3	119	5.2 Innovation linkages		15.4	95
1.3 Business environment		15.8	126	5.2.1	University-industry R&D collaboration†	33.5	89
1.3.1	Policies for doing business†	0.0	129	5.2.2	State of cluster development†	26.8	102
1.3.2	Entrepreneurship policies and culture†	31.7	56	5.2.3	GERD financed by abroad, % GDP	0.1	42
Human capital and research		30.0	70	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	101
2.1 Education		43.7	84	5.2.5	Patent families/bn PPP\$ GDP	0.1	63
2.1.1	Expenditure on education, % GDP	5.1	40	5.3 Knowledge absorption		41.1	40
2.1.2	Government funding/pupil, secondary, % GDP/cap	17.6	63	5.3.1	Intellectual property payments, % total trade	2.1	12
2.1.3	School life expectancy, years	18.1	13	5.3.2	High-tech imports, % total trade	11.7	22
2.1.4	PISA scales in reading, maths and science	395.0	69	5.3.3	ICT services imports, % total trade	2.2	30
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	5.3.4	FDI net inflows, % GDP	1.4	92
2.2 Tertiary education		29.6	69	5.3.5	Research talent, % in businesses	10.6	60
2.2.1	Tertiary enrolment, % gross	99.2	5	Knowledge and technology outputs		19.2	79
2.2.2	Graduates in science and engineering, %	14.1	101	6.1 Knowledge creation		13.0	70
2.2.3	Tertiary inbound mobility, %	3.5	60	6.1.1	Patents by origin/bn PPP\$ GDP	0.4	87
2.3 Research and development (R&D)		16.5	48	6.1.2	PCT patents by origin/bn PPP\$ GDP	n/a	n/a
2.3.1	Researchers, FTE/mn pop.	1,232.0	50	6.1.3	Utility models by origin/bn PPP\$ GDP	0.1	50
2.3.2	Gross expenditure on R&D, % GDP	0.5	59	6.1.4	Scientific and technical articles/bn PPP\$ GDP	7.1	92
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40	6.1.5	Citable documents H-index	28.0	36
2.3.4	QS university ranking, top 3*	44.3	29	6.2 Knowledge impact		23.8	82
Infrastructure		39.9	66	6.2.1	Labor productivity growth, %	-1.8	124
3.1 Information and communication technologies (ICTs)		74.8	50	6.2.2	Unicorn valuation, % GDP	0.4	41
3.1.1	ICT access*	86.1	45	6.2.3	Software spending, % GDP	0.3	47
3.1.2	ICT use*	70.4	70	6.2.4	High-tech manufacturing, %	28.1	45
3.1.3	Government's online service*	78.9	38	6.3 Knowledge diffusion		20.9	70
3.1.4	E-participation*	64.0	51	6.3.1	Intellectual property receipts, % total trade	0.4	31
3.2 General infrastructure		21.1	87	6.3.2	Production and export complexity	47.8	74
3.2.1	Electricity output, GWh/mn pop.	3,290.0	62	6.3.3	High-tech exports, % total trade	0.6	86
3.2.2	Logistics performance*	31.8	71	6.3.4	ICT services exports, % total trade	2.7	47
3.2.3	Gross capital formation, % GDP	20.9	89	6.3.5	ISO 9001 quality/bn PPP\$ GDP	5.5	51
3.3 Ecological sustainability		23.6	67	Creative outputs		30.3	51
3.3.1	GDP/unit of energy use	10.4	61	7.1 Intangible assets		39.7	42
3.3.2	Environmental performance*	37.6	68	7.1.1	Intangible asset intensity, top 15, %	69.0	21
3.3.3	ISO 14001 environment/bn PPP\$ GDP	1.2	59	7.1.2	Trademarks by origin/bn PPP\$ GDP	64.7	31
Market sophistication		25.2	92	7.1.3	Global brand value, top 5,000, % GDP	1.1	54
4.1 Credit		14.7	101	7.1.4	Industrial designs by origin/bn PPP\$ GDP	1.4	57
4.1.1	Finance for startups and scaleups†	25.3	75	7.2 Creative goods and services		18.2	52
4.1.2	Domestic credit to private sector, % GDP	16.0	116	7.2.1	Cultural and creative services exports, % total trade	1.1	23
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.2	National feature films/mn pop. 15-69	6.9	13
4.2 Investment		4.2	85	7.2.3	Entertainment and media market/th pop. 15-69	3.4	47
4.2.1	Market capitalization, % GDP	11.5	69	7.2.4	Creative goods exports, % total trade	0.2	76
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	83	7.3 Online creativity		23.4	56
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	83	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	3.4	64
4.2.4	VC received, value, % GDP	0.0	59	7.3.2	Country-code TLDs/th pop. 15-69	6.4	49
4.3 Trade, diversification and market scale		56.8	74	7.3.3	GitHub commits/mn pop. 15-69	14.8	48
4.3.1	Applied tariff rate, weighted avg., %	6.9	101	7.3.4	Mobile app creation/bn PPP\$ GDP	68.9	57
4.3.2	Domestic industry diversification	88.9	53				
4.3.3	Domestic market scale, bn PPP\$	1,207.2	28				

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Armenia

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
62	83	Upper middle	NAWA	2.8	49.8	16,798

	Score/Value	Rank		Score/Value	Rank
 Institutions	49.1	69	 Business sophistication	22.7	94
1.1 Institutional environment	35.8	90	5.1 Knowledge workers	32.4	65
1.1.1 Operational stability for businesses*	41.7	87	5.1.1 Knowledge-intensive employment, %	18.7	77
1.1.2 Government effectiveness*	29.9	87	5.1.2 Firms offering formal training, %	27.5	60
1.2 Regulatory environment	65.7	59	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	45.9	64	5.1.4 GERD financed by business, %	16.7	71
1.2.2 Rule of law*	36.9	69	5.1.5 Females employed w/advanced degrees, %	16.4	44
1.2.3 Cost of redundancy dismissal	13.0	41	5.2 Innovation linkages	11.2	115
1.3 Business environment	45.9	65	5.2.1 University-industry R&D collaboration†	28.6	100
1.3.1 Policies for doing business†	40.3	83	5.2.2 State of cluster development†	21.2	111
1.3.2 Entrepreneurship policies and culture†	51.6	34	5.2.3 GERD financed by abroad, % GDP	0.0	73
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	107
			5.2.5 Patent families/bn PPP\$ GDP	0.1	57
 Human capital and research	22.7	92	5.3 Knowledge absorption	24.6	107
2.1 Education	41.6	93	5.3.1 Intellectual property payments, % total trade	0.0	118
2.1.1 Expenditure on education, % GDP	2.8	111	5.3.2 High-tech imports, % total trade	7.9	73
2.1.2 Government funding/pupil, secondary, % GDP/cap	13.2	81	5.3.3 ICT services imports, % total trade	0.8	94
2.1.3 School life expectancy, years	13.5	78	5.3.4 FDI net inflows, % GDP	1.3	95
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	11.1	43	 Knowledge and technology outputs	22.6	67
2.2 Tertiary education	25.3	79	6.1 Knowledge creation	18.7	59
2.2.1 Tertiary enrolment, % gross	55.4	60	6.1.1 Patents by origin/bn PPP\$ GDP	1.0	59
2.2.2 Graduates in science and engineering, %	17.7	88	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	53
2.2.3 Tertiary inbound mobility, %	5.9	43	6.1.3 Utility models by origin/bn PPP\$ GDP	1.4	16
2.3 Research and development (R&D)	1.2	99	6.1.4 Scientific and technical articles/bn PPP\$ GDP	15.2	49
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index	10.3	76
2.3.2 Gross expenditure on R&D, % GDP	0.2	88	6.2 Knowledge impact	25.5	70
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2.1 Labor productivity growth, %	3.2	13
2.3.4 QS university ranking, top 3*	0.0	71	6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.2	58
			6.2.4 High-tech manufacturing, %	5.6	100
 Infrastructure	36.6	79	6.3 Knowledge diffusion	23.6	61
3.1 Information and communication technologies (ICTs)	72.8	58	6.3.1 Intellectual property receipts, % total trade	0.0	114
3.1.1 ICT access*	91.6	18	6.3.2 Production and export complexity	47.4	76
3.1.2 ICT use*	73.4	65	6.3.3 High-tech exports, % total trade	0.7	79
3.1.3 Government's online service*	69.3	63	6.3.4 ICT services exports, % total trade	7.0	9
3.1.4 E-participation*	57.0	64	6.3.5 ISO 9001 quality/bn PPP\$ GDP	1.1	105
3.2 General infrastructure	13.3	114	 Creative outputs	26.1	61
3.2.1 Electricity output, GWh/mn pop.	2,584.2	72	7.1 Intangible assets	31.3	68
3.2.2 Logistics performance*	18.2	89	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.2.3 Gross capital formation, % GDP	17.1	115	7.1.2 Trademarks by origin/bn PPP\$ GDP	97.5	16
3.3 Ecological sustainability	23.6	68	7.1.3 Global brand value, top 5,000, % GDP	0.0	74
3.3.1 GDP/unit of energy use	9.2	79	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.8	45
3.3.2 Environmental performance*	49.8	45	7.2 Creative goods and services	14.0	[60]
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.1	125	7.2.1 Cultural and creative services exports, % total trade	0.5	52
			7.2.2 National feature films/mn pop. 15-69	n/a	n/a
			7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
			7.2.4 Creative goods exports, % total trade	1.5	35
 Market sophistication	27.5	89	7.3 Online creativity	28.0	42
4.1 Credit	29.6	67	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.8	61
4.1.1 Finance for startups and scaleups†	32.9	65	7.3.2 Country-code TLDs/th pop. 15-69	6.1	52
4.1.2 Domestic credit to private sector, % GDP	72.2	50	7.3.3 GitHub commits/mn pop. 15-69	29.4	35
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	72.6	43
4.2 Investment	2.5	[97]			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	63			
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a			
4.2.4 VC received, value, % GDP	n/a	n/a			
4.3 Trade, diversification and market scale	50.4	85			
4.3.1 Applied tariff rate, weighted avg., %	3.1	74			
4.3.2 Domestic industry diversification	70.2	93			
4.3.3 Domestic market scale, bn PPP\$	49.8	107			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
30	16	High	SEAO	26.2	1,615.3	62,192	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
		75.6	17			50.7	24
1.1 Institutional environment		77.8	14	5.1 Knowledge workers		63.6	[15]
1.1.1 Operational stability for businesses*		77.1	14	5.1.1 Knowledge-intensive employment, %	⊖	51.5	8
1.1.2 Government effectiveness*		78.5	13	5.1.2 Firms offering formal training, %		n/a	n/a
1.2 Regulatory environment		90.7	10	5.1.3 GERD performed by business, % GDP	⊖	0.9	24
1.2.1 Regulatory quality*		89.8	4 ●	5.1.4 GERD financed by business, %		n/a	n/a
1.2.2 Rule of law*		88.8	12	5.1.5 Females employed w/advanced degrees, %	⊖	28.7	6 ●
1.2.3 Cost of redundancy dismissal		12.0	39	5.2 Innovation linkages		52.3	18
1.3 Business environment		58.4	37	5.2.1 University-industry R&D collaboration†		70.2	24
1.3.1 Policies for doing business†		69.3	27	5.2.2 State of cluster development†		64.6	30
1.3.2 Entrepreneurship policies and culture†	⊖	47.6	37	5.2.3 GERD financed by abroad, % GDP		n/a	n/a
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.2	11
				5.2.5 Patent families/bn PPP\$ GDP		1.0	27 ◇
Human capital and research		Score/Value	Rank	Knowledge absorption		Score/Value	Rank
		59.5	7 ●			36.2	54 ◇
2.1 Education		59.2	40	5.3.1 Intellectual property payments, % total trade		1.2	30
2.1.1 Expenditure on education, % GDP	⊖	5.1	35	5.3.2 High-tech imports, % total trade		11.0	25
2.1.2 Government funding/pupil, secondary, % GDP/cap		17.0	67 ◇◇	5.3.3 ICT services imports, % total trade		1.1	82 ◇◇
2.1.3 School life expectancy, years		21.1	1 ●◆	5.3.4 FDI net inflows, % GDP		1.8	79 ○
2.1.4 PISA scales in reading, maths and science		499.0	20	5.3.5 Research talent, % in businesses		n/a	n/a
2.1.5 Pupil-teacher ratio, secondary		n/a	n/a				
2.2 Tertiary education		59.2	4 ●◆	Knowledge and technology outputs		Score/Value	Rank
2.2.1 Tertiary enrolment, % gross		114.2	3 ●◆			34.9	30 ◇
2.2.2 Graduates in science and engineering, %		20.6	68 ○	6.1 Knowledge creation		45.8	17
2.2.3 Tertiary inbound mobility, %		26.0	5 ●◆	6.1.1 Patents by origin/bn PPP\$ GDP		2.0	35 ◇
2.3 Research and development (R&D)		60.0	16	6.1.2 PCT patents by origin/bn PPP\$ GDP		1.1	27 ◇
2.3.1 Researchers, FTE/mn pop.		n/a	n/a	6.1.3 Utility models by origin/bn PPP\$ GDP		1.2	21
2.3.2 Gross expenditure on R&D, % GDP	⊖	1.8	21	6.1.4 Scientific and technical articles/bn PPP\$ GDP		39.3	9
2.3.3 Global corporate R&D investors, top 3, mn USD		65.5	18	6.1.5 Citable documents H-index		69.6	7 ●
2.3.4 QS university ranking, top 3*		82.2	6 ●	6.2 Knowledge impact		38.4	34
				6.2.1 Labor productivity growth, %		0.5	81 ○
				6.2.2 Unicorn valuation, % GDP		3.1	14
				6.2.3 Software spending, % GDP		0.2	67 ◇
				6.2.4 High-tech manufacturing, %		25.1	50 ◇
Infrastructure		Score/Value	Rank	6.3 Knowledge diffusion		20.5	72 ◇
		58.8	19	6.3.1 Intellectual property receipts, % total trade		0.3	32 ◇
3.1 Information and communication technologies (ICTs)		91.8	9	6.3.2 Production and export complexity		41.5	90 ◇◇
3.1.1 ICT access*		82.3	66 ◇	6.3.3 High-tech exports, % total trade		1.8	62 ◇
3.1.2 ICT use*		92.7	14	6.3.4 ICT services exports, % total trade		1.3	76 ○
3.1.3 Government's online service*		93.1	7 ●	6.3.5 ISO 9001 quality/bn PPP\$ GDP		5.8	49
3.1.4 E-participation*		98.8	2 ●◆				
3.2 General infrastructure		47.9	23	Creative outputs		Score/Value	Rank
3.2.1 Electricity output, GWh/mn pop.		10,300.7	14			44.6	24
3.2.2 Logistics performance*		72.7	18	7.1 Intangible assets		46.8	33
3.2.3 Gross capital formation, % GDP		23.2	72	7.1.1 Intangible asset intensity, top 15, %		66.9	24
3.3 Ecological sustainability		36.7	38	7.1.2 Trademarks by origin/bn PPP\$ GDP		66.9	29
3.3.1 GDP/unit of energy use		9.7	74 ○	7.1.3 Global brand value, top 5,000, % GDP		7.6	27
3.3.2 Environmental performance*		69.8	17	7.1.4 Industrial designs by origin/bn PPP\$ GDP		1.8	46
3.3.3 ISO 14001 environment/bn PPP\$ GDP		2.4	37	7.2 Creative goods and services		20.9	47 ◇
				7.2.1 Cultural and creative services exports, % total trade		0.3	65 ○
				7.2.2 National feature films/mn pop. 15-69		1.2	58 ◇◇
				7.2.3 Entertainment and media market/th pop. 15-69		62.7	8
				7.2.4 Creative goods exports, % total trade		0.6	58
				7.3 Online creativity		64.0	12
				7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		67.7	11
				7.3.2 Country-code TLDs/th pop. 15-69		67.2	10
				7.3.3 GitHub commits/mn pop. 15-69		47.5	22
				7.3.4 Mobile app creation/bn PPP\$ GDP		73.5	37
Market sophistication		Score/Value	Rank				
		53.7	17				
4.1 Credit		57.3	21				
4.1.1 Finance for startups and scaleups†	⊖	60.6	32				
4.1.2 Domestic credit to private sector, % GDP		142.4	12				
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a				
4.2 Investment		29.5	24				
4.2.1 Market capitalization, % GDP		108.3	13				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		0.3	21				
4.2.3 VC recipients, deals/bn PPP\$ GDP		0.1	18				
4.2.4 VC received, value, % GDP		0.0	32				
4.3 Trade, diversification and market scale		74.3	15				
4.3.1 Applied tariff rate, weighted avg., %		0.7	7 ●				
4.3.2 Domestic industry diversification		92.8	41				
4.3.3 Domestic market scale, bn PPP\$		1,615.3	19				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Austria

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
15	18	High	EUR	8.9	599.5	66,680	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		76.2	15	5.1 Knowledge workers		54.0	25
1.1.1 Operational stability for businesses*		72.2	22	5.1.1 Knowledge-intensive employment, %		44.3	24
1.1.2 Government effectiveness*		80.1	11	5.1.2 Firms offering formal training, %		42.6	29
1.2 Regulatory environment		92.3	6	5.1.3 GERD performed by business, % GDP		2.2	7
1.2.1 Regulatory quality*		77.1	20	5.1.4 GERD financed by business, %		50.6	27
1.2.2 Rule of law*		92.1	7	5.1.5 Females employed w/advanced degrees, %		13.4	56
1.2.3 Cost of redundancy dismissal		8.0	1	5.2 Innovation linkages		63.6	9
1.3 Business environment		66.9	25	5.2.1 University-industry R&D collaboration†		68.3	26
1.3.1 Policies for doing business†		82.4	6	5.2.2 State of cluster development†		81.1	10
1.3.2 Entrepreneurship policies and culture†		51.5	35	5.2.3 GERD financed by abroad, % GDP		0.5	5
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	36
				5.2.5 Patent families/bn PPP\$ GDP		3.5	11
Human capital and research		Score/Value	Rank	5.3 Knowledge absorption		Score/Value	Rank
2.1 Education		62.0	24	5.3.1 Intellectual property payments, % total trade		0.7	52
2.1.1 Expenditure on education, % GDP		5.2	30	5.3.2 High-tech imports, % total trade		9.1	50
2.1.2 Government funding/pupil, secondary, % GDP/cap		25.4	18	5.3.3 ICT services imports, % total trade		3.4	11
2.1.3 School life expectancy, years		16.0	37	5.3.4 FDI net inflows, % GDP		-1.0	125
2.1.4 PISA scales in reading, maths and science		491.0	27	5.3.5 Research talent, % in businesses		63.3	9
2.1.5 Pupil-teacher ratio, secondary		9.4	23				
2.2 Tertiary education		55.6	5	Knowledge and technology outputs		Score/Value	Rank
2.2.1 Tertiary enrolment, % gross		87.2	15	6.1 Knowledge creation		45.2	18
2.2.2 Graduates in science and engineering, %		30.6	16	6.1.1 Patents by origin/bn PPP\$ GDP		7.8	11
2.2.3 Tertiary inbound mobility, %		18.0	10	6.1.2 PCT patents by origin/bn PPP\$ GDP		2.4	12
2.3 Research and development (R&D)		56.3	17	6.1.3 Utility models by origin/bn PPP\$ GDP		0.5	31
2.3.1 Researchers, FTE/mn pop.		6,163.0	9	6.1.4 Scientific and technical articles/bn PPP\$ GDP		29.5	23
2.3.2 Gross expenditure on R&D, % GDP		3.2	8	6.1.5 Citable documents H-index		44.4	18
2.3.3 Global corporate R&D investors, top 3, mn USD		59.2	25	6.2 Knowledge impact		48.9	19
2.3.4 QS university ranking, top 3*		44.7	27	6.2.1 Labor productivity growth, %		0.2	93
				6.2.2 Unicorn valuation, % GDP		1.6	27
				6.2.3 Software spending, % GDP		0.7	8
				6.2.4 High-tech manufacturing, %		45.7	19
Infrastructure		Score/Value	Rank	6.3 Knowledge diffusion		41.9	30
3.1 Information and communication technologies (ICTs)		86.3	17	6.3.1 Intellectual property receipts, % total trade		0.6	26
3.1.1 ICT access*		88.4	31	6.3.2 Production and export complexity		88.1	7
3.1.2 ICT use*		93.1	13	6.3.3 High-tech exports, % total trade		7.9	23
3.1.3 Government's online service*		87.0	19	6.3.4 ICT services exports, % total trade		3.6	31
3.1.4 E-participation*		76.7	21	6.3.5 ISO 9001 quality/bn PPP\$ GDP		7.1	40
3.2 General infrastructure		49.8	18				
3.2.1 Electricity output, GWh/mn pop.		7,480.7	23				
3.2.2 Logistics performance*		86.4	7				
3.2.3 Gross capital formation, % GDP		27.1	36				
3.3 Ecological sustainability		45.0	26				
3.3.1 GDP/unit of energy use		13.7	33				
3.3.2 Environmental performance*		80.7	8				
3.3.3 ISO 14001 environment/bn PPP\$ GDP		2.6	34				
Market sophistication		Score/Value	Rank				
4.1 Credit		47.9	32				
4.1.1 Finance for startups and scaleups†		61.3	31				
4.1.2 Domestic credit to private sector, % GDP		92.8	32				
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a				
4.2 Investment		17.8	41				
4.2.1 Market capitalization, % GDP		28.7	48				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		0.3	23				
4.2.3 VC recipients, deals/bn PPP\$ GDP		0.1	33				
4.2.4 VC received, value, % GDP		0.0	35				
4.3 Trade, diversification and market scale		67.5	24				
4.3.1 Applied tariff rate, weighted avg., %		1.5	20				
4.3.2 Domestic industry diversification		99.4	3				
4.3.3 Domestic market scale, bn PPP\$		599.5	41				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.


Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
104	76	Upper middle	NAWA	10.4	178.7	17,448	
		Score/Value	Rank			Score/Value	Rank
Institutions		61.2	42	Business sophistication		28.4	64
1.1 Institutional environment	49.6	54	●	5.1 Knowledge workers	31.0	66	
1.1.1 Operational stability for businesses*	55.6	56		5.1.1 Knowledge-intensive employment, %	⊙ 23.2	62	
1.1.2 Government effectiveness*	43.6	58	●	5.1.2 Firms offering formal training, %	33.9	48	
1.2 Regulatory environment	60.1	71		5.1.3 GERD performed by business, % GDP	⊙ 0.0	89	○
1.2.1 Regulatory quality*	40.6	74		5.1.4 GERD financed by business, %	⊙ 30.8	57	
1.2.2 Rule of law*	22.6	98		5.1.5 Females employed w/advanced degrees, %	⊙ 13.5	55	●
1.2.3 Cost of redundancy dismissal	13.7	51	●	5.2 Innovation linkages	27.6	48	●
1.3 Business environment	73.9	[17]		5.2.1 University-industry R&D collaboration†	⊙ 69.2	25	◆◆
1.3.1 Policies for doing business†	⊙ 73.9	22	◆◆	5.2.2 State of cluster development†	⊙ 66.9	28	◆◆
1.3.2 Entrepreneurship policies and culture†	n/a	n/a		5.2.3 GERD financed by abroad, % GDP	⊙ 0.0	96	○◇
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	115	○
				5.2.5 Patent families/bn PPP\$ GDP	0.0	95	○◇
Human capital and research		25.5	87	5.3 Knowledge absorption	26.7	[97]	
2.1 Education	46.8	76		5.3.1 Intellectual property payments, % total trade	n/a	n/a	
2.1.1 Expenditure on education, % GDP	3.5	89		5.3.2 High-tech imports, % total trade	4.9	117	
2.1.2 Government funding/pupil, secondary, % GDP/cap	23.6	28	●	5.3.3 ICT services imports, % total trade	0.4	114	◇
2.1.3 School life expectancy, years	13.5	77		5.3.4 FDI net inflows, % GDP	0.4	118	◇
2.1.4 PISA scales in reading, maths and science	402.2	65		5.3.5 Research talent, % in businesses	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	8.5	17	●				
2.2 Tertiary education	24.3	82		Knowledge and technology outputs		11.3	114
2.2.1 Tertiary enrolment, % gross	38.2	79		6.1 Knowledge creation	6.4	103	
2.2.2 Graduates in science and engineering, %	24.2	47	●	6.1.1 Patents by origin/bn PPP\$ GDP	0.9	63	
2.2.3 Tertiary inbound mobility, %	2.3	75		6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	87	
2.3 Research and development (R&D)	5.4	73		6.1.3 Utility models by origin/bn PPP\$ GDP	0.2	49	
2.3.1 Researchers, FTE/mn pop.	1,741.1	44	●	6.1.4 Scientific and technical articles/bn PPP\$ GDP	4.1	112	
2.3.2 Gross expenditure on R&D, % GDP	0.2	87		6.1.5 Citable documents H-index	5.9	95	
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	○◇	6.2 Knowledge impact	18.3	62	
2.3.4 QS university ranking, top 3*	0.0	71	○◇	6.2.1 Labor productivity growth, %	1.0	112	
				6.2.2 Unicorn valuation, % GDP	0.0	48	○◇
				6.2.3 Software spending, % GDP	0.1	102	◇
				6.2.4 High-tech manufacturing, %	12.3	85	
Infrastructure		29.5	95	6.3 Knowledge diffusion	9.2	110	◇
3.1 Information and communication technologies (ICTs)	60.3	81		6.3.1 Intellectual property receipts, % total trade	n/a	n/a	
3.1.1 ICT access*	81.0	71		6.3.2 Production and export complexity	26.5	114	○◇
3.1.2 ICT use*	65.8	81		6.3.3 High-tech exports, % total trade	0.1	118	◇
3.1.3 Government's online service*	57.1	81		6.3.4 ICT services exports, % total trade	0.5	104	
3.1.4 E-participation*	37.2	91	◇	6.3.5 ISO 9001 quality/bn PPP\$ GDP	1.7	91	
3.2 General infrastructure	9.2	125	○◇				
3.2.1 Electricity output, GWh/mn pop.	2,749.1	67		Creative outputs		12.6	100
3.2.2 Logistics performance*	n/a	n/a		7.1 Intangible assets	16.0	[96]	
3.2.3 Gross capital formation, % GDP	14.6	122	○◇	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a	
3.3 Ecological sustainability	19.0	84		7.1.2 Trademarks by origin/bn PPP\$ GDP	35.2	66	
3.3.1 GDP/unit of energy use	9.0	81		7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a	
3.3.2 Environmental performance*	33.4	77		7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.4	88	
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.5	83		7.2 Creative goods and services	3.0	97	
				7.2.1 Cultural and creative services exports, % total trade	0.1	83	
				7.2.2 National feature films/mn pop. 15-69	1.1	60	
				7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a	
				7.2.4 Creative goods exports, % total trade	0.0	121	○
				7.3 Online creativity	15.4	94	
				7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.0	98	
				7.3.2 Country-code TLDs/th pop. 15-69	1.6	76	
				7.3.3 GitHub commits/mn pop. 15-69	4.0	76	
				7.3.4 Mobile app creation/bn PPP\$ GDP	54.8	97	
Market sophistication		28.8	[85]				
4.1 Credit	8.1	[117]					
4.1.1 Finance for startups and scaleups†	n/a	n/a					
4.1.2 Domestic credit to private sector, % GDP	26.0	106	◇				
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a					
4.2 Investment	n/a	[n/a]					
4.2.1 Market capitalization, % GDP	n/a	n/a					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a					
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a					
4.2.4 VC received, value, % GDP	n/a	n/a					
4.3 Trade, diversification and market scale	49.5	88					
4.3.1 Applied tariff rate, weighted avg., %	5.9	96	◇				
4.3.2 Domestic industry diversification	83.1	68					
4.3.3 Domestic market scale, bn PPP\$	178.7	74					

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Bahrain

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
86	47	High	NAWA	1.5	87.9	57,921

	Score/Value	Rank		Score/Value	Rank
 Institutions	69.2	28 ●	 Business sophistication	22.9	92 ◇
1.1 Institutional environment	54.7	45 ◇	5.1 Knowledge workers	19.5	[100]
1.1.1 Operational stability for businesses*	52.8	65 ◇	5.1.1 Knowledge-intensive employment, %	⊙ 21.9	68
1.1.2 Government effectiveness*	56.5	40	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	73.9	36	5.1.3 GERD performed by business, % GDP	⊙ 0.0	80
1.2.1 Regulatory quality*	64.1	36	5.1.4 GERD financed by business, %	⊙ 21.8	65
1.2.2 Rule of law*	53.5	43 ◇	5.1.5 Females employed w/advanced degrees, %	n/a	n/a
1.2.3 Cost of redundancy dismissal	13.6	49	5.2 Innovation linkages	27.6	49
1.3 Business environment	79.1	[7]	5.2.1 University-industry R&D collaboration†	33.3	91 ◇
1.3.1 Policies for doing business†	79.1	10 ●	5.2.2 State of cluster development†	61.2	36
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	⊙ 0.0	71
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	16 ●
			5.2.5 Patent families/bn PPP\$ GDP	0.0	75
 Human capital and research	28.1	77 ◇	5.3 Knowledge absorption	21.5	122 ○◇
2.1 Education	47.8	74 ◇	5.3.1 Intellectual property payments, % total trade	n/a	n/a
2.1.1 Expenditure on education, % GDP	⊙ 2.3	115 ○◇	5.3.2 High-tech imports, % total trade	⊙ 4.7	118 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊙ 17.4	64	5.3.3 ICT services imports, % total trade	0.5	107 ◇
2.1.3 School life expectancy, years	⊙ 16.3	29 ●	5.3.4 FDI net inflows, % GDP	3.8	36
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	⊙ 0.4	82
2.1.5 Pupil-teacher ratio, secondary	⊙ 10.4	35	 Knowledge and technology outputs	20.9	74 ◇
2.2 Tertiary education	30.6	63 ◇	6.1 Knowledge creation	5.0	113 ◇
2.2.1 Tertiary enrolment, % gross	64.5	49	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	123 ○◇
2.2.2 Graduates in science and engineering, %	15.8	96 ◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	64
2.2.3 Tertiary inbound mobility, %	11.7	21 ●	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	5.8	71 ◇	6.1.4 Scientific and technical articles/bn PPP\$ GDP	6.7	95 ◇
2.3.1 Researchers, FTE/mn pop.	⊙ 369.0	76	6.1.5 Citable documents H-index	5.0	103 ◇
2.3.2 Gross expenditure on R&D, % GDP	⊙ 0.1	104	6.2 Knowledge impact	26.2	68 ◇
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.2.1 Labor productivity growth, %	2.3	26 ●◆
2.3.4 QS university ranking, top 3*	18.0	55	6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
			6.2.3 Software spending, % GDP	0.3	45
 Infrastructure	53.8	37	6.2.4 High-tech manufacturing, %	⊙ 9.8	93 ◇
3.1 Information and communication technologies (ICTs)	75.0	48	6.3 Knowledge diffusion	31.6	49
3.1.1 ICT access*	98.6	3 ●◆	6.3.1 Intellectual property receipts, % total trade	n/a	n/a
3.1.2 ICT use*	85.9	34 ●	6.3.2 Production and export complexity	54.8	56 ◇
3.1.3 Government's online service*	72.6	54	6.3.3 High-tech exports, % total trade	⊙ 1.4	68 ◇
3.1.4 E-participation*	43.0	86 ◇	6.3.4 ICT services exports, % total trade	4.2	26 ●
3.2 General infrastructure	65.8	2 ●◆	6.3.5 ISO 9001 quality/bn PPP\$ GDP	6.6	43
3.2.1 Electricity output, GWh/mn pop.	⊙ 19,600.5	1 ●◆	 Creative outputs	13.3	98 ◇
3.2.2 Logistics performance*	63.6	33	7.1 Intangible assets	15.2	97 ◇
3.2.3 Gross capital formation, % GDP	32.6	17 ●◆	7.1.1 Intangible asset intensity, top 15, %	-7.1	71 ◇
3.3 Ecological sustainability	20.5	79 ◇	7.1.2 Trademarks by origin/bn PPP\$ GDP	5.1	122 ○◇
3.3.1 GDP/unit of energy use	4.2	122 ○◇	7.1.3 Global brand value, top 5,000, % GDP	1.2	53
3.3.2 Environmental performance*	39.2	66 ◇	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.1	111 ○◇
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.2	42	7.2 Creative goods and services	5.5	[86]
			7.2.1 Cultural and creative services exports, % total trade	n/a	n/a
 Market sophistication	31.7	78 ◇	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	27.0	[72]	7.2.3 Entertainment and media market/th pop. 15-69	3.5	46 ◇
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.2.4 Creative goods exports, % total trade	⊙ 0.6	57
4.1.2 Domestic credit to private sector, % GDP	⊙ 73.9	47	7.3 Online creativity	17.3	83 ◇
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	5.5	56 ◇
4.2 Investment	15.1	46	7.3.2 Country-code TLDs/th pop. 15-69	1.4	81 ◇
4.2.1 Market capitalization, % GDP	66.1	26	7.3.3 GitHub commits/mn pop. 15-69	6.2	66 ◇
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	33	7.3.4 Mobile app creation/bn PPP\$ GDP	56.1	92 ◇
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	52			
4.2.4 VC received, value, % GDP	0.0	38			
4.3 Trade, diversification and market scale	52.9	81			
4.3.1 Applied tariff rate, weighted avg., %	2.0	61			
4.3.2 Domestic industry diversification	⊙ 69.9	94 ◇			
4.3.3 Domestic market scale, bn PPP\$	87.9	91			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Bangladesh

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
89	114	Lower middle	CSA	171.2	1,345.7	7,985	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
		35.7	108			15.9	126
1.1 Institutional environment		26.7	109	5.1 Knowledge workers		11.4	[119]
1.1.1 Operational stability for businesses*		34.0	112	5.1.1 Knowledge-intensive employment, %	⊙	8.3	110
1.1.2 Government effectiveness*		19.4	108	5.1.2 Firms offering formal training, %	⊙	21.9	73
1.2 Regulatory environment		37.7	122	5.1.3 GERD performed by business, % GDP		n/a	n/a
1.2.1 Regulatory quality*		20.2	118	5.1.4 GERD financed by business, %		n/a	n/a
1.2.2 Rule of law*		21.8	102	5.1.5 Females employed w/advanced degrees, %	⊙	1.3	114
1.2.3 Cost of redundancy dismissal		31.0	121	5.2 Innovation linkages		14.4	100
1.3 Business environment		42.6	[76]	5.2.1 University-industry R&D collaboration†		21.6	115
1.3.1 Policies for doing business†		42.6	79	5.2.2 State of cluster development†		34.1	84
1.3.2 Entrepreneurship policies and culture†		n/a	n/a	5.2.3 GERD financed by abroad, % GDP		n/a	n/a
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	117
				5.2.5 Patent families/bn PPP\$ GDP		0.0	95
							⊙ ◊
				5.3 Knowledge absorption		21.9	120
				5.3.1 Intellectual property payments, % total trade		0.1	99
				5.3.2 High-tech imports, % total trade	⊙	8.1	67
				5.3.3 ICT services imports, % total trade		0.2	130
				5.3.4 FDI net inflows, % GDP		0.5	114
				5.3.5 Research talent, % in businesses		n/a	n/a
Human capital and research		Score/Value	Rank	Knowledge and technology outputs		Score/Value	Rank
		11.4	125			15.2	89
2.1 Education		19.1	128	6.1 Knowledge creation		7.5	[95]
2.1.1 Expenditure on education, % GDP		1.8	122	6.1.1 Patents by origin/bn PPP\$ GDP		0.1	120
2.1.2 Government funding/pupil, secondary, % GDP/cap		6.5	96	6.1.2 PCT patents by origin/bn PPP\$ GDP		n/a	n/a
2.1.3 School life expectancy, years		12.4	90	6.1.3 Utility models by origin/bn PPP\$ GDP		n/a	n/a
2.1.4 PISA scales in reading, maths and science		n/a	n/a	6.1.4 Scientific and technical articles/bn PPP\$ GDP		4.4	111
2.1.5 Pupil-teacher ratio, secondary		33.1	123	6.1.5 Citable documents H-index		13.5	63
2.2 Tertiary education		10.3	111	6.2 Knowledge impact		27.4	62
2.2.1 Tertiary enrolment, % gross		25.1	92	6.2.1 Labor productivity growth, %		4.5	7
2.2.2 Graduates in science and engineering, %		11.1	108	6.2.2 Unicorn valuation, % GDP		0.0	48
2.2.3 Tertiary inbound mobility, %		n/a	n/a	6.2.3 Software spending, % GDP		0.2	75
2.3 Research and development (R&D)		4.9	[76]	6.2.4 High-tech manufacturing, %	⊙	6.5	99
2.3.1 Researchers, FTE/mn pop.		n/a	n/a	6.3 Knowledge diffusion		10.7	106
2.3.2 Gross expenditure on R&D, % GDP		n/a	n/a	6.3.1 Intellectual property receipts, % total trade		0.0	96
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	40	6.3.2 Production and export complexity		40.0	92
2.3.4 QS university ranking, top 3*		9.8	66	6.3.3 High-tech exports, % total trade	⊙	0.2	104
				6.3.4 ICT services exports, % total trade		0.9	90
				6.3.5 ISO 9001 quality/bn PPP\$ GDP		0.6	117
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank
		30.5	93			18.6	82
3.1 Information and communication technologies (ICTs)		55.1	90	7.1 Intangible assets		28.0	73
3.1.1 ICT access*		63.0	95	7.1.1 Intangible asset intensity, top 15, %		61.2	36
3.1.2 ICT use*		44.7	109	7.1.2 Trademarks by origin/bn PPP\$ GDP		9.2	112
3.1.3 Government's online service*		61.5	74	7.1.3 Global brand value, top 5,000, % GDP		0.4	68
3.1.4 E-participation*		51.2	74	7.1.4 Industrial designs by origin/bn PPP\$ GDP		1.1	63
3.2 General infrastructure		19.2	93	7.2 Creative goods and services		1.7	[108]
3.2.1 Electricity output, GWh/mn pop.	⊙	514.7	110	7.2.1 Cultural and creative services exports, % total trade		0.1	79
3.2.2 Logistics performance*		22.7	82	7.2.2 National feature films/mn pop. 15-69		n/a	n/a
3.2.3 Gross capital formation, % GDP		31.7	19	7.2.3 Entertainment and media market/th pop. 15-69		n/a	n/a
3.3 Ecological sustainability		17.3	96	7.2.4 Creative goods exports, % total trade	⊙	0.1	104
3.3.1 GDP/unit of energy use		17.1	14	7.3 Online creativity		16.8	87
3.3.2 Environmental performance*		7.1	129	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		0.4	114
3.3.3 ISO 14001 environment/bn PPP\$ GDP		0.2	115	7.3.2 Country-code TLDs/th pop. 15-69		0.1	126
				7.3.3 GitHub commits/mn pop. 15-69		2.2	98
				7.3.4 Mobile app creation/bn PPP\$ GDP		64.4	67
Market sophistication		Score/Value	Rank				
		23.7	100				
4.1 Credit		22.4	86				
4.1.1 Finance for startups and scaleups†		n/a	n/a				
4.1.2 Domestic credit to private sector, % GDP		39.2	83				
4.1.3 Loans from microfinance institutions, % GDP		2.7	14				
4.2 Investment		3.1	92				
4.2.1 Market capitalization, % GDP		22.1	57				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		0.0	94				
4.2.3 VC recipients, deals/bn PPP\$ GDP		0.0	88				
4.2.4 VC received, value, % GDP		0.0	78				
4.3 Trade, diversification and market scale		45.7	96				
4.3.1 Applied tariff rate, weighted avg., %		11.0	123				
4.3.2 Domestic industry diversification	⊙	79.3	79				
4.3.3 Domestic market scale, bn PPP\$		1,345.7	24				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Belarus

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
66	88	Upper middle	EUR	9.5	202.0	21,709

	Score/Value	Rank		Score/Value	Rank
 Institutions	24.3	128	 Business sophistication	26.3	74
1.1 Institutional environment	25.4	110	5.1 Knowledge workers	46.2	38
1.1.1 Operational stability for businesses*	35.4	108	5.1.1 Knowledge-intensive employment, %	41.7	27
1.1.2 Government effectiveness*	15.5	117	5.1.2 Firms offering formal training, %	31.5	54
1.2 Regulatory environment	42.9	115	5.1.3 GERD performed by business, % GDP	0.4	43
1.2.1 Regulatory quality*	18.2	121	5.1.4 GERD financed by business, %	45.0	35
1.2.2 Rule of law*	7.5	126	5.1.5 Females employed w/advanced degrees, %	20.9	30
1.2.3 Cost of redundancy dismissal	21.7	96	5.2 Innovation linkages	6.0	[127]
1.3 Business environment	4.5	[130]	5.2.1 University-industry R&D collaboration†	n/a	n/a
1.3.1 Policies for doing business†	n/a	n/a	5.2.2 State of cluster development†	n/a	n/a
1.3.2 Entrepreneurship policies and culture†	4.5	82	5.2.3 GERD financed by abroad, % GDP	0.1	41
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	105
			5.2.5 Patent families/bn PPP\$ GDP	0.1	56
 Human capital and research	39.9	37	5.3 Knowledge absorption	26.7	95
2.1 Education	61.6	26	5.3.1 Intellectual property payments, % total trade	0.5	69
2.1.1 Expenditure on education, % GDP	4.7	45	5.3.2 High-tech imports, % total trade	4.7	119
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	1.0	86
2.1.3 School life expectancy, years	15.1	47	5.3.4 FDI net inflows, % GDP	2.0	70
2.1.4 PISA scales in reading, maths and science	472.3	36	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	9.4	24	 Knowledge and technology outputs	29.9	47
2.2 Tertiary education	48.1	13	6.1 Knowledge creation	16.7	60
2.2.1 Tertiary enrolment, % gross	82.2	22	6.1.1 Patents by origin/bn PPP\$ GDP	1.8	37
2.2.2 Graduates in science and engineering, %	34.6	9	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	66
2.2.3 Tertiary inbound mobility, %	6.5	38	6.1.3 Utility models by origin/bn PPP\$ GDP	1.5	12
2.3 Research and development (R&D)	10.1	59	6.1.4 Scientific and technical articles/bn PPP\$ GDP	5.8	103
2.3.1 Researchers, FTE/mn pop.	1,417.7	49	6.1.5 Citable documents H-index	10.2	78
2.3.2 Gross expenditure on R&D, % GDP	0.5	62	6.2 Knowledge impact	23.1	88
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2.1 Labor productivity growth, %	0.9	66
2.3.4 QS university ranking, top 3*	17.6	56	6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.0	111
			6.2.4 High-tech manufacturing, %	29.5	40
 Infrastructure	38.7	71	6.3 Knowledge diffusion	49.9	18
3.1 Information and communication technologies (ICTs)	66.8	74	6.3.1 Intellectual property receipts, % total trade	0.3	38
3.1.1 ICT access*	90.0	22	6.3.2 Production and export complexity	70.0	31
3.1.2 ICT use*	87.2	28	6.3.3 High-tech exports, % total trade	1.8	63
3.1.3 Government's online service*	48.1	94	6.3.4 ICT services exports, % total trade	6.8	10
3.1.4 E-participation*	41.9	87	6.3.5 ISO 9001 quality/bn PPP\$ GDP	34.6	2
3.2 General infrastructure	22.6	81	 Creative outputs	16.3	88
3.2.1 Electricity output, GWh/mn pop.	4,109.8	54	7.1 Intangible assets	12.8	103
3.2.2 Logistics performance*	27.3	76	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.2.3 Gross capital formation, % GDP	23.8	68	7.1.2 Trademarks by origin/bn PPP\$ GDP	22.7	88
3.3 Ecological sustainability	26.6	59	7.1.3 Global brand value, top 5,000, % GDP	0.0	74
3.3.1 GDP/unit of energy use	7.1	97	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.4	58
3.3.2 Environmental performance*	50.2	44	7.2 Creative goods and services	9.2	[71]
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.0	45	7.2.1 Cultural and creative services exports, % total trade	0.4	61
			7.2.2 National feature films/mn pop. 15-69	n/a	n/a
			7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
			7.2.4 Creative goods exports, % total trade	0.9	48
 Market sophistication	23.8	99	7.3 Online creativity	30.3	40
4.1 Credit	8.9	116	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	2.0	84
4.1.1 Finance for startups and scaleups†	15.9	81	7.3.2 Country-code TLDs/th pop. 15-69	6.6	48
4.1.2 Domestic credit to private sector, % GDP	32.5	92	7.3.3 GitHub commits/mn pop. 15-69	24.2	39
4.1.3 Loans from microfinance institutions, % GDP	0.0	54	7.3.4 Mobile app creation/bn PPP\$ GDP	88.4	2
4.2 Investment	0.7	109			
4.2.1 Market capitalization, % GDP	1.4	77			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	90			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	90			
4.2.4 VC received, value, % GDP	0.0	96			
4.3 Trade, diversification and market scale	61.9	50			
4.3.1 Applied tariff rate, weighted avg., %	1.8	56			
4.3.2 Domestic industry diversification	92.8	40			
4.3.3 Domestic market scale, bn PPP\$	202.0	69			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Belgium

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
22	23	High	EUR	11.7	723.1	62,065

	Score/Value	Rank		Score/Value	Rank
 Institutions	68.3	30	 Business sophistication	60.8	10
1.1 Institutional environment	68.6	29	5.1 Knowledge workers	74.2	4
1.1.1 Operational stability for businesses*	69.4	29	5.1.1 Knowledge-intensive employment, %	49.2	12
1.1.2 Government effectiveness*	67.8	27	5.1.2 Firms offering formal training, %	57.8	10
1.2 Regulatory environment	77.3	31	5.1.3 GERD performed by business, % GDP	2.4	5
1.2.1 Regulatory quality*	76.9	22	5.1.4 GERD financed by business, %	64.3	8
1.2.2 Rule of law*	78.6	21	5.1.5 Females employed w/advanced degrees, %	28.3	7
1.2.3 Cost of redundancy dismissal	19.7	85	5.2 Innovation linkages	61.0	13
1.3 Business environment	58.9	35	5.2.1 University-industry R&D collaboration†	85.1	9
1.3.1 Policies for doing business†	66.1	31	5.2.2 State of cluster development†	74.0	19
1.3.2 Entrepreneurship policies and culture†	51.6	33	5.2.3 GERD financed by abroad, % GDP	0.5	6
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	25
			5.2.5 Patent families/bn PPP\$ GDP	2.5	15
 Human capital and research	55.4	14	5.3 Knowledge absorption	47.3	29
2.1 Education	69.6	6	5.3.1 Intellectual property payments, % total trade	0.7	55
2.1.1 Expenditure on education, % GDP	6.3	15	5.3.2 High-tech imports, % total trade	9.2	47
2.1.2 Government funding/pupil, secondary, % GDP/cap	23.3	29	5.3.3 ICT services imports, % total trade	2.9	20
2.1.3 School life expectancy, years	19.4	6	5.3.4 FDI net inflows, % GDP	-1.5	127
2.1.4 PISA scales in reading, maths and science	499.9	19	5.3.5 Research talent, % in businesses	64.3	8
2.1.5 Pupil-teacher ratio, secondary	8.7	19	 Knowledge and technology outputs	46.8	15
2.2 Tertiary education	34.9	48	6.1 Knowledge creation	50.1	13
2.2.1 Tertiary enrolment, % gross	80.9	23	6.1.1 Patents by origin/bn PPP\$ GDP	5.0	17
2.2.2 Graduates in science and engineering, %	17.6	89	6.1.2 PCT patents by origin/bn PPP\$ GDP	1.8	17
2.2.3 Tertiary inbound mobility, %	10.4	24	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	61.6	13	6.1.4 Scientific and technical articles/bn PPP\$ GDP	30.4	20
2.3.1 Researchers, FTE/mn pop.	6,604.4	8	6.1.5 Citable documents H-index	54.1	14
2.3.2 Gross expenditure on R&D, % GDP	3.2	6	6.2 Knowledge impact	49.1	18
2.3.3 Global corporate R&D investors, top 3, mn USD	65.4	19	6.2.1 Labor productivity growth, %	0.2	95
2.3.4 QS university ranking, top 3*	54.6	17	6.2.2 Unicorn valuation, % GDP	1.7	26
			6.2.3 Software spending, % GDP	0.7	10
 Infrastructure	51.6	44	6.2.4 High-tech manufacturing, %	45.9	18
3.1 Information and communication technologies (ICTs)	70.9	64	6.3 Knowledge diffusion	41.1	33
3.1.1 ICT access*	84.7	53	6.3.1 Intellectual property receipts, % total trade	0.9	23
3.1.2 ICT use*	88.8	24	6.3.2 Production and export complexity	76.3	22
3.1.3 Government's online service*	65.7	67	6.3.3 High-tech exports, % total trade	11.9	13
3.1.4 E-participation*	44.2	83	6.3.4 ICT services exports, % total trade	3.5	33
3.2 General infrastructure	50.3	17	6.3.5 ISO 9001 quality/bn PPP\$ GDP	4.3	60
3.2.1 Electricity output, GWh/mn pop.	8,560.7	16	 Creative outputs	39.4	30
3.2.2 Logistics performance*	86.4	7	7.1 Intangible assets	39.3	44
3.2.3 Gross capital formation, % GDP	24.6	60	7.1.1 Intangible asset intensity, top 15, %	62.1	34
3.3 Ecological sustainability	33.8	41	7.1.2 Trademarks by origin/bn PPP\$ GDP	34.3	70
3.3.1 GDP/unit of energy use	10.1	66	7.1.3 Global brand value, top 5,000, % GDP	4.8	35
3.3.2 Environmental performance*	66.6	21	7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.2	40
3.3.3 ISO 14001 environment/bn PPP\$ GDP	1.6	55	7.2 Creative goods and services	27.0	36
			7.2.1 Cultural and creative services exports, % total trade	1.3	22
 Market sophistication	47.9	26	7.2.2 National feature films/mn pop. 15-69	3.4	37
4.1 Credit	56.0	23	7.2.3 Entertainment and media market/th pop. 15-69	50.5	17
4.1.1 Finance for startups and scaleups†	84.4	4	7.2.4 Creative goods exports, % total trade	0.9	47
4.1.2 Domestic credit to private sector, % GDP	75.3	45	7.3 Online creativity	52.0	22
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	24.7	26
4.2 Investment	22.5	32	7.3.2 Country-code TLDs/th pop. 15-69	63.7	13
4.2.1 Market capitalization, % GDP	75.2	22	7.3.3 GitHub commits/mn pop. 15-69	57.9	15
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.3	20	7.3.4 Mobile app creation/bn PPP\$ GDP	61.9	76
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	31			
4.2.4 VC received, value, % GDP	0.0	36			
4.3 Trade, diversification and market scale	65.2	27			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	89.8	49			
4.3.3 Domestic market scale, bn PPP\$	723.1	36			

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Benin

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$		
128	108	Lower middle	SSA	13.4	53.7	4,183		
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank	
52.2		58	◆	19.4 [111]				
1.1 Institutional environment	36.4	88		5.1 Knowledge workers	9.2	[123]		
1.1.1 Operational stability for businesses*	41.7	87		5.1.1 Knowledge-intensive employment, %	6.1	117	◇	
1.1.2 Government effectiveness*	31.0	85	●	5.1.2 Firms offering formal training, %	20.0	81	◇	
1.2 Regulatory environment	59.7	74	●	5.1.3 GERD performed by business, % GDP	n/a	n/a		
1.2.1 Regulatory quality*	30.9	95		5.1.4 GERD financed by business, %	n/a	n/a		
1.2.2 Rule of law*	22.3	100		5.1.5 Females employed w/advanced degrees, %	1.2	115	◇	
1.2.3 Cost of redundancy dismissal	11.6	38	●	5.2 Innovation linkages	14.5	[97]		
1.3 Business environment	60.6	[32]		5.2.1 University–industry R&D collaboration†	26.8	102		
1.3.1 Policies for doing business†	60.6	38	◆	5.2.2 State of cluster development†	16.6	117		
1.3.2 Entrepreneurship policies and culture†	n/a	n/a		5.2.3 GERD financed by abroad, % GDP	n/a	n/a		
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	n/a	n/a		
				5.2.5 Patent families/bn PPP\$ GDP	0.0	95	◇	
Human capital and research		Score/Value	Rank	5.3 Knowledge absorption	34.6	58	●	
15.2		114		5.3.1 Intellectual property payments, % total trade	0.0	114	◇	
2.1 Education	31.1	119		5.3.2 High-tech imports, % total trade	3.8	126		
2.1.1 Expenditure on education, % GDP	3.2	103		5.3.3 ICT services imports, % total trade	3.4	12	◆	
2.1.2 Government funding/pupil, secondary, % GDP/cap	8.2	95	⊙	5.3.4 FDI net inflows, % GDP	1.5	87		
2.1.3 School life expectancy, years	10.8	100		5.3.5 Research talent, % in businesses	n/a	n/a		
2.1.4 PISA scales in reading, maths and science	n/a	n/a						
2.1.5 Pupil–teacher ratio, secondary	18.1	91						
2.2 Tertiary education	14.4	104		Knowledge and technology outputs		11.0	116	
2.2.1 Tertiary enrolment, % gross	11.1	111		6.1 Knowledge creation	5.4	111		
2.2.2 Graduates in science and engineering, %	19.7	74		6.1.1 Patents by origin/bn PPP\$ GDP	0.2	99		
2.2.3 Tertiary inbound mobility, %	3.0	66	●	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	90		
2.3 Research and development (R&D)	0.0	[119]		6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	75	◇	
2.3.1 Researchers, FTE/mn pop.	n/a	n/a		6.1.4 Scientific and technical articles/bn PPP\$ GDP	9.3	79	●	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a		6.1.5 Citable documents H-index	4.6	108		
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	◇	6.2 Knowledge impact	26.9	64	●	
2.3.4 QS university ranking, top 3*	0.0	71	◇	6.2.1 Labor productivity growth, %	3.5	9	◆	
				6.2.2 Unicorn valuation, % GDP	0.0	48	◇	
				6.2.3 Software spending, % GDP	0.1	104		
				6.2.4 High-tech manufacturing, %	n/a	n/a		
Infrastructure		Score/Value	Rank	6.3 Knowledge diffusion	0.8	132	◇	
22.7		114		6.3.1 Intellectual property receipts, % total trade	0.0	108		
3.1 Information and communication technologies (ICTs)	35.8	114		6.3.2 Production and export complexity	n/a	n/a		
3.1.1 ICT access*	32.6	121	◇	6.3.3 High-tech exports, % total trade	0.0	127		
3.1.2 ICT use*	30.6	116	◇	6.3.4 ICT services exports, % total trade	0.0	132	◇	
3.1.3 Government's online service*	47.4	96		6.3.5 ISO 9001 quality/bn PPP\$ GDP	0.9	111		
3.1.4 E-participation*	32.6	100						
3.2 General infrastructure	21.4	83	●	Creative outputs		2.6	129	◇
3.2.1 Electricity output, GWh/mn pop.	81.7	123	◇	7.1 Intangible assets	1.5	129	◇	
3.2.2 Logistics performance*	36.4	65	●	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a		
3.2.3 Gross capital formation, % GDP	28.6	28	●	7.1.2 Trademarks by origin/bn PPP\$ GDP	4.0	127	◇	
3.3 Ecological sustainability	11.0	124	◇	7.1.3 Global brand value, top 5,000, % GDP	0.0	74	◇	
3.3.1 GDP/unit of energy use	7.1	96		7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.1	112		
3.3.2 Environmental performance*	18.1	113		7.2 Creative goods and services	0.1	[130]		
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.1	123		7.2.1 Cultural and 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 and media market/th pop. 15–69	n/a	n/a		
				7.2.4 Creative goods exports, % total trade	0.0	122		
				7.3 Online creativity	7.1	120	◇	
				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	0.1	124		
				7.3.3 GitHub commits/mn pop. 15–69	0.8	117		
				7.3.4 Mobile app creation/bn PPP\$ GDP	26.9	119	◇	
Market sophistication		Score/Value	Rank					
16.7		118						
4.1 Credit	14.7	102						
4.1.1 Finance for startups and scaleups†	n/a	n/a						
4.1.2 Domestic credit to private sector, % GDP	15.5	117						
4.1.3 Loans from microfinance institutions, % GDP	2.2	18	●					
4.2 Investment	n/a	[n/a]						
4.2.1 Market capitalization, % GDP	n/a	n/a						
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a						
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a						
4.2.4 VC received, value, % GDP	n/a	n/a						
4.3 Trade, diversification and market scale	18.6	127	◇					
4.3.1 Applied tariff rate, weighted avg., %	9.9	117						
4.3.2 Domestic industry diversification	n/a	n/a						
4.3.3 Domestic market scale, bn PPP\$	53.7	104						

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Bolivia (Plurinational State of)

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
101	91	Lower middle	LCN	12.2	118.8	9,933	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		22.2	120	5.1 Knowledge workers		25.1	81
1.1.1	Operational stability for businesses*	27.8	120	5.1.1	Knowledge-intensive employment, %	13.9	92
1.1.2	Government effectiveness*	16.5	113	5.1.2	Firms offering formal training, %	49.9	20
1.2 Regulatory environment		8.9	132	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	12.2	129	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	5.6	128	5.1.5	Females employed w/advanced degrees, %	11.9	64
1.2.3	Cost of redundancy dismissal	n/a	n/a	5.2 Innovation linkages		8.1	124
1.3 Business environment		5.7	[129]	5.2.1	University-industry R&D collaboration [†]	12.3	123
1.3.1	Policies for doing business [†]	5.7	127	5.2.2	State of cluster development [†]	17.9	115
1.3.2	Entrepreneurship policies and culture [†]	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	n/a	n/a
Human capital and research		32.5	[61]	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	112
2.1 Education		65.0	[15]	5.2.5	Patent families/bn PPP\$ GDP	0.0	95
2.1.1	Expenditure on education, % GDP	8.4	2	5.3 Knowledge absorption		27.0	93
2.1.2	Government funding/pupil, secondary, % GDP/cap	24.1	25	5.3.1	Intellectual property payments, % total trade	0.5	71
2.1.3	School life expectancy, years	n/a	n/a	5.3.2	High-tech imports, % total trade	7.4	77
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	0.9	92
2.1.5	Pupil-teacher ratio, secondary	18.7	95	5.3.4	FDI net inflows, % GDP	-0.7	124
2.2 Tertiary education		n/a	[n/a]	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	n/a	n/a	Knowledge and technology outputs		12.7	106
2.2.2	Graduates in science and engineering, %	n/a	n/a	6.1 Knowledge creation		6.1	105
2.2.3	Tertiary inbound mobility, %	n/a	n/a	6.1.1	Patents by origin/bn PPP\$ GDP	0.6	72
2.3 Research and development (R&D)		0.0	[119]	6.1.2	PCT patents by origin/bn PPP\$ GDP	n/a	n/a
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	6.1.3	Utility models by origin/bn PPP\$ GDP	0.1	54
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	6.1.4	Scientific and technical articles/bn PPP\$ GDP	2.5	119
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40	6.1.5	Citable documents H-index	6.6	92
2.3.4	QS university ranking, top 3*	0.0	71	6.2 Knowledge impact		21.2	98
Infrastructure		27.0	104	6.2.1	Labor productivity growth, %	0.3	88
3.1 Information and communication technologies (ICTs)		50.2	99	6.2.2	Unicorn valuation, % GDP	0.0	48
3.1.1	ICT access*	62.5	96	6.2.3	Software spending, % GDP	0.3	50
3.1.2	ICT use*	61.0	91	6.2.4	High-tech manufacturing, %	10.6	87
3.1.3	Government's online service*	46.9	97	6.3 Knowledge diffusion		10.9	103
3.1.4	E-participation*	30.2	104	6.3.1	Intellectual property receipts, % total trade	0.1	69
3.2 General infrastructure		9.4	124	6.3.2	Production and export complexity	33.7	105
3.2.1	Electricity output, GWh/mn pop.	911.9	101	6.3.3	High-tech exports, % total trade	0.4	90
3.2.2	Logistics performance*	13.6	103	6.3.4	ICT services exports, % total trade	0.5	102
3.2.3	Gross capital formation, % GDP	18.0	112	6.3.5	ISO 9001 quality/bn PPP\$ GDP	2.3	84
3.3 Ecological sustainability		21.4	76	Creative outputs		12.2	102
3.3.1	GDP/unit of energy use	10.5	60	7.1 Intangible assets		14.2	[100]
3.3.2	Environmental performance*	35.9	73	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.5	80	7.1.2	Trademarks by origin/bn PPP\$ GDP	37.0	62
Market sophistication		55.3	16	7.1.3	Global brand value, top 5,000, % GDP	n/a	n/a
4.1 Credit		63.0	14	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.2	108
4.1.1	Finance for startups and scaleups [†]	n/a	n/a	7.2 Creative goods and services		9.0	72
4.1.2	Domestic credit to private sector, % GDP	71.2	51	7.2.1	Cultural and creative services exports, % total trade	0.0	95
4.1.3	Loans from microfinance institutions, % GDP	16.8	1	7.2.2	National feature films/mn pop. 15-69	0.8	67
4.2 Investment		n/a	[n/a]	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	n/a	n/a	7.2.4	Creative goods exports, % total trade	1.9	26
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a	7.3 Online creativity		11.4	111
4.2.3	VC recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1.9	88
4.2.4	VC received, value, % GDP	n/a	n/a	7.3.2	Country-code TLDs/th pop. 15-69	0.5	99
4.3 Trade, diversification and market scale		47.6	91	7.3.3	GitHub commits/mn pop. 15-69	3.0	90
4.3.1	Applied tariff rate, weighted avg., %	5.2	91	7.3.4	Mobile app creation/bn PPP\$ GDP	40.4	112
4.3.2	Domestic industry diversification	73.9	90				
4.3.3	Domestic market scale, bn PPP\$	118.8	85				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Bosnia and Herzegovina



Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
80	75	Upper middle	EUR	3.2	62.2	17,899

		Score/ Value	Rank			Score/ Value	Rank
Institutions		36.5	104	Business sophistication		20.5	106
1.1	Institutional environment	24.8	113	5.1	Knowledge workers	30.9	67
1.1.1	Operational stability for businesses*	41.7	87	5.1.1	Knowledge-intensive employment, %	25.2	55
1.1.2	Government effectiveness*	8.0	127	5.1.2	Firms offering formal training, %	37.9	39
1.2	Regulatory environment	66.0	56	5.1.3	GERD performed by business, % GDP	0.1	64
1.2.1	Regulatory quality*	37.5	81	5.1.4	GERD financed by business, %	29.4	59
1.2.2	Rule of law*	31.6	80	5.1.5	Females employed w/advanced degrees, %	10.7	71
1.2.3	Cost of redundancy dismissal	9.2	24	5.2	Innovation linkages	9.8	119
1.3	Business environment	18.7	120	5.2.1	University–industry R&D collaboration†	11.0	126
1.3.1	Policies for doing business†	11.2	126	5.2.2	State of cluster development†	31.2	90
1.3.2	Entrepreneurship policies and culture†	26.1	66	5.2.3	GERD financed by abroad, % GDP	0.0	74
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	79
				5.2.5	Patent families/bn PPP\$ GDP	0.0	81
Human capital and research		30.5	68	5.3	Knowledge absorption	20.7	127
2.1	Education	61.3	[28]	5.3.1	Intellectual property payments, % total trade	0.2	95
2.1.1	Expenditure on education, % GDP	n/a	n/a	5.3.2	High-tech imports, % total trade	6.0	103
2.1.2	Government funding/pupil, secondary, % GDP/cap	33.5	5	5.3.3	ICT services imports, % total trade	0.5	108
2.1.3	School life expectancy, years	n/a	n/a	5.3.4	FDI net inflows, % GDP	2.4	65
2.1.4	PISA scales in reading, maths and science	402.6	63	5.3.5	Research talent, % in businesses	9.7	62
2.1.5	Pupil–teacher ratio, secondary	8.3	13	Knowledge and technology outputs		23.1	64
2.2	Tertiary education	28.2	73	6.1	Knowledge creation	11.2	79
2.2.1	Tertiary enrolment, % gross	39.2	78	6.1.1	Patents by origin/bn PPP\$ GDP	0.9	61
2.2.2	Graduates in science and engineering, %	24.0	50	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	68
2.2.3	Tertiary inbound mobility, %	6.6	37	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3	Research and development (R&D)	1.9	90	6.1.4	Scientific and technical articles/bn PPP\$ GDP	11.8	66
2.3.1	Researchers, FTE/mn pop.	447.2	72	6.1.5	Citable documents H-index	5.5	98
2.3.2	Gross expenditure on R&D, % GDP	0.2	89	6.2	Knowledge impact	21.0	100
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40	6.2.1	Labor productivity growth, %	1.5	45
2.3.4	QS university ranking, top 3*	0.0	71	6.2.2	Unicorn valuation, % GDP	0.0	48
				6.2.3	Software spending, % GDP	0.1	98
				6.2.4	High-tech manufacturing, %	16.6	73
Infrastructure		39.5	67	6.3	Knowledge diffusion	37.1	37
3.1	Information and communication technologies (ICTs)	59.5	83	6.3.1	Intellectual property receipts, % total trade	0.1	50
3.1.1	ICT access*	78.7	77	6.3.2	Production and export complexity	67.2	36
3.1.2	ICT use*	63.5	87	6.3.3	High-tech exports, % total trade	2.9	48
3.1.3	Government's online service*	43.6	102	6.3.4	ICT services exports, % total trade	2.2	54
3.1.4	E-participation*	52.3	71	6.3.5	ISO 9001 quality/bn PPP\$ GDP	23.4	6
3.2	General infrastructure	28.6	58	Creative outputs		15.6	91
3.2.1	Electricity output, GWh/mn pop.	5,639.0	38	7.1	Intangible assets	17.5	91
3.2.2	Logistics performance*	40.9	60	7.1.1	Intangible asset intensity, top 15, %	-27.9	76
3.2.3	Gross capital formation, % GDP	21.8	83	7.1.2	Trademarks by origin/bn PPP\$ GDP	17.9	96
3.3	Ecological sustainability	30.3	53	7.1.3	Global brand value, top 5,000, % GDP	0.0	74
3.3.1	GDP/unit of energy use	6.4	104	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.9	73
3.3.2	Environmental performance*	34.7	75	7.2	Creative goods and services	12.1	63
3.3.3	ISO 14001 environment/bn PPP\$ GDP	5.6	17	7.2.1	Cultural and creative services exports, % total trade	0.4	60
				7.2.2	National feature films/mn pop. 15–69	3.7	35
				7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a
				7.2.4	Creative goods exports, % total trade	0.4	68
Market sophistication		47.9	27	7.3	Online creativity	15.2	96
4.1	Credit	35.9	50	7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.4	66
4.1.1	Finance for startups and scaleups†	50.8	44	7.3.2	Country-code TLDs/th pop. 15–69	3.3	63
4.1.2	Domestic credit to private sector, % GDP	58.5	63	7.3.3	GitHub commits/mn pop. 15–69	7.0	61
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4	Mobile app creation/bn PPP\$ GDP	47.2	105
4.2	Investment	n/a	[n/a]				
4.2.1	Market capitalization, % GDP	n/a	n/a				
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a				
4.2.3	VC recipients, deals/bn PPP\$ GDP	n/a	n/a				
4.2.4	VC received, value, % GDP	n/a	n/a				
4.3	Trade, diversification and market scale	59.9	56				
4.3.1	Applied tariff rate, weighted avg., %	2.9	72				
4.3.2	Domestic industry diversification	96.9	18				
4.3.3	Domestic market scale, bn PPP\$	62.2	100				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
110	61	Upper middle	SSA	2.6	47.0	19,199	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
63.5		37	◆	29.6		56	
1.1 Institutional environment	58.0	42	◆	5.1 Knowledge workers	28.8	74	
1.1.1 Operational stability for businesses*	69.4	29	◆◆	5.1.1 Knowledge-intensive employment, %	23.3	61	
1.1.2 Government effectiveness*	46.5	51		5.1.2 Firms offering formal training, %	n/a	n/a	
1.2 Regulatory environment	65.8	58		5.1.3 GERD performed by business, % GDP	⊙	0.1	63
1.2.1 Regulatory quality*	58.0	44	◆	5.1.4 GERD financed by business, %	⊙	17.7	70
1.2.2 Rule of law*	53.8	42	◆	5.1.5 Females employed w/advanced degrees, %		17.9	40
1.2.3 Cost of redundancy dismissal	20.3	88		5.2 Innovation linkages	29.2	42	◆
1.3 Business environment	66.8	26	◆◆	5.2.1 University-industry R&D collaboration†	57.4	39	
1.3.1 Policies for doing business†	75.3	17	◆◆	5.2.2 State of cluster development†	62.9	35	◆◆
1.3.2 Entrepreneurship policies and culture†	⊙ 58.3	25		5.2.3 GERD financed by abroad, % GDP	⊙	0.1	33
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	62
				5.2.5 Patent families/bn PPP\$ GDP		0.0	95
				⊙			○◇
Human capital and research		29.7	73	5.3 Knowledge absorption	30.7	77	
2.1 Education	68.9	[9]	◆◆	5.3.1 Intellectual property payments, % total trade	0.8	51	
2.1.1 Expenditure on education, % GDP	⊙ 8.1	3	◆◆	5.3.2 High-tech imports, % total trade	5.3	111	
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a		5.3.3 ICT services imports, % total trade	3.0	16	◆◆
2.1.3 School life expectancy, years	12.1	92	◇	5.3.4 FDI net inflows, % GDP	0.4	120	◇
2.1.4 PISA scales in reading, maths and science	n/a	n/a		5.3.5 Research talent, % in businesses	⊙ 1.0	79	
2.1.5 Pupil-teacher ratio, secondary	11.5	46					
2.2 Tertiary education	17.2	96	◇	Knowledge and technology outputs		11.0	117
2.2.1 Tertiary enrolment, % gross	24.7	94	◇	6.1 Knowledge creation	5.9	108	
2.2.2 Graduates in science and engineering, %	19.7	71		6.1.1 Patents by origin/bn PPP\$ GDP	0.1	116	
2.2.3 Tertiary inbound mobility, %	2.5	72		6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	101	○◇
2.3 Research and development (R&D)	2.9	88		6.1.3 Utility models by origin/bn PPP\$ GDP	0.1	51	
2.3.1 Researchers, FTE/mn pop.	⊙ 185.2	83		6.1.4 Scientific and technical articles/bn PPP\$ GDP	10.1	73	
2.3.2 Gross expenditure on R&D, % GDP	⊙ 0.6	57		6.1.5 Citable documents H-index	5.2	100	
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	○◇	6.2 Knowledge impact	18.9	111	
2.3.4 QS university ranking, top 3*	0.0	71	○◇	6.2.1 Labor productivity growth, %	-0.6	113	
				6.2.2 Unicorn valuation, % GDP	0.0	48	○◇
				6.2.3 Software spending, % GDP	0.1	90	
				6.2.4 High-tech manufacturing, %	22.1	58	
Infrastructure		34.2	85	6.3 Knowledge diffusion	8.3	114	◇
3.1 Information and communication technologies (ICTs)	45.6	105	◇	6.3.1 Intellectual property receipts, % total trade	0.0	90	
3.1.1 ICT access*	82.0	69		6.3.2 Production and export complexity	32.3	109	◇
3.1.2 ICT use*	65.4	85		6.3.3 High-tech exports, % total trade	0.3	101	
3.1.3 Government's online service*	19.8	129	○◇	6.3.4 ICT services exports, % total trade	0.2	118	
3.1.4 E-participation*	15.1	128	○◇	6.3.5 ISO 9001 quality/bn PPP\$ GDP	0.5	120	
3.2 General infrastructure	24.3	76					
3.2.1 Electricity output, GWh/mn pop.	⊙ 926.9	100	◇	Creative outputs		11.1	106
3.2.2 Logistics performance*	45.5	56		7.1 Intangible assets	19.1	88	
3.2.3 Gross capital formation, % GDP	25.8	45		7.1.1 Intangible asset intensity, top 15, %	1.8	70	
3.3 Ecological sustainability	32.8	44		7.1.2 Trademarks by origin/bn PPP\$ GDP	⊙ 18.2	95	◇
3.3.1 GDP/unit of energy use	14.3	29	●	7.1.3 Global brand value, top 5,000, % GDP	0.0	74	○◇
3.3.2 Environmental performance*	59.5	33	◆◆	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.4	87	
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.5	82		7.2 Creative goods and services	1.9	[104]	
				7.2.1 Cultural and creative services exports, % total trade	0.1	84	
				7.2.2 National feature films/mn pop. 15-69	n/a	n/a	
				7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a	
				7.2.4 Creative goods exports, % total trade	0.1	92	
				7.3 Online creativity	4.5	122	◇
				7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.1	95	
				7.3.2 Country-code TLDs/th pop. 15-69	1.9	73	
				7.3.3 GitHub commits/mn pop. 15-69	1.3	109	
				7.3.4 Mobile app creation/bn PPP\$ GDP	13.5	122	○◇
Market sophistication		33.7	70				
4.1 Credit	38.2	44					
4.1.1 Finance for startups and scaleups†	⊙ 66.2	24					
4.1.2 Domestic credit to private sector, % GDP	39.8	81					
4.1.3 Loans from microfinance institutions, % GDP	⊙ 3.0	12	●				
4.2 Investment	3.2	[90]					
4.2.1 Market capitalization, % GDP	n/a	n/a					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a					
4.2.3 VC recipients, deals/bn PPP\$ GDP	⊙ 0.0	75					
4.2.4 VC received, value, % GDP	⊙ 0.0	92					
4.3 Trade, diversification and market scale	59.8	57					
4.3.1 Applied tariff rate, weighted avg., %	0.8	8	◆◆				
4.3.2 Domestic industry diversification	83.6	67					
4.3.3 Domestic market scale, bn PPP\$	47.0	112					

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Brazil

49





Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$		
49	59	Upper middle	LCN	215.3	3,782.8	17,684		
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank	
38.5		99	37.6		39	◆		
1.1 Institutional environment	34.9	91	5.1 Knowledge workers	44.9	[41]			
1.1.1 Operational stability for businesses*	45.8	79	5.1.1 Knowledge-intensive employment, %	23.9	60			
1.1.2 Government effectiveness*	24.0	98	5.1.2 Firms offering formal training, %	n/a	n/a			
1.2 Regulatory environment	60.3	70	5.1.3 GERD performed by business, % GDP	n/a	n/a			
1.2.1 Regulatory quality*	39.2	79	5.1.4 GERD financed by business, %	43.2	39			
1.2.2 Rule of law*	31.5	81	5.1.5 Females employed w/advanced degrees, %	14.5	52			
1.2.3 Cost of redundancy dismissal	15.4	62	5.2 Innovation linkages	23.3	60			
1.3 Business environment	20.2	118 ○◇	5.2.1 University–industry R&D collaboration†	38.2	78			
1.3.1 Policies for doing business†	31.7	103 ○	5.2.2 State of cluster development†	47.5	50			
1.3.2 Entrepreneurship policies and culture†	8.7	79 ○◇	5.2.3 GERD financed by abroad, % GDP	n/a	n/a			
5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP			5.2.4	0.0	77			
5.2.5 Patent families/bn PPP\$ GDP			5.2.5	0.1	53			
Human capital and research		Score/Value	Rank	Knowledge absorption		Score/Value	Rank	
33.5		56	44.7		32	◆		
2.1 Education	50.0	68	5.3.1 Intellectual property payments, % total trade	1.8	17	◆◆		
2.1.1 Expenditure on education, % GDP	6.0	19 ●	5.3.2 High-tech imports, % total trade	13.5	19	●		
2.1.2 Government funding/pupil, secondary, % GDP/cap	21.4	44	5.3.3 ICT services imports, % total trade	2.1	34			
2.1.3 School life expectancy, years	15.1	49	5.3.4 FDI net inflows, % GDP	3.1	45			
2.1.4 PISA scales in reading, maths and science	400.0	68 ○	5.3.5 Research talent, % in businesses	26.1	50	⊖		
2.1.5 Pupil–teacher ratio, secondary	16.3	84	Knowledge and technology outputs		26.8	52		
2.2 Tertiary education	19.8	90	6.1 Knowledge creation	21.2	53			
2.2.1 Tertiary enrolment, % gross	54.6	63	6.1.1 Patents by origin/bn PPP\$ GDP	1.4	49			
2.2.2 Graduates in science and engineering, %	17.5	90 ○	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	51			
2.2.3 Tertiary inbound mobility, %	0.2	107 ○◇	6.1.3 Utility models by origin/bn PPP\$ GDP	0.7	26			
2.3 Research and development (R&D)	30.8	35 ◆	6.1.4 Scientific and technical articles/bn PPP\$ GDP	12.8	61			
2.3.1 Researchers, FTE/mn pop.	887.7	54	6.1.5 Citable documents H-index	39.4	23	◆◆		
2.3.2 Gross expenditure on R&D, % GDP	1.2	34	6.2 Knowledge impact	37.4	37 ◆			
2.3.3 Global corporate R&D investors, top 3, mn USD	48.9	34	6.2.1 Labor productivity growth, %	-0.1	100 ○			
2.3.4 QS university ranking, top 3*	44.1	30	6.2.2 Unicorn valuation, % GDP	1.9	22	◆◆		
Infrastructure		43.5	58	6.2.3 Software spending, % GDP	0.3	44		
3.1 Information and communication technologies (ICTs)	81.0	36 ◆	6.2.4 High-tech manufacturing, %	35.6	33			
3.1.1 ICT access*	72.9	84	6.3 Knowledge diffusion	22.0	67			
3.1.2 ICT use*	73.1	66	6.3.1 Intellectual property receipts, % total trade	0.2	41			
3.1.3 Government's online service*	88.5	14	6.3.2 Production and export complexity	53.2	59			
3.1.4 E-participation*	89.5	11	6.3.3 High-tech exports, % total trade	2.1	58			
3.2 General infrastructure	25.6	70	6.3.4 ICT services exports, % total trade	1.1	86			
3.2.1 Electricity output, GWh/mn pop.	3,065.9	66	6.3.5 ISO 9001 quality/bn PPP\$ GDP	4.8	56			
3.2.2 Logistics performance*	50.0	50	Creative outputs		31.2	46		
3.2.3 Gross capital formation, % GDP	18.8	104 ○	7.1 Intangible assets	47.4	31			
3.3 Ecological sustainability	23.9	65	7.1.1 Intangible asset intensity, top 15, %	64.1	30			
3.3.1 GDP/unit of energy use	10.2	63	7.1.2 Trademarks by origin/bn PPP\$ GDP	100.9	13	◆◆		
3.3.2 Environmental performance*	41.9	60	7.1.3 Global brand value, top 5,000, % GDP	3.6	39			
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.9	69	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.3	60			
Market sophistication		Score/Value	Rank	Creative goods and services		Score/Value	Rank	
38.1		50	5.6		85			
4.1 Credit	24.1	80	7.2.1 Cultural and creative services exports, % total trade	0.5	53			
4.1.1 Finance for startups and scaleups†	46.6	51	7.2.2 National feature films/mn pop. 15–69	0.8	63 ○			
4.1.2 Domestic credit to private sector, % GDP	70.0	52	7.2.3 Entertainment and media market/th pop. 15–69	5.4	41			
4.1.3 Loans from microfinance institutions, % GDP	0.0	55 ○	7.2.4 Creative goods exports, % total trade	0.2	80			
4.2 Investment	16.9	44	7.3 Online creativity	24.6	52			
4.2.1 Market capitalization, % GDP	59.8	30	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.8	89			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	53	7.3.2 Country-code TLDs/th pop. 15–69	9.3	42			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	46	7.3.3 GitHub commits/mn pop. 15–69	14.1	49			
4.2.4 VC received, value, % GDP	0.0	27	7.3.4 Mobile app creation/bn PPP\$ GDP	73.2	40			
4.3 Trade, diversification and market scale	73.3	18 ●	4.3.1 Applied tariff rate, weighted avg., %		8.4	107 ○◇		
4.3.1 Applied tariff rate, weighted avg., %	8.4	107 ○◇	4.3.2 Domestic industry diversification		93.1	39		
4.3.2 Domestic industry diversification	93.1	39	4.3.3 Domestic market scale, bn PPP\$		3,782.8	8	◆◆	
4.3.3 Domestic market scale, bn PPP\$	3,782.8	8						

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Brunei Darussalam

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
125	53	High	SEAO	0.4	31.9	74,196

	Score/Value	Rank		Score/Value	Rank
 Institutions	72.9	20 ●	 Business sophistication	25.3	80 ◇
1.1 Institutional environment	84.3	6 ●◆	5.1 Knowledge workers	30.7	[68]
1.1.1 Operational stability for businesses*	91.7	3 ●◆	5.1.1 Knowledge-intensive employment, %	33.5	43
1.1.2 Government effectiveness*	76.9	15 ●	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	83.4	20 ●	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	67.9	31 ●	5.1.4 GERD financed by business, %	0.0	98 ○◇
1.2.2 Rule of law*	65.8	32 ●	5.1.5 Females employed w/advanced degrees, %	13.0	58 ◇
1.2.3 Cost of redundancy dismissal	8.0	1 ●◆	5.2 Innovation linkages	21.4	66 ◇
1.3 Business environment	50.9	[52]	5.2.1 University–industry R&D collaboration†	53.5	47
1.3.1 Policies for doing business†	50.9	59	5.2.2 State of cluster development†	41.7	63
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.0	91 ◇
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	43
			5.2.5 Patent families/bn PPP\$ GDP	0.0	68
 Human capital and research	33.2	57 ◇	5.3 Knowledge absorption	23.7	111 ◇
2.1 Education	52.2	63	5.3.1 Intellectual property payments, % total trade	0.2	93 ◇
2.1.1 Expenditure on education, % GDP	4.4	56	5.3.2 High-tech imports, % total trade	2.8	130 ○◇
2.1.2 Government funding/pupil, secondary, % GDP/cap	24.0	26	5.3.3 ICT services imports, % total trade	1.1	80
2.1.3 School life expectancy, years	14.0	72 ◇	5.3.4 FDI net inflows, % GDP	3.0	47
2.1.4 PISA scales in reading, maths and science	423.1	53 ◇	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil–teacher ratio, secondary	7.2	3 ●◆	 Knowledge and technology outputs	9.8	126 ○◇
2.2 Tertiary education	37.9	39	6.1 Knowledge creation	8.7	89 ◇
2.2.1 Tertiary enrolment, % gross	32.0	86 ◇	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	118 ◇
2.2.2 Graduates in science and engineering, %	38.4	4 ●◆	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	101 ○◇
2.2.3 Tertiary inbound mobility, %	3.7	59	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	9.5	63 ◇	6.1.4 Scientific and technical articles/bn PPP\$ GDP	15.1	50
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index	4.3	110 ◇
2.3.2 Gross expenditure on R&D, % GDP	0.3	80 ◇	6.2 Knowledge impact	17.1	116 ◇
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.2.1 Labor productivity growth, %	-1.7	121 ◇
2.3.4 QS university ranking, top 3*	23.5	46	6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
			6.2.3 Software spending, % GDP	0.2	62
 Infrastructure	45.2	54 ◇	6.2.4 High-tech manufacturing, %	n/a	n/a
3.1 Information and communication technologies (ICTs)	65.5	75 ◇	6.3 Knowledge diffusion	3.5	128 ○◇
3.1.1 ICT access*	76.6	81 ◇	6.3.1 Intellectual property receipts, % total trade	0.0	114 ○◇
3.1.2 ICT use*	84.6	41	6.3.2 Production and export complexity	n/a	n/a
3.1.3 Government's online service*	54.4	86 ◇	6.3.3 High-tech exports, % total trade	0.3	98 ◇
3.1.4 E-participation*	46.5	80 ◇	6.3.4 ICT services exports, % total trade	0.0	129 ○◇
3.2 General infrastructure	48.3	20 ●	6.3.5 ISO 9001 quality/bn PPP\$ GDP	2.9	76
3.2.1 Electricity output, GWh/mn pop.	13,135.0	10 ●	 Creative outputs	4.4	[127]
3.2.2 Logistics performance*	n/a	n/a	7.1 Intangible assets	1.5	[128]
3.2.3 Gross capital formation, % GDP	30.0	25 ●◆	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	21.8	75 ◇	7.1.2 Trademarks by origin/bn PPP\$ GDP	6.0	118 ◇
3.3.1 GDP/unit of energy use	6.9	99	7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a
3.3.2 Environmental performance*	45.4	55	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.0	120 ○◇
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.8	70 ◇	7.2 Creative goods and services	0.2	[129]
			7.2.1 Cultural and creative services exports, % total trade	0.0	109 ○◇
 Market sophistication	22.7	[105]	7.2.2 National feature films/mn pop. 15–69	n/a	n/a
4.1 Credit	13.5	[104]	7.2.3 Entertainment and media market/th pop. 15–69	n/a	n/a
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.2.4 Creative goods exports, % total trade	0.0	116
4.1.2 Domestic credit to private sector, % GDP	39.7	82 ◇	7.3 Online creativity	14.4	101 ◇
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	8.1	46
4.2 Investment	4.3	[84]	7.3.2 Country-code TLDs/th pop. 15–69	1.1	86 ◇
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.3 GitHub commits/mn pop. 15–69	4.3	74 ◇
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	47	7.3.4 Mobile app creation/bn PPP\$ GDP	43.9	109 ◇
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a			
4.2.4 VC received, value, % GDP	n/a	n/a			
4.3 Trade, diversification and market scale	50.2	86 ◇			
4.3.1 Applied tariff rate, weighted avg., %	0.0	2 ●◆			
4.3.2 Domestic industry diversification	n/a	n/a			
4.3.3 Domestic market scale, bn PPP\$	31.9	124 ○			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Bulgaria

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
34	45	Upper middle	EUR	6.8	198.3	29,178

	Score/Value	Rank		Score/Value	Rank
 Institutions	49.5	66	 Business sophistication	36.0	42
1.1 Institutional environment	43.2	73	5.1 Knowledge workers	37.3	54
1.1.1 Operational stability for businesses*	53.5	64	5.1.1 Knowledge-intensive employment, %	32.6	45
1.1.2 Government effectiveness*	32.9	80	5.1.2 Firms offering formal training, %	20.0	81
1.2 Regulatory environment	72.4	39	5.1.3 GERD performed by business, % GDP	0.5	39
1.2.1 Regulatory quality*	53.7	49	5.1.4 GERD financed by business, %	35.4	53
1.2.2 Rule of law*	38.4	63	5.1.5 Females employed w/advanced degrees, %	20.1	33
1.2.3 Cost of redundancy dismissal	8.6	16	5.2 Innovation linkages	33.0	38
1.3 Business environment	33.0	94	5.2.1 University-industry R&D collaboration†	48.0	53
1.3.1 Policies for doing business†	38.5	90	5.2.2 State of cluster development†	47.6	49
1.3.2 Entrepreneurship policies and culture†	27.5	63	5.2.3 GERD financed by abroad, % GDP	0.3	10
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	47
			5.2.5 Patent families/bn PPP\$ GDP	0.3	41
 Human capital and research	31.1	66	5.3 Knowledge absorption	37.6	52
2.1 Education	48.8	71	5.3.1 Intellectual property payments, % total trade	0.6	64
2.1.1 Expenditure on education, % GDP	4.2	65	5.3.2 High-tech imports, % total trade	8.0	70
2.1.2 Government funding/pupil, secondary, % GDP/cap	23.2	30	5.3.3 ICT services imports, % total trade	1.3	67
2.1.3 School life expectancy, years	13.6	73	5.3.4 FDI net inflows, % GDP	3.6	37
2.1.4 PISA scales in reading, maths and science	426.7	50	5.3.5 Research talent, % in businesses	49.8	25
2.1.5 Pupil-teacher ratio, secondary	11.7	51			
2.2 Tertiary education	33.2	58	 Knowledge and technology outputs	33.9	34
2.2.1 Tertiary enrolment, % gross	75.4	27	6.1 Knowledge creation	18.7	58
2.2.2 Graduates in science and engineering, %	19.5	76	6.1.1 Patents by origin/bn PPP\$ GDP	1.2	54
2.2.3 Tertiary inbound mobility, %	7.8	34	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	47
2.3 Research and development (R&D)	11.3	57	6.1.3 Utility models by origin/bn PPP\$ GDP	1.2	20
2.3.1 Researchers, FTE/mn pop.	2,346.5	37	6.1.4 Scientific and technical articles/bn PPP\$ GDP	13.1	59
2.3.2 Gross expenditure on R&D, % GDP	0.8	47	6.1.5 Citable documents H-index	16.2	53
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2 Knowledge impact	30.0	57
2.3.4 QS university ranking, top 3*	7.4	69	6.2.1 Labor productivity growth, %	2.9	20
			6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.2	74
			6.2.4 High-tech manufacturing, %	25.3	49
 Infrastructure	56.2	28	6.3 Knowledge diffusion	52.9	12
3.1 Information and communication technologies (ICTs)	78.1	43	6.3.1 Intellectual property receipts, % total trade	0.4	29
3.1.1 ICT access*	89.5	24	6.3.2 Production and export complexity	65.8	39
3.1.2 ICT use*	82.0	53	6.3.3 High-tech exports, % total trade	5.2	35
3.1.3 Government's online service*	67.9	64	6.3.4 ICT services exports, % total trade	5.4	19
3.1.4 E-participation*	73.3	29	6.3.5 ISO 9001 quality/bn PPP\$ GDP	37.4	1
3.2 General infrastructure	32.5	48			
3.2.1 Electricity output, GWh/mn pop.	6,856.1	29	 Creative outputs	38.2	34
3.2.2 Logistics performance*	50.0	50	7.1 Intangible assets	47.6	30
3.2.3 Gross capital formation, % GDP	19.6	101	7.1.1 Intangible asset intensity, top 15, %	71.6	17
3.3 Ecological sustainability	57.8	8	7.1.2 Trademarks by origin/bn PPP\$ GDP	78.0	19
3.3.1 GDP/unit of energy use	8.2	86	7.1.3 Global brand value, top 5,000, % GDP	0.0	74
3.3.2 Environmental performance*	55.9	35	7.1.4 Industrial designs by origin/bn PPP\$ GDP	4.7	23
3.3.3 ISO 14001 environment/bn PPP\$ GDP	12.7	1	7.2 Creative goods and services	24.7	42
			7.2.1 Cultural and creative services exports, % total trade	1.7	16
			7.2.2 National feature films/mn pop. 15-69	4.1	33
			7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
			7.2.4 Creative goods exports, % total trade	1.0	46
 Market sophistication	36.7	60	7.3 Online creativity	33.0	36
4.1 Credit	40.0	42	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	28.4	24
4.1.1 Finance for startups and scaleups†	61.8	29	7.3.2 Country-code TLDs/th pop. 15-69	4.6	57
4.1.2 Domestic credit to private sector, % GDP	51.5	72	7.3.3 GitHub commits/mn pop. 15-69	27.9	36
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	71.2	46
4.2 Investment	6.4	68			
4.2.1 Market capitalization, % GDP	24.2	53			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	43			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	56			
4.2.4 VC received, value, % GDP	0.0	75			
4.3 Trade, diversification and market scale	63.8	35			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	96.9	19			
4.3.3 Domestic market scale, bn PPP\$	198.3	70			

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Burkina Faso

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
127	119	Low	SSA	22.7	58.8	2,656	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		41.2	92	5.1 Knowledge workers		14.8	128
1.1.1	Operational stability for businesses*	17.4	125	5.1.1	Knowledge-intensive employment, %	9.7 [122]	
1.1.2	Government effectiveness*	18.1	125	5.1.2	Firms offering formal training, %	13.3	97 ◆
1.2 Regulatory environment		61.8	67 ●	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	16.7	111	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	30.0	97	5.1.5	Females employed w/advanced degrees, %	0.8	120
1.2.3	Cost of redundancy dismissal	26.9	89	5.2 Innovation linkages		6.0	128 ◇
1.3 Business environment		44.6	71 ●	5.2.1	University–industry R&D collaboration†	16.7	120 ◇
1.3.1	Policies for doing business†	45.7	71 ●	5.2.2	State of cluster development†	0.0	129 ○◇
1.3.2	Entrepreneurship policies and culture†	43.5	42 ●◆	5.2.3	GERD financed by abroad, % GDP	0.0	55 ●
Human capital and research		17.8	108	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	110 ◇
2.1 Education		37.9	105	5.2.5	Patent families/bn PPP\$ GDP	n/a	n/a
2.1.1	Expenditure on education, % GDP	5.2	29 ●	5.3 Knowledge absorption		28.8	84
2.1.2	Government funding/pupil, secondary, % GDP/cap	16.2	70	5.3.1	Intellectual property payments, % total trade	0.0	113
2.1.3	School life expectancy, years	9.1	106	5.3.2	High-tech imports, % total trade	4.4	121
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	2.2	29 ●◆
2.1.5	Pupil–teacher ratio, secondary	20.1	97	5.3.4	FDI net inflows, % GDP	0.4	119
2.2 Tertiary education		14.1	105	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	9.5	116	Knowledge and technology outputs		11.6	112
2.2.2	Graduates in science and engineering, %	20.7	66	6.1 Knowledge creation		5.1	112
2.2.3	Tertiary inbound mobility, %	1.9	78	6.1.1	Patents by origin/bn PPP\$ GDP	0.1	113
2.3 Research and development (R&D)		1.4	94	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	101 ○◇
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	6.1.3	Utility models by origin/bn PPP\$ GDP	0.0	75 ○◇
2.3.2	Gross expenditure on R&D, % GDP	0.3	84	6.1.4	Scientific and technical articles/bn PPP\$ GDP	9.9	74
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.1.5	Citable documents H-index	5.1	101
2.3.4	QS university ranking, top 3*	0.0	71 ○◇	6.2 Knowledge impact		19.8	105
Infrastructure		19.7	121	6.2.1	Labor productivity growth, %	1.4	49 ●
3.1 Information and communication technologies (ICTs)		27.8	123	6.2.2	Unicorn valuation, % GDP	0.0	48 ○◇
3.1.1	ICT access*	36.9	120	6.2.3	Software spending, % GDP	0.0	115
3.1.2	ICT use*	22.8	123	6.2.4	High-tech manufacturing, %	n/a	n/a
3.1.3	Government's online service*	30.7	122	6.3 Knowledge diffusion		9.7	109
3.1.4	E-participation*	20.9	122	6.3.1	Intellectual property receipts, % total trade	0.0	89
3.2 General infrastructure		17.1	100	6.3.2	Production and export complexity	37.5	97
3.2.1	Electricity output, GWh/mn pop.	n/a	n/a	6.3.3	High-tech exports, % total trade	0.1	125
3.2.2	Logistics performance*	9.1	106 ◇	6.3.4	ICT services exports, % total trade	1.0	87
3.2.3	Gross capital formation, % GDP	27.3	35 ●	6.3.5	ISO 9001 quality/bn PPP\$ GDP	0.5	122
3.3 Ecological sustainability		14.1	108	Creative outputs		2.0	130 ○
3.3.1	GDP/unit of energy use	n/a	n/a	7.1 Intangible assets		3.1	124
3.3.2	Environmental performance*	28.1	91	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.1	129 ○◇	7.1.2	Trademarks by origin/bn PPP\$ GDP	6.7	116
Market sophistication		17.6	116	7.1.3	Global brand value, top 5,000, % GDP	0.0	74 ○◇
4.1 Credit		20.3	92 ◆	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.2	104
4.1.1	Finance for startups and scaleups†	21.8	78	7.2 Creative goods and services		1.9	[106]
4.1.2	Domestic credit to private sector, % GDP	28.3	99 ◆	7.2.1	Cultural and creative services exports, % total trade	0.2	73
4.1.3	Loans from microfinance institutions, % GDP	2.6	15 ●◆	7.2.2	National feature films/mn pop. 15–69	n/a	n/a
4.2 Investment		5.0	[77]	7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a
4.2.1	Market capitalization, % GDP	n/a	n/a	7.2.4	Creative goods exports, % total trade	0.0	126
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a	7.3 Online creativity		0.1	132 ○◇
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	51 ●	7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	127
4.2.4	VC received, value, % GDP	0.0	100 ○◇	7.3.2	Country-code TLDs/th pop. 15–69	0.0	128
4.3 Trade, diversification and market scale		27.5	117	7.3.3	GitHub commits/mn pop. 15–69	0.1	130 ○
4.3.1	Applied tariff rate, weighted avg., %	7.2	102	7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	n/a
4.3.2	Domestic industry diversification	n/a	n/a				
4.3.3	Domestic market scale, bn PPP\$	58.8	102				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Burundi

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
130	126	Low	SSA	12.9	10.9	865	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		13.2	128	5.1 Knowledge workers		16.5	121
1.1.1	Operational stability for businesses*	26.4	122	5.1.1	Knowledge-intensive employment, %	2.7	126 ○◇
1.1.2	Government effectiveness*	0.0	132 ○◇	5.1.2	Firms offering formal training, %	32.0	50 ●
1.2 Regulatory environment		46.8	109	5.1.3	GERD performed by business, % GDP	0.0	81
1.2.1	Regulatory quality*	16.6	126 ◇	5.1.4	GERD financed by business, %	8.8	76 ◆
1.2.2	Rule of law*	1.8	131 ◇	5.1.5	Females employed w/advanced degrees, %	0.7	122
1.2.3	Cost of redundancy dismissal	15.9	66 ●	5.2 Innovation linkages		14.4	99
1.3 Business environment		49.0	[57]	5.2.1	University-industry R&D collaboration†	31.5	93
1.3.1	Policies for doing business†	49.0	62 ●	5.2.2	State of cluster development†	26.1	103
1.3.2	Entrepreneurship policies and culture†	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	0.0	96 ○◇
Human capital and research		20.7	100	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	n/a	n/a
2.1 Education		46.3	79 ◆	5.2.5	Patent families/bn PPP\$ GDP	0.0	95 ○◇
2.1.1	Expenditure on education, % GDP	5.1	39 ●	5.3 Knowledge absorption		25.2	102
2.1.2	Government funding/pupil, secondary, % GDP/cap	32.8	6	5.3.1	Intellectual property payments, % total trade	0.0	117
2.1.3	School life expectancy, years	10.8	99	5.3.2	High-tech imports, % total trade	9.8	41 ●◆
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	1.8	41 ●
2.1.5	Pupil-teacher ratio, secondary	24.9	110	5.3.4	FDI net inflows, % GDP	0.2	121
2.2 Tertiary education		14.9	103	5.3.5	Research talent, % in businesses	1.5	77
2.2.1	Tertiary enrolment, % gross	6.0	122	Knowledge and technology outputs		5.8	131 ◇
2.2.2	Graduates in science and engineering, %	19.7	73	6.1 Knowledge creation		6.7	102
2.2.3	Tertiary inbound mobility, %	4.8	51 ●◆	6.1.1	Patents by origin/bn PPP\$ GDP	0.2	96
2.3 Research and development (R&D)		0.9	101	6.1.2	PCT patents by origin/bn PPP\$ GDP	n/a	n/a
2.3.1	Researchers, FTE/mn pop.	23.4	103	6.1.3	Utility models by origin/bn PPP\$ GDP	0.3	37 ●
2.3.2	Gross expenditure on R&D, % GDP	0.2	86	6.1.4	Scientific and technical articles/bn PPP\$ GDP	7.1	93
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.1.5	Citable documents H-index	1.0	129 ◇
2.3.4	QS university ranking, top 3*	0.0	71 ○◇	6.2 Knowledge impact		8.2	129 ◇
Infrastructure		17.0	126	6.2.1	Labor productivity growth, %	-2.2	128 ◇
3.1 Information and communication technologies (ICTs)		17.4	130 ◇	6.2.2	Unicorn valuation, % GDP	0.0	48 ○◇
3.1.1	ICT access*	10.3	130 ◇	6.2.3	Software spending, % GDP	0.1	100 ◆
3.1.2	ICT use*	0.0	132 ○◇	6.2.4	High-tech manufacturing, %	3.9	105
3.1.3	Government's online service*	26.8	127	6.3 Knowledge diffusion		2.6	130 ◇
3.1.4	E-participation*	32.6	100	6.3.1	Intellectual property receipts, % total trade	0.0	107
3.2 General infrastructure		22.1	[82]	6.3.2	Production and export complexity	n/a	n/a
3.2.1	Electricity output, GWh/mn pop.	n/a	n/a	6.3.3	High-tech exports, % total trade	0.1	117
3.2.2	Logistics performance*	n/a	n/a	6.3.4	ICT services exports, % total trade	0.6	100
3.2.3	Gross capital formation, % GDP	25.4	50 ●	6.3.5	ISO 9001 quality/bn PPP\$ GDP	1.4	97 ◆
3.3 Ecological sustainability		11.6	122	Creative outputs		4.9	125
3.3.1	GDP/unit of energy use	n/a	n/a	7.1 Intangible assets		2.7	125
3.3.2	Environmental performance*	19.7	109	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.5	84 ◆	7.1.2	Trademarks by origin/bn PPP\$ GDP	4.6	124
Market sophistication		7.3	131 ◇	7.1.3	Global brand value, top 5,000, % GDP	0.0	74 ○◇
4.1 Credit		5.6	123	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.2	102
4.1.1	Finance for startups and scaleups†	n/a	n/a	7.2 Creative goods and services		2.4	[101]
4.1.2	Domestic credit to private sector, % GDP	23.6	112	7.2.1	Cultural and creative services exports, % total trade	0.2	72
4.1.3	Loans from microfinance institutions, % GDP	0.3	41	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
4.2 Investment		n/a	[n/a]	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	n/a	n/a	7.2.4	Creative goods exports, % total trade	0.1	106
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a	7.3 Online creativity		11.6	110
4.2.3	VC recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.1	128
4.2.4	VC received, value, % GDP	n/a	n/a	7.3.2	Country-code TLDs/th pop. 15-69	0.1	120
4.3 Trade, diversification and market scale		9.0	131 ◇	7.3.3	GitHub commits/mn pop. 15-69	0.2	128
4.3.1	Applied tariff rate, weighted avg., %	11.3	124	7.3.4	Mobile app creation/bn PPP\$ GDP	46.2	107
4.3.2	Domestic industry diversification	0.0	111				
4.3.3	Domestic market scale, bn PPP\$	10.9	131				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.






Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
106	74	Lower middle	SSA	0.6	4.8	8,460	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
59.7		44	◆	28.4		[65]	
1.1 Institutional environment	51.3	52	◆	5.1 Knowledge workers	23.8	[82]	
1.1.1 Operational stability for businesses*	64.6	37	◆	5.1.1 Knowledge-intensive employment, %	⊙	17.1	84
1.1.2 Government effectiveness*	37.9	67	◆	5.1.2 Firms offering formal training, %		n/a	n/a
1.2 Regulatory environment	65.5	60	◆	5.1.3 GERD performed by business, % GDP		n/a	n/a
1.2.1 Regulatory quality*	49.2	57	◆	5.1.4 GERD financed by business, %		n/a	n/a
1.2.2 Rule of law*	50.0	50	◆	5.1.5 Females employed w/advanced degrees, %	⊙	7.6	86
1.2.3 Cost of redundancy dismissal	17.4	75		5.2 Innovation linkages	23.1	[63]	
1.3 Business environment	62.2	[30]		5.2.1 University-industry R&D collaboration†		35.5	85
1.3.1 Policies for doing business†	62.2	35	◆	5.2.2 State of cluster development†		33.8	86
1.3.2 Entrepreneurship policies and culture†	n/a	n/a		5.2.3 GERD financed by abroad, % GDP		n/a	n/a
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		n/a	n/a
				5.2.5 Patent families/bn PPP\$ GDP		0.0	95
							⊙
				5.3 Knowledge absorption	38.2	50	◆
				5.3.1 Intellectual property payments, % total trade		0.5	68
				5.3.2 High-tech imports, % total trade	⊙	6.8	91
				5.3.3 ICT services imports, % total trade		2.7	24
				5.3.4 FDI net inflows, % GDP		5.2	17
				5.3.5 Research talent, % in businesses		n/a	n/a
Human capital and research		Score/Value	Rank	Knowledge and technology outputs		Score/Value	Rank
21.3		97		13.8		98	
2.1 Education	51.1	66	◆	6.1 Knowledge creation	9.2	[84]	
2.1.1 Expenditure on education, % GDP	6.5	13	◆	6.1.1 Patents by origin/bn PPP\$ GDP		0.2	94
2.1.2 Government funding/pupil, secondary, % GDP/cap	16.1	71		6.1.2 PCT patents by origin/bn PPP\$ GDP		n/a	n/a
2.1.3 School life expectancy, years	⊙	12.7	88	6.1.3 Utility models by origin/bn PPP\$ GDP		n/a	n/a
2.1.4 PISA scales in reading, maths and science		n/a	n/a	6.1.4 Scientific and technical articles/bn PPP\$ GDP		12.0	64
2.1.5 Pupil-teacher ratio, secondary	⊙	15.3	79	6.1.5 Citable documents H-index		0.0	132
2.2 Tertiary education	12.5	106		6.2 Knowledge impact	25.2	72	
2.2.1 Tertiary enrolment, % gross	⊙	23.6	96	6.2.1 Labor productivity growth, %		2.2	30
2.2.2 Graduates in science and engineering, %	⊙	16.1	94	6.2.2 Unicorn valuation, % GDP		0.0	48
2.2.3 Tertiary inbound mobility, %	⊙	1.4	83	6.2.3 Software spending, % GDP		0.3	53
2.3 Research and development (R&D)	0.4	112		6.2.4 High-tech manufacturing, %	⊙	10.0	92
2.3.1 Researchers, FTE/mn pop.	⊙	123.5	88	6.3 Knowledge diffusion	7.1	121	
2.3.2 Gross expenditure on R&D, % GDP		n/a	n/a	6.3.1 Intellectual property receipts, % total trade		0.0	97
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	40	⊙		n/a	n/a
2.3.4 QS university ranking, top 3*		0.0	71	⊙		0.0	132
				⊙		1.2	82
						7.4	36
							◆
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank
41.1		64	◆	9.2		[108]	
3.1 Information and communication technologies (ICTs)	48.6	101		7.1 Intangible assets	14.5	[99]	
3.1.1 ICT access*	68.6	91		7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
3.1.2 ICT use*	58.3	96		7.1.2 Trademarks by origin/bn PPP\$ GDP		15.0	99
3.1.3 Government's online service*	44.4	99		7.1.3 Global brand value, top 5,000, % GDP		n/a	n/a
3.1.4 E-participation*	23.3	115		7.1.4 Industrial designs by origin/bn PPP\$ GDP	⊙	1.0	67
3.2 General infrastructure	53.7	[11]		7.2 Creative goods and services	5.7	[84]	
3.2.1 Electricity output, GWh/mn pop.		n/a	n/a	7.2.1 Cultural and creative services exports, % total trade		0.6	50
3.2.2 Logistics performance*		n/a	n/a	7.2.2 National feature films/mn pop. 15-69		n/a	n/a
3.2.3 Gross capital formation, % GDP	44.7	3	◆	7.2.3 Entertainment and media market/th pop. 15-69		n/a	n/a
3.3 Ecological sustainability	21.1	78		7.2.4 Creative goods exports, % total trade	⊙	0.0	130
3.3.1 GDP/unit of energy use		n/a	n/a	7.3 Online creativity	2.3	124	◇
3.3.2 Environmental performance*	39.0	67	◆	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		2.1	81
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.5	88		7.3.2 Country-code TLDs/th pop. 15-69		2.3	69
				7.3.3 GitHub commits/mn pop. 15-69		2.4	97
				7.3.4 Mobile app creation/bn PPP\$ GDP		n/a	n/a
Market sophistication		Score/Value	Rank				
24.7		[96]					
4.1 Credit	26.7	[73]					
4.1.1 Finance for startups and scaleups†		n/a	n/a				
4.1.2 Domestic credit to private sector, % GDP	73.2	48	●				
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a				
4.2 Investment	n/a	[n/a]					
4.2.1 Market capitalization, % GDP		n/a	n/a				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		n/a	n/a				
4.2.3 VC recipients, deals/bn PPP\$ GDP		n/a	n/a				
4.2.4 VC received, value, % GDP		n/a	n/a				
4.3 Trade, diversification and market scale	22.7	124	◇				
4.3.1 Applied tariff rate, weighted avg., %	12.2	128	⊙				
4.3.2 Domestic industry diversification	⊙	47.0	105				
4.3.3 Domestic market scale, bn PPP\$	4.8	132	⊙				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Cambodia

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
100	97	Lower middle	SEAO	16.8	89.3	5,583

	Score/Value	Rank		Score/Value	Rank
 Institutions	44.2	87	 Business sophistication	16.2	125 ○◇
1.1 Institutional environment	41.4	74	5.1 Knowledge workers	11.6	118 ◇
1.1.1 Operational stability for businesses*	57.6	53 ●◆	5.1.1 Knowledge-intensive employment, %	5.9	118 ○◇
1.1.2 Government effectiveness*	25.1	96	5.1.2 Firms offering formal training, %	22.2	71
1.2 Regulatory environment	48.4	104	5.1.3 GERD performed by business, % GDP	0.0	83
1.2.1 Regulatory quality*	25.4	110	5.1.4 GERD financed by business, %	19.4	67
1.2.2 Rule of law*	13.4	116	5.1.5 Females employed w/advanced degrees, %	2.1	108
1.2.3 Cost of redundancy dismissal	19.4	84	5.2 Innovation linkages	15.6	94
1.3 Business environment	42.8	[74]	5.2.1 University-industry R&D collaboration†	26.2	103
1.3.1 Policies for doing business†	42.8	78	5.2.2 State of cluster development†	37.4	82
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.0	52 ●◆
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	57 ●
			5.2.5 Patent families/bn PPP\$ GDP	0.0	86
 Human capital and research	20.5	101	5.3 Knowledge absorption	21.3	124 ○
2.1 Education	45.2	[81]	5.3.1 Intellectual property payments, % total trade	0.1	102
2.1.1 Expenditure on education, % GDP	1.7	124 ○◇	5.3.2 High-tech imports, % total trade	4.6	120
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	0.7	99
2.1.3 School life expectancy, years	n/a	n/a	5.3.4 FDI net inflows, % GDP	13.5	9 ●◆
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	4.3	71
2.1.5 Pupil-teacher ratio, secondary	9.9	31 ●◆	 Knowledge and technology outputs	14.6	93
2.2 Tertiary education	15.9	100	6.1 Knowledge creation	3.3	120
2.2.1 Tertiary enrolment, % gross	13.0	107	6.1.1 Patents by origin/bn PPP\$ GDP	0.0	129 ○
2.2.2 Graduates in science and engineering, %	23.2	53	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	101 ○◇
2.2.3 Tertiary inbound mobility, %	0.3	106 ○	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	0.5	109	6.1.4 Scientific and technical articles/bn PPP\$ GDP	4.5	110
2.3.1 Researchers, FTE/mn pop.	30.4	99	6.1.5 Citable documents H-index	5.1	101
2.3.2 Gross expenditure on R&D, % GDP	0.1	102	6.2 Knowledge impact	23.6	87
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.2.1 Labor productivity growth, %	2.6	22 ●
2.3.4 QS university ranking, top 3*	0.0	71 ○◇	6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
			6.2.3 Software spending, % GDP	0.0	114 ◇
			6.2.4 High-tech manufacturing, %	n/a	n/a
 Infrastructure	25.1	108	6.3 Knowledge diffusion	16.9	89
3.1 Information and communication technologies (ICTs)	49.9	100	6.3.1 Intellectual property receipts, % total trade	0.0	79
3.1.1 ICT access*	70.5	89	6.3.2 Production and export complexity	48.3	72
3.1.2 ICT use*	66.5	79	6.3.3 High-tech exports, % total trade	1.7	65
3.1.3 Government's online service*	35.7	116	6.3.4 ICT services exports, % total trade	0.3	109
3.1.4 E-participation*	26.7	106	6.3.5 ISO 9001 quality/bn PPP\$ GDP	2.6	78
3.2 General infrastructure	12.6	117	 Creative outputs	11.6	103
3.2.1 Electricity output, GWh/mn pop.	537.1	109	7.1 Intangible assets	10.7	106
3.2.2 Logistics performance*	13.6	103 ○	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.2.3 Gross capital formation, % GDP	25.0	54 ●	7.1.2 Trademarks by origin/bn PPP\$ GDP	39.5	59
3.3 Ecological sustainability	12.7	115	7.1.3 Global brand value, top 5,000, % GDP	0.0	74 ○◇
3.3.1 GDP/unit of energy use	7.9	88	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.3	99
3.3.2 Environmental performance*	19.0	112	7.2 Creative goods and services	6.7	[79]
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.4	95	7.2.1 Cultural and 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 and media market/th pop. 15-69	n/a	n/a
			7.2.4 Creative goods exports, % total trade	0.6	60 ●
 Market sophistication	36.7	59 ●	7.3 Online creativity	18.3	77
4.1 Credit	76.5	3 ●◆	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.8	101
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	0.1	123
4.1.2 Domestic credit to private sector, % GDP	139.6	13 ●◆	7.3.3 GitHub commits/mn pop. 15-69	1.7	103
4.1.3 Loans from microfinance institutions, % GDP	28.7	1 ●◆	7.3.4 Mobile app creation/bn PPP\$ GDP	70.4	54 ●
4.2 Investment	2.9	94			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	75			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	71			
4.2.4 VC received, value, % GDP	0.0	89			
4.3 Trade, diversification and market scale	30.8	114			
4.3.1 Applied tariff rate, weighted avg., %	6.2	98			
4.3.2 Domestic industry diversification	n/a	n/a			
4.3.3 Domestic market scale, bn PPP\$	89.3	90			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Cameroon

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
117	123	Lower middle	SSA	27.9	123.3	4,419	
		Score/Value	Rank			Score/Value	Rank
 Institutions		41.3	91	 Business sophistication		23.2	88
1.1 Institutional environment		21.6	122	5.1 Knowledge workers		21.5	[93]
1.1.1 Operational stability for businesses*		30.6	117	5.1.1 Knowledge-intensive employment, %	⊖	10.9	104
1.1.2 Government effectiveness*		12.6	123	5.1.2 Firms offering formal training, %	⊖	37.6	40 ●
1.2 Regulatory environment		44.7	111	5.1.3 GERD performed by business, % GDP		n/a	n/a
1.2.1 Regulatory quality*		18.2	122	5.1.4 GERD financed by business, %		n/a	n/a
1.2.2 Rule of law*		7.6	125 ◊	5.1.5 Females employed w/advanced degrees, %	⊖	2.0	110
1.2.3 Cost of redundancy dismissal		19.9	86	5.2 Innovation linkages		19.8	74
1.3 Business environment		57.5	40 ●	5.2.1 University–industry R&D collaboration†		46.6	58 ●
1.3.1 Policies for doing business†		47.5	64 ●	5.2.2 State of cluster development†		31.2	91
1.3.2 Entrepreneurship policies and culture†	⊖	67.6	16	5.2.3 GERD financed by abroad, % GDP		n/a	n/a
 Human capital and research		16.2	[112]	5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	118
2.1 Education		41.5	[95]	5.2.5 Patent families/bn PPP\$ GDP		0.0	95 ◊◊
2.1.1 Expenditure on education, % GDP		2.8	110	5.3 Knowledge absorption		28.3	86
2.1.2 Government funding/pupil, secondary, % GDP/cap		n/a	n/a	5.3.1 Intellectual property payments, % total trade		0.0	109
2.1.3 School life expectancy, years	⊖	12.1	94	5.3.2 High-tech imports, % total trade	⊖	1.1	101
2.1.4 PISA scales in reading, maths and science		n/a	n/a	5.3.3 ICT services imports, % total trade		1.7	50 ●
2.1.5 Pupil–teacher ratio, secondary		17.5	88	5.3.4 FDI net inflows, % GDP		2.1	69 ●
2.2 Tertiary education		7.0	117 ◊	5.3.5 Research talent, % in businesses		n/a	n/a
2.2.1 Tertiary enrolment, % gross	⊖	14.3	106	 Knowledge and technology outputs		12.9	104
2.2.2 Graduates in science and engineering, %		n/a	n/a	6.1 Knowledge creation		8.7	90
2.2.3 Tertiary inbound mobility, %	⊖	2.8	70	6.1.1 Patents by origin/bn PPP\$ GDP		0.6	75
2.3 Research and development (R&D)		0.0	[119]	6.1.2 PCT patents by origin/bn PPP\$ GDP		0.0	80
2.3.1 Researchers, FTE/mn pop.		n/a	n/a	6.1.3 Utility models by origin/bn PPP\$ GDP		0.0	75 ◊◊
2.3.2 Gross expenditure on R&D, % GDP		n/a	n/a	6.1.4 Scientific and technical articles/bn PPP\$ GDP		12.8	62 ●
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	40 ◊◊	6.1.5 Citable documents H-index		7.8	87
2.3.4 QS university ranking, top 3*		0.0	71 ◊◊	6.2 Knowledge impact		21.2	99
 Infrastructure		15.0	130 ◊◊	6.2.1 Labor productivity growth, %		0.8	72
3.1 Information and communication technologies (ICTs)		27.2	124 ◊	6.2.2 Unicorn valuation, % GDP		0.0	48 ◊◊
3.1.1 ICT access*		10.6	129 ◊◊	6.2.3 Software spending, % GDP		0.1	85
3.1.2 ICT use*		38.9	110	6.2.4 High-tech manufacturing, %		n/a	n/a
3.1.3 Government's online service*		32.8	118	6.3 Knowledge diffusion		8.7	113
3.1.4 E-participation*		26.7	106	6.3.1 Intellectual property receipts, % total trade		0.0	78
3.2 General infrastructure		4.2	131 ◊◊	6.3.2 Production and export complexity		18.6	117 ◊◊
3.2.1 Electricity output, GWh/mn pop.	⊖	339.4	115	6.3.3 High-tech exports, % total trade	⊖	0.2	107
3.2.2 Logistics performance*		0.0	111 ◊◊	6.3.4 ICT services exports, % total trade		2.3	51 ●
3.2.3 Gross capital formation, % GDP		18.6	105	6.3.5 ISO 9001 quality/bn PPP\$ GDP		0.7	115
3.3 Ecological sustainability		13.4	112	 Creative outputs		6.4	118 ◊
3.3.1 GDP/unit of energy use		9.2	80	7.1 Intangible assets		3.9	121 ◊
3.3.2 Environmental performance*		19.2	111	7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
3.3.3 ISO 14001 environment/bn PPP\$ GDP		0.1	122	7.1.2 Trademarks by origin/bn PPP\$ GDP		7.0	115
 Market sophistication		9.0	129 ◊◊	7.1.3 Global brand value, top 5,000, % GDP		0.0	74 ◊◊
4.1 Credit		23.5	84	7.1.4 Industrial designs by origin/bn PPP\$ GDP		0.3	94
4.1.1 Finance for startups and scaleups†	⊖	54.5	39	7.2 Creative goods and services		3.4	[92]
4.1.2 Domestic credit to private sector, % GDP	⊖	14.7	120	7.2.1 Cultural and creative services exports, % total trade		0.3	64
4.1.3 Loans from microfinance institutions, % GDP	⊖	1.0	27 ●	7.2.2 National feature films/mn pop. 15–69		n/a	n/a
4.2 Investment		2.1	101	7.2.3 Entertainment and media market/th pop. 15–69		n/a	n/a
4.2.1 Market capitalization, % GDP		n/a	n/a	7.2.4 Creative goods exports, % total trade	⊖	0.0	123
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	⊖	0.0	77	7.3 Online creativity		14.5	100
4.2.3 VC recipients, deals/bn PPP\$ GDP		0.0	85	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69		0.2	118
4.2.4 VC received, value, % GDP		0.0	82	7.3.2 Country-code TLDs/th pop. 15–69		0.9	92
4.3 Trade, diversification and market scale		1.3	132 ◊◊	7.3.3 GitHub commits/mn pop. 15–69		1.3	111
4.3.1 Applied tariff rate, weighted avg., %	⊖	15.5	132 ◊◊	7.3.4 Mobile app creation/bn PPP\$ GDP		55.5	95
4.3.2 Domestic industry diversification		n/a	n/a				
4.3.3 Domestic market scale, bn PPP\$		123.3	84				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Canada

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
20	9	High	NAC	38.5	2,240.4	57,827

	Score/ Value	Rank		Score/ Value	Rank
 Institutions	78.0	14	 Business sophistication	56.0	18
1.1 Institutional environment	78.4	13	5.1 Knowledge workers	50.7	28 ◇
1.1.1 Operational stability for businesses*	75.7	15	5.1.1 Knowledge-intensive employment, %	⊙ 43.7	25
1.1.2 Government effectiveness*	81.0	10 ●	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	90.9	9 ●	5.1.3 GERD performed by business, % GDP	0.9	28
1.2.1 Regulatory quality*	84.1	12	5.1.4 GERD financed by business, %	44.1	37 ◇
1.2.2 Rule of law*	87.4	13	5.1.5 Females employed w/advanced degrees, %	20.0	35
1.2.3 Cost of redundancy dismissal	10.0	29	5.2 Innovation linkages	65.7	6 ●
1.3 Business environment	64.8	28	5.2.1 University-industry R&D collaboration†	85.8	7 ●
1.3.1 Policies for doing business†	68.8	28	5.2.2 State of cluster development†	77.5	15
1.3.2 Entrepreneurship policies and culture†	60.8	23	5.2.3 GERD financed by abroad, % GDP	0.2	28
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.3	1 ●◆
			5.2.5 Patent families/bn PPP\$ GDP	2.0	19
 Human capital and research	58.1	10 ●	5.3 Knowledge absorption	51.6	16
2.1 Education	68.7	10 ●	5.3.1 Intellectual property payments, % total trade	2.6	10
2.1.1 Expenditure on education, % GDP	⊙ 4.8	44	5.3.2 High-tech imports, % total trade	10.3	32
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	1.4	63 ○◇
2.1.3 School life expectancy, years	16.6	22	5.3.4 FDI net inflows, % GDP	2.6	58 ○
2.1.4 PISA scales in reading, maths and science	516.7	7	5.3.5 Research talent, % in businesses	⊙ 60.5	14
2.1.5 Pupil-teacher ratio, secondary	9.6	25	 Knowledge and technology outputs	43.9	19
2.2 Tertiary education	49.4	10	6.1 Knowledge creation	49.0	16
2.2.1 Tertiary enrolment, % gross	79.5	26	6.1.1 Patents by origin/bn PPP\$ GDP	2.3	32
2.2.2 Graduates in science and engineering, %	25.7	42	6.1.2 PCT patents by origin/bn PPP\$ GDP	1.2	24 ◇
2.2.3 Tertiary inbound mobility, %	18.2	8 ●	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	56.0	18	6.1.4 Scientific and technical articles/bn PPP\$ GDP	30.3	21
2.3.1 Researchers, FTE/mn pop.	⊙ 4,860.5	19	6.1.5 Citable documents H-index	80.0	4 ●◆
2.3.2 Gross expenditure on R&D, % GDP	1.6	25	6.2 Knowledge impact	47.8	21
2.3.3 Global corporate R&D investors, top 3, mn USD	64.9	20	6.2.1 Labor productivity growth, %	0.2	94 ○
2.3.4 QS university ranking, top 3*	81.2	7 ●	6.2.2 Unicorn valuation, % GDP	2.2	17
			6.2.3 Software spending, % GDP	0.7	5 ●
 Infrastructure	56.0	30 ◇	6.2.4 High-tech manufacturing, %	34.7	34
3.1 Information and communication technologies (ICTs)	82.3	31	6.3 Knowledge diffusion	34.9	41
3.1.1 ICT access*	79.5	73 ○◇	6.3.1 Intellectual property receipts, % total trade	1.3	18
3.1.2 ICT use*	83.6	48 ◇	6.3.2 Production and export complexity	64.4	43 ◇
3.1.3 Government's online service*	83.5	27	6.3.3 High-tech exports, % total trade	5.8	33
3.1.4 E-participation*	82.6	14	6.3.4 ICT services exports, % total trade	2.1	55
3.2 General infrastructure	63.6	5 ●◆	6.3.5 ISO 9001 quality/bn PPP\$ GDP	2.7	77 ○◇
3.2.1 Electricity output, GWh/mn pop.	16,810.1	6 ●◆	 Creative outputs	44.7	22
3.2.2 Logistics performance*	86.4	7	7.1 Intangible assets	39.6	43 ◇
3.2.3 Gross capital formation, % GDP	23.3	70 ○	7.1.1 Intangible asset intensity, top 15, %	67.6	23
3.3 Ecological sustainability	22.2	73 ○◇	7.1.2 Trademarks by origin/bn PPP\$ GDP	32.8	71 ○
3.3.1 GDP/unit of energy use	5.9	107 ○◇	7.1.3 Global brand value, top 5,000, % GDP	11.4	15
3.3.2 Environmental performance*	52.7	42	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.4	91 ○◇
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.4	91 ○◇	7.2 Creative goods and services	32.3	23
			7.2.1 Cultural and creative services exports, % total trade	1.5	20
 Market sophistication	68.1	4 ●◆	7.2.2 National feature films/mn pop. 15-69	4.3	30
4.1 Credit	64.8	[10]	7.2.3 Entertainment and media market/th pop. 15-69	62.2	9
4.1.1 Finance for startups and scaleups†	64.8	26	7.2.4 Creative goods exports, % total trade	0.8	53
4.1.2 Domestic credit to private sector, % GDP	n/a	n/a	7.3 Online creativity	67.4	10 ●
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	99.0	3 ●◆
4.2 Investment	60.7	9	7.3.2 Country-code TLDs/th pop. 15-69	35.8	19
4.2.1 Market capitalization, % GDP	137.0	8	7.3.3 GitHub commits/mn pop. 15-69	61.7	12
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.5	12	7.3.4 Mobile app creation/bn PPP\$ GDP	73.0	41
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.4	1 ●◆			
4.2.4 VC received, value, % GDP	0.0	10			
4.3 Trade, diversification and market scale	78.8	13			
4.3.1 Applied tariff rate, weighted avg., %	1.5	47			
4.3.2 Domestic industry diversification	97.8	11			
4.3.3 Domestic market scale, bn PPP\$	2,240.4	15			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
56	48	High	LCN	19.6	575.5	28,888	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		56.7	49	5.1 Knowledge workers		29.8	55
1.1.1	Operational stability for businesses*	56.5	43	5.1.1	Knowledge-intensive employment, %	33.2	64
1.1.2	Government effectiveness*	59.0	48	5.1.2	Firms offering formal training, %	31.9	48
1.2 Regulatory environment		54.0	43	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	64.1	62	5.1.4	GERD financed by business, %	0.1	61
1.2.2	Rule of law*	66.8	32	5.1.5	Females employed w/advanced degrees, %	34.7	55
1.2.3	Cost of redundancy dismissal	66.5	31	5.2 Innovation linkages		12.4	61
1.3 Business environment		27.4	111	5.2.1	University-industry R&D collaboration [†]	17.5	88
1.3.1	Policies for doing business [†]	49.4	55	5.2.2	State of cluster development [†]	35.7	83
1.3.2	Entrepreneurship policies and culture [†]	46.8	65	5.2.3	GERD financed by abroad, % GDP	37.8	80
		51.9	31	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	78
				5.2.5	Patent families/bn PPP\$ GDP	0.2	43
Human capital and research		Score/Value	Rank	Knowledge and technology outputs		Score/Value	Rank
2.1 Education		33.0	58	6.1 Knowledge creation		24.3	58
2.1.1	Expenditure on education, % GDP	52.8	62	6.1.1	Patents by origin/bn PPP\$ GDP	16.6	61
2.1.2	Government funding/pupil, secondary, % GDP/cap	5.6	22	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.8	68
2.1.3	School life expectancy, years	19.9	55	6.1.3	Utility models by origin/bn PPP\$ GDP	0.3	36
2.1.4	PISA scales in reading, maths and science	16.6	24	6.1.4	Scientific and technical articles/bn PPP\$ GDP	0.2	47
2.1.5	Pupil-teacher ratio, secondary	437.8	46	6.1.5	Citable documents H-index	17.0	43
2.2 Tertiary education		17.7	90	6.2 Knowledge impact		38.6	33
2.2.1	Tertiary enrolment, % gross	32.7	59	6.2.1	Labor productivity growth, %	1.9	37
2.2.2	Graduates in science and engineering, %	91.7	12	6.2.2	Unicorn valuation, % GDP	0.7	36
2.2.3	Tertiary inbound mobility, %	21.4	63	6.2.3	Software spending, % GDP	0.5	21
2.3 Research and development (R&D)		1.1	87	6.2.4	High-tech manufacturing, %	23.9	55
2.3.1	Researchers, FTE/mn pop.	13.6	51	6.3 Knowledge diffusion		17.7	84
2.3.2	Gross expenditure on R&D, % GDP	512.0	70	6.3.1	Intellectual property receipts, % total trade	0.1	70
2.3.3	Global corporate R&D investors, top 3, mn USD	0.3	72	6.3.2	Production and export complexity	47.4	75
2.3.4	QS university ranking, top 3*	0.0	40	6.3.3	High-tech exports, % total trade	1.3	70
		43.2	31	6.3.4	ICT services exports, % total trade	0.6	99
				6.3.5	ISO 9001 quality/bn PPP\$ GDP	5.5	52
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank
3.1 Information and communication technologies (ICTs)		46.4	52	7.1 Intangible assets		26.8	59
3.1.1	ICT access*	80.9	38	7.1.1	Intangible asset intensity, top 15, %	39.2	46
3.1.2	ICT use*	88.0	33	7.1.2	Trademarks by origin/bn PPP\$ GDP	42.2	60
3.1.3	Government's online service*	85.8	36	7.1.3	Global brand value, top 5,000, % GDP	101.6	10
3.1.4	E-participation*	81.0	30	7.1.4	Industrial designs by origin/bn PPP\$ GDP	3.4	41
3.2 General infrastructure		0.1	115	7.2 Creative goods and services		6.6	80
3.2.1	Electricity output, GWh/mn pop.	28.2	59	7.2.1	Cultural and creative services exports, % total trade	0.2	70
3.2.2	Logistics performance*	4,372.6	52	7.2.2	National feature films/mn pop. 15-69	1.3	57
3.2.3	Gross capital formation, % GDP	40.9	60	7.2.3	Entertainment and media market/th pop. 15-69	12.6	30
3.3 Ecological sustainability		25.1	53	7.2.4	Creative goods exports, % total trade	0.1	90
3.3.1	GDP/unit of energy use	30.2	54	7.3 Online creativity		22.3	59
3.3.2	Environmental performance*	12.2	45	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	2.3	77
3.3.3	ISO 14001 environment/bn PPP\$ GDP	47.1	51	7.3.2	Country-code TLDs/th pop. 15-69	14.8	32
		1.9	51	7.3.3	GitHub commits/mn pop. 15-69	8.2	57
				7.3.4	Mobile app creation/bn PPP\$ GDP	63.7	71
Market sophistication		Score/Value	Rank				
4.1 Credit		38.9	47				
4.1.1	Finance for startups and scaleups [†]	40.0	41				
4.1.2	Domestic credit to private sector, % GDP	33.0	64				
4.1.3	Loans from microfinance institutions, % GDP	124.6	19				
4.2 Investment		n/a	n/a				
4.2.1	Market capitalization, % GDP	13.9	47				
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	77.0	21				
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.1	49				
4.2.4	VC received, value, % GDP	0.0	55				
4.3 Trade, diversification and market scale		0.0	44				
4.3.1	Applied tariff rate, weighted avg., %	62.9	47				
4.3.2	Domestic industry diversification	0.4	5				
4.3.3	Domestic market scale, bn PPP\$	79.1	80				
		575.5	44				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

China

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
8	25	Upper middle	SEAO	1,425.9	30,074.4	21,291	
		Score/Value	Rank			Score/Value	Rank
 Institutions		60.2	43	 Business sophistication		54.1	20
1.1 Institutional environment		56.4	44	5.1 Knowledge workers		66.1	[12]
1.1.1 Operational stability for businesses*		52.8	65	5.1.1 Knowledge-intensive employment, %		n/a	n/a
1.1.2 Government effectiveness*		60.0	37	5.1.2 Firms offering formal training, %		n/a	n/a
1.2 Regulatory environment		49.5	100	5.1.3 GERD performed by business, % GDP	⊙	1.8	13
1.2.1 Regulatory quality*		34.0	89	5.1.4 GERD financed by business, %		77.5	3
1.2.2 Rule of law*		40.8	62	5.1.5 Females employed w/advanced degrees, %		n/a	n/a
1.2.3 Cost of redundancy dismissal		27.4	111	5.2 Innovation linkages		43.8	27
1.3 Business environment		74.9	14	5.2.1 University-industry R&D collaboration†		86.8	6
1.3.1 Policies for doing business†		74.4	21	5.2.2 State of cluster development†		91.4	2
1.3.2 Entrepreneurship policies and culture†		75.4	10	5.2.3 GERD financed by abroad, % GDP		0.0	76
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	70
				5.2.5 Patent families/bn PPP\$ GDP		1.7	23
 Human capital and research		49.8	22	5.3 Knowledge absorption		52.5	14
2.1 Education		68.5	[11]	5.3.1 Intellectual property payments, % total trade		1.4	24
2.1.1 Expenditure on education, % GDP	⊙	3.5	88	5.3.2 High-tech imports, % total trade		22.6	6
2.1.2 Government funding/pupil, secondary, % GDP/cap		n/a	n/a	5.3.3 ICT services imports, % total trade		1.2	76
2.1.3 School life expectancy, years		n/a	n/a	5.3.4 FDI net inflows, % GDP		1.6	82
2.1.4 PISA scales in reading, maths and science		579.0	1	5.3.5 Research talent, % in businesses	⊙	58.5	17
2.1.5 Pupil-teacher ratio, secondary		13.3	62				
2.2 Tertiary education		20.6	88	 Knowledge and technology outputs		61.5	6
2.2.1 Tertiary enrolment, % gross		63.6	50	6.1 Knowledge creation		71.9	3
2.2.2 Graduates in science and engineering, %		n/a	n/a	6.1.1 Patents by origin/bn PPP\$ GDP		52.4	2
2.2.3 Tertiary inbound mobility, %		0.4	101	6.1.2 PCT patents by origin/bn PPP\$ GDP		2.3	14
2.3 Research and development (R&D)		60.3	15	6.1.3 Utility models by origin/bn PPP\$ GDP		104.6	1
2.3.1 Researchers, FTE/mn pop.	⊙	1,584.9	48	6.1.4 Scientific and technical articles/bn PPP\$ GDP		21.9	32
2.3.2 Gross expenditure on R&D, % GDP	⊙	2.4	14	6.1.5 Citable documents H-index		66.1	11
2.3.3 Global corporate R&D investors, top 3, mn USD		92.9	2	6.2 Knowledge impact		65.5	3
2.3.4 QS university ranking, top 3*		88.8	3	6.2.1 Labor productivity growth, %		6.0	1
				6.2.2 Unicorn valuation, % GDP		3.8	12
				6.2.3 Software spending, % GDP		0.4	27
				6.2.4 High-tech manufacturing, %	⊙	48.5	13
 Infrastructure		56.4	27	6.3 Knowledge diffusion		47.2	20
3.1 Information and communication technologies (ICTs)		86.0	18	6.3.1 Intellectual property receipts, % total trade		0.3	33
3.1.1 ICT access*		82.7	64	6.3.2 Production and export complexity		79.8	17
3.1.2 ICT use*		87.7	26	6.3.3 High-tech exports, % total trade		28.0	5
3.1.3 Government's online service*		87.6	15	6.3.4 ICT services exports, % total trade		2.3	52
3.1.4 E-participation*		86.0	13	6.3.5 ISO 9001 quality/bn PPP\$ GDP		15.7	19
3.2 General infrastructure		52.4	13				
3.2.1 Electricity output, GWh/mn pop.		6,019.0	32	 Creative outputs		48.9	14
3.2.2 Logistics performance*		72.7	18	7.1 Intangible assets		80.5	1
3.2.3 Gross capital formation, % GDP		44.8	2	7.1.1 Intangible asset intensity, top 15, %		75.7	11
3.3 Ecological sustainability		30.7	50	7.1.2 Trademarks by origin/bn PPP\$ GDP		337.9	1
3.3.1 GDP/unit of energy use		6.8	100	7.1.3 Global brand value, top 5,000, % GDP		9.4	20
3.3.2 Environmental performance*		16.1	118	7.1.4 Industrial designs by origin/bn PPP\$ GDP		28.9	2
3.3.3 ISO 14001 environment/bn PPP\$ GDP		8.0	10	7.2 Creative goods and services		31.4	28
				7.2.1 Cultural and creative services exports, % total trade		0.6	51
 Market sophistication		56.7	13	7.2.2 National feature films/mn pop. 15-69		0.5	69
4.1 Credit		50.0	28	7.2.3 Entertainment and media market/th pop. 15-69		11.1	32
4.1.1 Finance for startups and scaleups†		70.5	16	7.2.4 Creative goods exports, % total trade		11.3	1
4.1.2 Domestic credit to private sector, % GDP		182.9	4	7.3 Online creativity		3.1	123
4.1.3 Loans from microfinance institutions, % GDP		0.8	32	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		2.8	74
4.2 Investment		25.3	27	7.3.2 Country-code TLDs/th pop. 15-69		5.0	56
4.2.1 Market capitalization, % GDP		62.8	28	7.3.3 GitHub commits/mn pop. 15-69		1.4	107
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		0.1	36	7.3.4 Mobile app creation/bn PPP\$ GDP		n/a	n/a
4.2.3 VC recipients, deals/bn PPP\$ GDP		0.1	27				
4.2.4 VC received, value, % GDP		0.0	18				
4.3 Trade, diversification and market scale		94.6	3				
4.3.1 Applied tariff rate, weighted avg., %		2.5	66				
4.3.2 Domestic industry diversification	⊙	99.8	2				
4.3.3 Domestic market scale, bn PPP\$		30,074.4	1				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
71	63	Upper middle	LCN	51.9	964.7	18,693	
		Score/Value	Rank			Score/Value	Rank
🏛️ Institutions		46.7	78	📁 Business sophistication		37.3	40
1.1 Institutional environment	39.0	81	5.1 Knowledge workers	48.1	34	◆	
1.1.1 Operational stability for businesses*	41.7	87	5.1.1 Knowledge-intensive employment, %	24.2	58		
1.1.2 Government effectiveness*	36.3	71	5.1.2 Firms offering formal training, %	⊙ 63.0	6	◆◆	
1.2 Regulatory environment	60.0	72	5.1.3 GERD performed by business, % GDP	⊙ 0.1	57		
1.2.1 Regulatory quality*	47.8	58	5.1.4 GERD financed by business, %	53.4	22	◆◆	
1.2.2 Rule of law*	26.5	90	5.1.5 Females employed w/advanced degrees, %	16.3	46		
1.2.3 Cost of redundancy dismissal	16.7	68	5.2 Innovation linkages	19.9	72		
1.3 Business environment	41.0	83	5.2.1 University-industry R&D collaboration†	47.7	55		
1.3.1 Policies for doing business†	40.1	84	5.2.2 State of cluster development†	44.2	58		
1.3.2 Entrepreneurship policies and culture†	41.9	47	5.2.3 GERD financed by abroad, % GDP	0.0	66		
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	89		
			5.2.5 Patent families/bn PPP\$ GDP	0.1	59		
👤 Human capital and research		27.0	81	📄 Knowledge and technology outputs		23.7	62
2.1 Education	43.8	83	5.3 Knowledge absorption	43.9	33	◆	
2.1.1 Expenditure on education, % GDP	⊙ 5.2	28	5.3.1 Intellectual property payments, % total trade	2.4	11	◆◆	
2.1.2 Government funding/pupil, secondary, % GDP/cap	23.1	33	5.3.2 High-tech imports, % total trade	17.5	12	◆◆	
2.1.3 School life expectancy, years	14.8	58	5.3.3 ICT services imports, % total trade	1.9	39		
2.1.4 PISA scales in reading, maths and science	405.5	62	⊙	3.4	40		
2.1.5 Pupil-teacher ratio, secondary	26.2	113	○◇	5.3.5 Research talent, % in businesses	⊙ 2.5	75	○
2.2 Tertiary education	26.5	76	6.1 Knowledge creation	9.7	81		
2.2.1 Tertiary enrolment, % gross	57.1	57	6.1.1 Patents by origin/bn PPP\$ GDP	0.5	79		
2.2.2 Graduates in science and engineering, %	23.9	51	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	56		
2.2.3 Tertiary inbound mobility, %	0.2	109	○◇	6.1.3 Utility models by origin/bn PPP\$ GDP	0.2	46	
2.3 Research and development (R&D)	10.7	58	6.1.4 Scientific and technical articles/bn PPP\$ GDP	6.9	94		
2.3.1 Researchers, FTE/mn pop.	⊙ 88.0	92	○◇	6.1.5 Citable documents H-index	19.3	46	
2.3.2 Gross expenditure on R&D, % GDP	⊙ 0.3	78		6.2 Knowledge impact	37.3	38	◆
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	○◇	6.2.1 Labor productivity growth, %	3.1	15	●
2.3.4 QS university ranking, top 3*	37.1	35		6.2.2 Unicorn valuation, % GDP	2.0	20	◆◆
				6.2.3 Software spending, % GDP	0.2	79	
				6.2.4 High-tech manufacturing, %	20.9	61	
⚙️ Infrastructure		43.1	60	6.3 Knowledge diffusion	24.0	60	
3.1 Information and communication technologies (ICTs)	71.5	62	6.3.1 Intellectual property receipts, % total trade	0.2	43		
3.1.1 ICT access*	79.9	72	6.3.2 Production and export complexity	51.3	63		
3.1.2 ICT use*	63.8	86	6.3.3 High-tech exports, % total trade	1.3	69		
3.1.3 Government's online service*	71.5	59	6.3.4 ICT services exports, % total trade	1.1	85		
3.1.4 E-participation*	70.9	37	6.3.5 ISO 9001 quality/bn PPP\$ GDP	12.3	21	●	
3.2 General infrastructure	19.3	92	7.1 Intangible assets	23.0	80		
3.2.1 Electricity output, GWh/mn pop.	1,642.1	89	7.1.1 Intangible asset intensity, top 15, %	-19.0	74	○	
3.2.2 Logistics performance*	36.4	65	7.1.2 Trademarks by origin/bn PPP\$ GDP	40.1	57		
3.2.3 Gross capital formation, % GDP	20.0	98	7.1.3 Global brand value, top 5,000, % GDP	2.3	45		
3.3 Ecological sustainability	38.5	36	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.6	80		
3.3.1 GDP/unit of energy use	17.9	13	◆◆	7.2 Creative goods and services	5.8	83	
3.3.2 Environmental performance*	39.8	63	7.2.1 Cultural and creative services exports, % total trade	0.5	55		
3.3.3 ISO 14001 environment/bn PPP\$ GDP	3.8	25	●	7.2.2 National feature films/mn pop. 15-69	0.8	64	○
				7.2.3 Entertainment and media market/th pop. 15-69	5.8	40	
				7.2.4 Creative goods exports, % total trade	0.3	72	
🏠 Market sophistication		33.4	73	7.3 Online creativity	24.7	51	
4.1 Credit	23.8	81	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.1	67		
4.1.1 Finance for startups and scaleups†	28.3	73	○	7.3.2 Country-code TLDs/th pop. 15-69	25.3	28	◆◆
4.1.2 Domestic credit to private sector, % GDP	54.3	68		7.3.3 GitHub commits/mn pop. 15-69	7.1	60	
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a		7.3.4 Mobile app creation/bn PPP\$ GDP	63.4	72	
4.2 Investment	12.8	49					
4.2.1 Market capitalization, % GDP	37.1	42					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	84	○				
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	60					
4.2.4 VC received, value, % GDP	0.0	28					
4.3 Trade, diversification and market scale	63.5	39					
4.3.1 Applied tariff rate, weighted avg., %	2.4	65					
4.3.2 Domestic industry diversification	85.5	63					
4.3.3 Domestic market scale, bn PPP\$	964.7	31					

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Costa Rica

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
81	66	Upper middle	LCN	5.2	129.9	24,837	
		Score/Value	Rank			Score/Value	Rank
 Institutions		57.9	48	 Business sophistication		28.7	63
1.1 Institutional environment	49.0	55	5.1 Knowledge workers	18.5	104	◇	
1.1.1 Operational stability for businesses*	54.2	62	5.1.1 Knowledge-intensive employment, %	21.4	72		
1.1.2 Government effectiveness*	43.8	56	5.1.2 Firms offering formal training, %	n/a	n/a		
1.2 Regulatory environment	66.1	55	5.1.3 GERD performed by business, % GDP	⊙	0.1	58	
1.2.1 Regulatory quality*	53.9	48	5.1.4 GERD financed by business, %	⊙	2.3	86 ○◇	
1.2.2 Rule of law*	53.0	44	5.1.5 Females employed w/advanced degrees, %	11.8	65		
1.2.3 Cost of redundancy dismissal	18.7	79	5.2 Innovation linkages	19.9	73		
1.3 Business environment	58.7	[36]	5.2.1 University-industry R&D collaboration†	39.9	73		
1.3.1 Policies for doing business†	58.7	42	5.2.2 State of cluster development†	52.8	43		
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	⊙	0.0	67	
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP ⊙	0.0	88		
			5.2.5 Patent families/bn PPP\$ GDP	0.0	74		
 Human capital and research		27.9	79	 Knowledge and technology outputs		21.7	70
2.1 Education	58.3	44	5.3 Knowledge absorption	47.6	28	◆◆	
2.1.1 Expenditure on education, % GDP	⊙	6.7	9	◆◆	3.0	8	◆◆
2.1.2 Government funding/pupil, secondary, % GDP/cap	25.1	21	◆	5.3.1 Intellectual property payments, % total trade	8.3	64	
2.1.3 School life expectancy, years	⊙	16.5	27	◆◆	1.3	65	
2.1.4 PISA scales in reading, maths and science	414.8	59		5.3.2 High-tech imports, % total trade	4.4	26	◆
2.1.5 Pupil-teacher ratio, secondary	12.8	59		5.3.3 ICT services imports, % total trade	n/a	n/a	
2.2 Tertiary education	19.8	91		5.3.4 FDI net inflows, % GDP			
2.2.1 Tertiary enrolment, % gross	⊙	57.7	56	5.3.5 Research talent, % in businesses			
2.2.2 Graduates in science and engineering, %	15.9	95	○				
2.2.3 Tertiary inbound mobility, %	⊙	1.2	86				
2.3 Research and development (R&D)	5.5	72					
2.3.1 Researchers, FTE/mn pop.	⊙	345.0	78				
2.3.2 Gross expenditure on R&D, % GDP	⊙	0.4	68				
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	○◇				
2.3.4 QS university ranking, top 3*	12.1	62					
 Infrastructure		42.0	62	 Creative outputs		16.2	89
3.1 Information and communication technologies (ICTs)	69.9	65	6.1 Knowledge creation	5.4	110	○	
3.1.1 ICT access*	86.3	44	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	108	○	
3.1.2 ICT use*	73.9	64	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	85		
3.1.3 Government's online service*	64.8	70	6.1.3 Utility models by origin/bn PPP\$ GDP	0.1	62		
3.1.4 E-participation*	54.7	66	6.1.4 Scientific and technical articles/bn PPP\$ GDP	6.6	96		
3.2 General infrastructure	21.1	86	6.1.5 Citable documents H-index	10.5	75		
3.2.1 Electricity output, GWh/mn pop.	2,464.6	76	6.2 Knowledge impact	25.9	69		
3.2.2 Logistics performance*	36.4	65	6.2.1 Labor productivity growth, %	1.4	47		
3.2.3 Gross capital formation, % GDP	20.8	93	6.2.2 Unicorn valuation, % GDP	0.0	48	○◇	
3.3 Ecological sustainability	35.0	40	6.2.3 Software spending, % GDP	0.3	32	◆◆	
3.3.1 GDP/unit of energy use	19.3	9	◆◆	6.2.4 High-tech manufacturing, %	13.0	83	
3.3.2 Environmental performance*	46.4	53		6.3 Knowledge diffusion	33.8	44	
3.3.3 ISO 14001 environment/bn PPP\$ GDP	1.1	63		6.3.1 Intellectual property receipts, % total trade	0.0	80	
				6.3.2 Production and export complexity	58.9	48	
				6.3.3 High-tech exports, % total trade	6.3	30	◆
				6.3.4 ICT services exports, % total trade	6.4	15	◆◆
				6.3.5 ISO 9001 quality/bn PPP\$ GDP	3.1	73	
 Market sophistication		27.2	90				
4.1 Credit	21.7	[88]	7.1 Intangible assets	17.5	92		
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a		
4.1.2 Domestic credit to private sector, % GDP	60.4	58	7.1.2 Trademarks by origin/bn PPP\$ GDP	76.0	21	◆	
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.1.3 Global brand value, top 5,000, % GDP	0.0	74	○◇	
4.2 Investment	2.4	99	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.1	116	○	
4.2.1 Market capitalization, % GDP	3.4	76	○	7.2 Creative goods and services	8.4	74	
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	62		7.2.1 Cultural and creative services exports, % total trade	0.6	47	
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	81	○	7.2.2 National feature films/mn pop. 15-69	1.6	51	
4.2.4 VC received, value, % GDP	0.0	84	○	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a	
4.3 Trade, diversification and market scale	57.5	69		7.2.4 Creative goods exports, % total trade	0.2	77	
4.3.1 Applied tariff rate, weighted avg., %	1.5	48	7.3 Online creativity	21.7	60		
4.3.2 Domestic industry diversification	79.5	78	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	12.8	38	◆	
4.3.3 Domestic market scale, bn PPP\$	129.9	82	7.3.2 Country-code TLDs/th pop. 15-69	1.4	83		
			7.3.3 GitHub commits/mn pop. 15-69	11.2	53		
			7.3.4 Mobile app creation/bn PPP\$ GDP	61.4	77		

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.



Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
102	112	Lower middle	SSA	28.2	181.5	6,397	
		Score/Value	Rank			Score/Value	Rank
🏛️ Institutions		48.1	71	📁 Business sophistication		22.1	96
1.1 Institutional environment	36.8	86	5.1 Knowledge workers	17.5	[107]		
1.1.1 Operational stability for businesses*	50.7	70 ●	5.1.1 Knowledge-intensive employment, %	⊖	7.1	115	
1.1.2 Government effectiveness*	22.9	100	5.1.2 Firms offering formal training, %	⊖	35.5	46 ●	
1.2 Regulatory environment	59.1	75	5.1.3 GERD performed by business, % GDP		n/a	n/a	
1.2.1 Regulatory quality*	35.4	86	5.1.4 GERD financed by business, %		n/a	n/a	
1.2.2 Rule of law*	21.2	103	5.1.5 Females employed w/advanced degrees, %	⊖	1.2	116	
1.2.3 Cost of redundancy dismissal	13.1	47 ●	5.2 Innovation linkages	20.9	68 ●		
1.3 Business environment	48.4	[60]	5.2.1 University-industry R&D collaboration†		42.0	71	
1.3.1 Policies for doing business†	48.4	63 ●	5.2.2 State of cluster development†		39.9	71	
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP		n/a	n/a	
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	116	
			5.2.5 Patent families/bn PPP\$ GDP		0.0	95 ◊	
👤 Human capital and research		10.5	128 ◊	📄 Knowledge and technology outputs		11.0	118
2.1 Education	26.1	125 ◊	5.3 Knowledge absorption	28.0	88		
2.1.1 Expenditure on education, % GDP	3.5	92	5.3.1 Intellectual property payments, % total trade		0.1	103	
2.1.2 Government funding/pupil, secondary, % GDP/cap	10.8	89	5.3.2 High-tech imports, % total trade	⊖	5.7	106	
2.1.3 School life expectancy, years	10.7	101	5.3.3 ICT services imports, % total trade		1.7	51 ●	
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.4 FDI net inflows, % GDP		1.5	88	
2.1.5 Pupil-teacher ratio, secondary	29.3	119 ◊	5.3.5 Research talent, % in businesses		n/a	n/a	
2.2 Tertiary education	5.0	121 ◊	6.1 Knowledge creation	2.9	122		
2.2.1 Tertiary enrolment, % gross	9.9	115	6.1.1 Patents by origin/bn PPP\$ GDP		0.3	91	
2.2.2 Graduates in science and engineering, %	n/a	n/a	6.1.2 PCT patents by origin/bn PPP\$ GDP		0.0	96	
2.2.3 Tertiary inbound mobility, %	2.4	73	6.1.3 Utility models by origin/bn PPP\$ GDP		0.0	75 ◊	
2.3 Research and development (R&D)	0.4	113	6.1.4 Scientific and technical articles/bn PPP\$ GDP		2.4	120	
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index		5.5	98	
2.3.2 Gross expenditure on R&D, % GDP	⊖	0.1	107 ◊	6.2 Knowledge impact	21.2	97	
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ◊	71 ◊	6.2.1 Labor productivity growth, %	1.9	34 ●	
2.3.4 QS university ranking, top 3*	0.0	71 ◊	6.2.2 Unicorn valuation, % GDP		0.0	48 ◊	
			6.2.3 Software spending, % GDP		0.0	123 ◊	
			6.2.4 High-tech manufacturing, %		n/a	n/a	
⚙️ Infrastructure		25.9	106	6.3 Knowledge diffusion	8.8	112	
3.1 Information and communication technologies (ICTs)	46.0	104	6.3.1 Intellectual property receipts, % total trade		0.0	99	
3.1.1 ICT access*	51.0	106	6.3.2 Production and export complexity		24.2	116 ◊	
3.1.2 ICT use*	47.0	106	6.3.3 High-tech exports, % total trade	⊖	0.4	91	
3.1.3 Government's online service*	49.9	91	6.3.4 ICT services exports, % total trade		0.9	91	
3.1.4 E-participation*	36.0	93	6.3.5 ISO 9001 quality/bn PPP\$ GDP		1.5	93	
3.2 General infrastructure	12.7	116	7.1 Intangible assets	22.2	81		
3.2.1 Electricity output, GWh/mn pop.	⊖	426.5	7.1.1 Intangible asset intensity, top 15, %		35.9	65	
3.2.2 Logistics performance*	n/a	n/a	7.1.2 Trademarks by origin/bn PPP\$ GDP		7.2	114	
3.2.3 Gross capital formation, % GDP	26.2	43 ●	7.1.3 Global brand value, top 5,000, % GDP		0.5	62 ●	
3.3 Ecological sustainability	18.8	85	7.1.4 Industrial designs by origin/bn PPP\$ GDP		0.5	81	
3.3.1 GDP/unit of energy use	12.9	38 ●	7.2 Creative goods and services	0.4	[125]		
3.3.2 Environmental performance*	23.6	100	7.2.1 Cultural and creative services exports, % total trade		0.0	93	
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.3	106	7.2.2 National feature films/mn pop. 15-69		n/a	n/a	
			7.2.3 Entertainment and media market/th pop. 15-69		n/a	n/a	
			7.2.4 Creative goods exports, % total trade	⊖	0.0	119	
🏢 Market sophistication		14.0	123 ◊	7.3 Online creativity	9.4	118	
4.1 Credit	10.5	110	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		0.5	112	
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69		0.3	108	
4.1.2 Domestic credit to private sector, % GDP	21.1	114	7.3.3 GitHub commits/mn pop. 15-69		0.4	123 ◊	
4.1.3 Loans from microfinance institutions, % GDP	1.3	23 ●	7.3.4 Mobile app creation/bn PPP\$ GDP		36.4	115 ◊	
4.2 Investment	4.1	86					
4.2.1 Market capitalization, % GDP	13.5	67					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	66					
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	65					
4.2.4 VC received, value, % GDP	0.0	79					
4.3 Trade, diversification and market scale	27.2	118					
4.3.1 Applied tariff rate, weighted avg., %	7.6	104					
4.3.2 Domestic industry diversification	n/a	n/a					
4.3.3 Domestic market scale, bn PPP\$	181.5	73					

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Croatia

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
44	43	High	EUR	4.0	150.4	37,550

	Score/Value	Rank		Score/Value	Rank
 Institutions	48.0	72 ◊	 Business sophistication	30.6	53 ◊
1.1 Institutional environment	61.3	40	5.1 Knowledge workers	39.3	49
1.1.1 Operational stability for businesses*	69.4	29	5.1.1 Knowledge-intensive employment, %	35.2	41
1.1.2 Government effectiveness*	53.1	44	5.1.2 Firms offering formal training, %	26.2	64 ◊◊
1.2 Regulatory environment	68.9	46	5.1.3 GERD performed by business, % GDP	0.6	36
1.2.1 Regulatory quality*	55.1	46 ◊	5.1.4 GERD financed by business, %	37.6	50
1.2.2 Rule of law*	48.6	51 ◊	5.1.5 Females employed w/advanced degrees, %	17.8	41
1.2.3 Cost of redundancy dismissal	15.1	61	5.2 Innovation linkages	16.6	91 ◊◊
1.3 Business environment	13.8	127 ◊◊	5.2.1 University-industry R&D collaboration†	⊙ 22.0	113 ◊◊
1.3.1 Policies for doing business†	⊙ 26.5	112 ◊◊	5.2.2 State of cluster development†	⊙ 8.4	125 ◊◊
1.3.2 Entrepreneurship policies and culture†	1.0	84 ◊◊	5.2.3 GERD financed by abroad, % GDP	0.3	13 ●
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	68
			5.2.5 Patent families/bn PPP\$ GDP	0.1	49
 Human capital and research	36.6	44	5.3 Knowledge absorption	35.9	55
2.1 Education	61.0	30	5.3.1 Intellectual property payments, % total trade	1.1	34
2.1.1 Expenditure on education, % GDP	⊙ 3.9	76	5.3.2 High-tech imports, % total trade	7.2	83
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	1.7	46
2.1.3 School life expectancy, years	15.1	52	5.3.4 FDI net inflows, % GDP	5.1	19 ●
2.1.4 PISA scales in reading, maths and science	471.9	37	5.3.5 Research talent, % in businesses	26.4	49
2.1.5 Pupil-teacher ratio, secondary	6.1	1 ●◆	 Knowledge and technology outputs	34.0	33
2.2 Tertiary education	35.9	42	6.1 Knowledge creation	20.1	54
2.2.1 Tertiary enrolment, % gross	68.1	44	6.1.1 Patents by origin/bn PPP\$ GDP	0.8	67
2.2.2 Graduates in science and engineering, %	28.5	26	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	55
2.2.3 Tertiary inbound mobility, %	3.0	67	6.1.3 Utility models by origin/bn PPP\$ GDP	0.2	43
2.3 Research and development (R&D)	12.8	52 ◊	6.1.4 Scientific and technical articles/bn PPP\$ GDP	31.5	18 ●
2.3.1 Researchers, FTE/mn pop.	2,355.6	36	6.1.5 Citable documents H-index	18.0	49
2.3.2 Gross expenditure on R&D, % GDP	1.2	33	6.2 Knowledge impact	41.9	25
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ◊◊	6.2.1 Labor productivity growth, %	1.7	40
2.3.4 QS university ranking, top 3*	4.6	70 ◊	6.2.2 Unicorn valuation, % GDP	4.1	11 ●◆
			6.2.3 Software spending, % GDP	0.0	108 ◊◊
			6.2.4 High-tech manufacturing, %	26.2	48
 Infrastructure	56.7	26	6.3 Knowledge diffusion	40.1	35
3.1 Information and communication technologies (ICTs)	81.1	34	6.3.1 Intellectual property receipts, % total trade	0.3	40
3.1.1 ICT access*	86.4	43	6.3.2 Production and export complexity	69.3	32
3.1.2 ICT use*	85.5	37	6.3.3 High-tech exports, % total trade	3.7	42
3.1.3 Government's online service*	79.1	36	6.3.4 ICT services exports, % total trade	3.5	35
3.1.4 E-participation*	73.3	29	6.3.5 ISO 9001 quality/bn PPP\$ GDP	21.4	8 ●◆
3.2 General infrastructure	30.0	55 ◊	 Creative outputs	30.0	52
3.2.1 Electricity output, GWh/mn pop.	3,890.7	57	7.1 Intangible assets	34.3	56
3.2.2 Logistics performance*	54.5	42	7.1.1 Intangible asset intensity, top 15, %	37.3	64 ◊
3.2.3 Gross capital formation, % GDP	21.4	85 ◊	7.1.2 Trademarks by origin/bn PPP\$ GDP	32.1	73
3.3 Ecological sustainability	59.0	5 ●◆	7.1.3 Global brand value, top 5,000, % GDP	0.2	71 ◊
3.3.1 GDP/unit of energy use	12.5	41	7.1.4 Industrial designs by origin/bn PPP\$ GDP	3.6	28
3.3.2 Environmental performance*	70.0	16 ●	7.2 Creative goods and services	19.6	50
3.3.3 ISO 14001 environment/bn PPP\$ GDP	9.8	5 ●◆	7.2.1 Cultural and creative services exports, % total trade	1.7	15 ●
			7.2.2 National feature films/mn pop. 15-69	2.1	47 ◊
			7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
			7.2.4 Creative goods exports, % total trade	0.9	49
 Market sophistication	38.8	48	7.3 Online creativity	31.9	38
4.1 Credit	33.7	57	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	17.7	32
4.1.1 Finance for startups and scaleups†	46.0	52	7.3.2 Country-code TLDs/th pop. 15-69	12.8	37
4.1.2 Domestic credit to private sector, % GDP	59.5	62	7.3.3 GitHub commits/mn pop. 15-69	26.3	38
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	70.8	50
4.2 Investment	19.6	36			
4.2.1 Market capitalization, % GDP	35.9	43			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	81 ◊			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	54			
4.2.4 VC received, value, % GDP	0.0	14 ●			
4.3 Trade, diversification and market scale	63.2	41			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	96.2	24			
4.3.3 Domestic market scale, bn PPP\$	150.4	78			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◊ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
21	33	High	NAWA	1.3	44.8	49,504


	Score/Value	Rank		Score/Value	Rank
 Institutions	61.8	41	 Business sophistication	43.9	31
1.1 Institutional environment	61.9	39	5.1 Knowledge workers	49.7	31
1.1.1 Operational stability for businesses*	66.7	36	5.1.1 Knowledge-intensive employment, %	38.4	33
1.1.2 Government effectiveness*	57.1	39	5.1.2 Firms offering formal training, %	39.7	35
1.2 Regulatory environment	80.7	27	5.1.3 GERD performed by business, % GDP	0.4	44
1.2.1 Regulatory quality*	64.4	35	5.1.4 GERD financed by business, %	38.0	47
1.2.2 Rule of law*	58.4	39	5.1.5 Females employed w/advanced degrees, %	26.7	13
1.2.3 Cost of redundancy dismissal	8.0	1 ◆	5.2 Innovation linkages	36.4	32
1.3 Business environment	42.8	75	5.2.1 University-industry R&D collaboration†	39.4	75
1.3.1 Policies for doing business†	56.2	48	5.2.2 State of cluster development†	47.3	51
1.3.2 Entrepreneurship policies and culture†	29.4	58	5.2.3 GERD financed by abroad, % GDP	0.2	22
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	17
			5.2.5 Patent families/bn PPP\$ GDP	1.4	24
 Human capital and research	39.8	38	5.3 Knowledge absorption	45.7	31
2.1 Education	62.5	22	5.3.1 Intellectual property payments, % total trade	1.2	29
2.1.1 Expenditure on education, % GDP	5.2	31	5.3.2 High-tech imports, % total trade	4.3	122 ○◇
2.1.2 Government funding/pupil, secondary, % GDP/cap	34.9	4 ◆	5.3.3 ICT services imports, % total trade	13.9	1 ◆◆
2.1.3 School life expectancy, years	15.8	42	5.3.4 FDI net inflows, % GDP	-5.9	130 ○◇
2.1.4 PISA scales in reading, maths and science	438.0	45 ◇	5.3.5 Research talent, % in businesses	35.4	38
2.1.5 Pupil-teacher ratio, secondary	7.7	7 ◆◆			
2.2 Tertiary education	48.3	12	 Knowledge and technology outputs	39.5	23
2.2.1 Tertiary enrolment, % gross	92.9	10	6.1 Knowledge creation	36.0	26
2.2.2 Graduates in science and engineering, %	13.1	103 ○◇	6.1.1 Patents by origin/bn PPP\$ GDP	1.1	55
2.2.3 Tertiary inbound mobility, %	27.2	4 ◆◆	6.1.2 PCT patents by origin/bn PPP\$ GDP	1.2	23
2.3 Research and development (R&D)	8.5	66 ◇	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1 Researchers, FTE/mn pop.	1,813.6	43	6.1.4 Scientific and technical articles/bn PPP\$ GDP	42.7	4 ◆◆
2.3.2 Gross expenditure on R&D, % GDP	0.9	45	6.1.5 Citable documents H-index	13.4	64
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.2 Knowledge impact	23.0	89 ◇
2.3.4 QS university ranking, top 3*	0.0	71 ○◇	6.2.1 Labor productivity growth, %	1.4	51
			6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
 Infrastructure	55.5	32	6.2.3 Software spending, % GDP	0.2	81 ◇
3.1 Information and communication technologies (ICTs)	83.0	28	6.2.4 High-tech manufacturing, %	17.7	68 ◇
3.1.1 ICT access*	97.6	6 ◆◆	6.3 Knowledge diffusion	59.4	5 ◆◆
3.1.2 ICT use*	84.3	42	6.3.1 Intellectual property receipts, % total trade	2.5	12
3.1.3 Government's online service*	75.6	46	6.3.2 Production and export complexity	61.4	45
3.1.4 E-participation*	74.4	25	6.3.3 High-tech exports, % total trade	0.9	74 ◇
3.2 General infrastructure	30.2	54 ◇	6.3.4 ICT services exports, % total trade	17.6	1 ◆◆
3.2.1 Electricity output, GWh/mn pop.	5,856.2	34	6.3.5 ISO 9001 quality/bn PPP\$ GDP	19.1	14 ◆
3.2.2 Logistics performance*	50.0	50 ◇			
3.2.3 Gross capital formation, % GDP	18.5	107 ○◇	 Creative outputs	47.5	17
3.3 Ecological sustainability	53.3	14	7.1 Intangible assets	52.9	18
3.3.1 GDP/unit of energy use	15.1	25	7.1.1 Intangible asset intensity, top 15, %	40.5	61
3.3.2 Environmental performance*	66.3	22	7.1.2 Trademarks by origin/bn PPP\$ GDP	110.6	8 ◆
3.3.3 ISO 14001 environment/bn PPP\$ GDP	7.2	12 ◆	7.1.3 Global brand value, top 5,000, % GDP	0.0	74 ○◇
			7.1.4 Industrial designs by origin/bn PPP\$ GDP	8.5	12 ◆
 Market sophistication	44.5	38	7.2 Creative goods and services	27.4	35
4.1 Credit	37.2	45	7.2.1 Cultural and creative services exports, % total trade	2.6	9 ◆
4.1.1 Finance for startups and scaleups†	33.6	62 ◇	7.2.2 National feature films/mn pop. 15-69	4.3	28
4.1.2 Domestic credit to private sector, % GDP	108.8	24	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.2.4 Creative goods exports, % total trade	0.2	79
4.2 Investment	39.1	15	7.3 Online creativity	56.6	17
4.2.1 Market capitalization, % GDP	16.1	64 ○	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	79.0	8 ◆◆
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	1.6	4 ◆◆	7.3.2 Country-code TLDs/th pop. 15-69	7.8	45
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.2	10	7.3.3 GitHub commits/mn pop. 15-69	39.6	26
4.2.4 VC received, value, % GDP	0.0	33	7.3.4 Mobile app creation/bn PPP\$ GDP	100.0	1 ◆◆
4.3 Trade, diversification and market scale	57.3	70			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	80.8	72			
4.3.3 Domestic market scale, bn PPP\$	44.8	113 ○			

NOTES: ◆ indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ◎ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Czech Republic

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
27	34	High	EUR	10.5	514.7	48,919

	Score/Value	Rank		Score/Value	Rank
 Institutions	63.7	36	 Business sophistication	47.2	27
1.1 Institutional environment	69.8	23	5.1 Knowledge workers	45.9	39
1.1.1 Operational stability for businesses*	72.2	22	5.1.1 Knowledge-intensive employment, %	40.0	30
1.1.2 Government effectiveness*	67.4	29	5.1.2 Firms offering formal training, %	43.6	27
1.2 Regulatory environment	75.3	34	5.1.3 GERD performed by business, % GDP	1.3	19
1.2.1 Regulatory quality*	77.1	21	5.1.4 GERD financed by business, %	36.1	52 ○
1.2.2 Rule of law*	72.7	25	5.1.5 Females employed w/advanced degrees, %	13.9	54
1.2.3 Cost of redundancy dismissal	20.2	87 ○	5.2 Innovation linkages	45.8	25
1.3 Business environment	45.9	[66]	5.2.1 University-industry R&D collaboration†	72.4	23
1.3.1 Policies for doing business†	45.9	69 ○	5.2.2 State of cluster development†	41.4	66
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.6	1 ●◆
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	80 ○
			5.2.5 Patent families/bn PPP\$ GDP	0.5	32
 Human capital and research	44.6	30	5.3 Knowledge absorption	49.9	19
2.1 Education	60.7	32	5.3.1 Intellectual property payments, % total trade	0.8	48
2.1.1 Expenditure on education, % GDP	⊙ 4.5	53	5.3.2 High-tech imports, % total trade	21.2	7 ●◆
2.1.2 Government funding/pupil, secondary, % GDP/cap	27.1	13	5.3.3 ICT services imports, % total trade	1.7	53
2.1.3 School life expectancy, years	16.3	30	5.3.4 FDI net inflows, % GDP	3.5	39
2.1.4 PISA scales in reading, maths and science	495.5	23	5.3.5 Research talent, % in businesses	53.3	20
2.1.5 Pupil-teacher ratio, secondary	⊙ 11.5	48	 Knowledge and technology outputs	43.5	21
2.2 Tertiary education	44.1	23	6.1 Knowledge creation	35.0	27
2.2.1 Tertiary enrolment, % gross	68.1	45	6.1.1 Patents by origin/bn PPP\$ GDP	1.6	44
2.2.2 Graduates in science and engineering, %	25.9	40	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.5	33
2.2.3 Tertiary inbound mobility, %	15.0	13	6.1.3 Utility models by origin/bn PPP\$ GDP	2.2	7 ●◆
2.3 Research and development (R&D)	28.9	36	6.1.4 Scientific and technical articles/bn PPP\$ GDP	27.7	26
2.3.1 Researchers, FTE/mn pop.	4,581.3	22	6.1.5 Citable documents H-index	30.7	32
2.3.2 Gross expenditure on R&D, % GDP	2.0	19	6.2 Knowledge impact	41.5	27
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.2.1 Labor productivity growth, %	0.9	67
2.3.4 QS university ranking, top 3*	32.5	39	6.2.2 Unicorn valuation, % GDP	0.4	40
			6.2.3 Software spending, % GDP	0.3	34
 Infrastructure	56.8	24	6.2.4 High-tech manufacturing, %	59.7	4 ●◆
3.1 Information and communication technologies (ICTs)	73.3	56	6.3 Knowledge diffusion	54.0	11 ●
3.1.1 ICT access*	84.9	50	6.3.1 Intellectual property receipts, % total trade	0.4	28
3.1.2 ICT use*	85.5	38	6.3.2 Production and export complexity	89.8	6 ●◆
3.1.3 Government's online service*	63.5	72 ○◇	6.3.3 High-tech exports, % total trade	20.7	7 ●◆
3.1.4 E-participation*	59.3	57	6.3.4 ICT services exports, % total trade	3.1	39
3.2 General infrastructure	41.7	30	6.3.5 ISO 9001 quality/bn PPP\$ GDP	24.4	4 ●◆
3.2.1 Electricity output, GWh/mn pop.	7,824.6	22	 Creative outputs	38.7	32
3.2.2 Logistics performance*	54.5	42	7.1 Intangible assets	28.4	71 ○
3.2.3 Gross capital formation, % GDP	30.7	23 ◆	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	55.5	12 ●◆	7.1.2 Trademarks by origin/bn PPP\$ GDP	61.7	37
3.3.1 GDP/unit of energy use	9.4	77 ○	7.1.3 Global brand value, top 5,000, % GDP	1.6	47
3.3.2 Environmental performance*	69.5	19	7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.9	34
3.3.3 ISO 14001 environment/bn PPP\$ GDP	9.7	6 ●◆	7.2 Creative goods and services	45.1	8 ●◆
			7.2.1 Cultural and creative services exports, % total trade	0.6	45
 Market sophistication	30.4	82 ○◇	7.2.2 National feature films/mn pop. 15-69	6.3	16
4.1 Credit	18.8	[94]	7.2.3 Entertainment and media market/th pop. 15-69	27.2	25
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.2.4 Creative goods exports, % total trade	10.9	1 ●◆
4.1.2 Domestic credit to private sector, % GDP	53.1	70 ○	7.3 Online creativity	53.1	20
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	20.6	30
4.2 Investment	7.3	64 ○	7.3.2 Country-code TLDs/th pop. 15-69	59.1	16
4.2.1 Market capitalization, % GDP	10.6	70 ○◇	7.3.3 GitHub commits/mn pop. 15-69	58.0	14 ●
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	44	7.3.4 Mobile app creation/bn PPP\$ GDP	74.8	26
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	61 ○			
4.2.4 VC received, value, % GDP	0.0	49			
4.3 Trade, diversification and market scale	65.2	28			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	94.0	34			
4.3.3 Domestic market scale, bn PPP\$	514.7	47			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Denmark

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
10	7	High	EUR	5.9	411.0	69,845	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
		83.9	5 ●			59.0	12
1.1 Institutional environment	88.7	2 ●◆	5.1 Knowledge workers	63.1	17		
1.1.1 Operational stability for businesses*	85.4	6 ◆	5.1.1 Knowledge-intensive employment, %	48.9	13		
1.1.2 Government effectiveness*	92.1	3 ●◆	5.1.2 Firms offering formal training, %	40.6	32		
1.2 Regulatory environment	85.7	17	5.1.3 GERD performed by business, % GDP	1.7	14		
1.2.1 Regulatory quality*	89.0	5 ●	5.1.4 GERD financed by business, %	59.6	15	⊙	
1.2.2 Rule of law*	96.4	3 ●◆	5.1.5 Females employed w/advanced degrees, %	25.3	18		
1.2.3 Cost of redundancy dismissal	18.8	81 ○	5.2 Innovation linkages	64.0	8		
1.3 Business environment	77.2	[12]	5.2.1 University-industry R&D collaboration†	81.5	13		
1.3.1 Policies for doing business†	77.2	14	5.2.2 State of cluster development†	69.0	25		
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.2	27	⊙	
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	15		
			5.2.5 Patent families/bn PPP\$ GDP	4.9	8	◆	
Human capital and research		Score/Value	Rank	Knowledge and technology outputs		Score/Value	Rank
		58.1	9			51.3	12
2.1 Education	69.2	7	5.3 Knowledge absorption	49.8	21		
2.1.1 Expenditure on education, % GDP	6.9	7 ◆	5.3.1 Intellectual property payments, % total trade	0.8	49 ○		
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.4	37	5.3.2 High-tech imports, % total trade	6.5	100 ○		
2.1.3 School life expectancy, years	18.7	10	5.3.3 ICT services imports, % total trade	4.1	7 ◆		
2.1.4 PISA scales in reading, maths and science	501.1	17	5.3.4 FDI net inflows, % GDP	1.0	97 ○		
2.1.5 Pupil-teacher ratio, secondary	10.1	32	5.3.5 Research talent, % in businesses	56.2	18		
2.2 Tertiary education	40.4	34					
2.2.1 Tertiary enrolment, % gross	82.8	20	6.1 Knowledge creation	59.6	11		
2.2.2 Graduates in science and engineering, %	23.0	55 ○	6.1.1 Patents by origin/bn PPP\$ GDP	9.9	9		
2.2.3 Tertiary inbound mobility, %	10.2	26	6.1.2 PCT patents by origin/bn PPP\$ GDP	3.6	7		
2.3 Research and development (R&D)	64.5	10	6.1.3 Utility models by origin/bn PPP\$ GDP	0.2	42 ○		
2.3.1 Researchers, FTE/mn pop.	7,708.3	4 ●◆	6.1.4 Scientific and technical articles/bn PPP\$ GDP	47.9	2 ●◆		
2.3.2 Gross expenditure on R&D, % GDP	2.8	12	6.1.5 Citable documents H-index	51.5	15		
2.3.3 Global corporate R&D investors, top 3, mn USD	70.1	14	6.2 Knowledge impact	48.1	20		
2.3.4 QS university ranking, top 3*	57.6	16	6.2.1 Labor productivity growth, %	0.4	83 ○		
			6.2.2 Unicorn valuation, % GDP	1.7	25		
			6.2.3 Software spending, % GDP	0.5	22		
			6.2.4 High-tech manufacturing, %	50.5	10		
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank
		65.6	3 ●◆			55.9	10
3.1 Information and communication technologies (ICTs)	94.2	7 ◆	7.1 Intangible assets	55.6	15		
3.1.1 ICT access*	90.9	20	7.1.1 Intangible asset intensity, top 15, %	85.7	3 ●◆		
3.1.2 ICT use*	99.6	2 ●◆	7.1.2 Trademarks by origin/bn PPP\$ GDP	31.3	75 ○		
3.1.3 Government's online service*	97.8	4 ●◆	7.1.3 Global brand value, top 5,000, % GDP	14.2	9		
3.1.4 E-participation*	88.4	12	7.1.4 Industrial designs by origin/bn PPP\$ GDP	5.8	18		
3.2 General infrastructure	46.6	25	7.2 Creative goods and services	37.9	16		
3.2.1 Electricity output, GWh/mn pop.	5,644.0	36	7.2.1 Cultural and creative services exports, % total trade	0.9	34		
3.2.2 Logistics performance*	90.9	3 ●◆	7.2.2 National feature films/mn pop. 15-69	5.7	20		
3.2.3 Gross capital formation, % GDP	24.2	63 ○	7.2.3 Entertainment and media market/th pop. 15-69	77.8	3 ●		
3.3 Ecological sustainability	56.2	10 ◆	7.2.4 Creative goods exports, % total trade	1.6	32		
3.3.1 GDP/unit of energy use	18.6	10	7.3 Online creativity	74.5	4 ●		
3.3.2 Environmental performance*	100.0	1 ●◆	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	56.8	14		
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.6	35	7.3.2 Country-code TLDs/th pop. 15-69	100.0	1 ●◆		
			7.3.3 GitHub commits/mn pop. 15-69	64.7	9		
			7.3.4 Mobile app creation/bn PPP\$ GDP	76.4	16		
Market sophistication		Score/Value	Rank				
		52.8	21				
4.1 Credit	62.5	[15]					
4.1.1 Finance for startups and scaleups†	n/a	n/a					
4.1.2 Domestic credit to private sector, % GDP	163.7	8					
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a					
4.2 Investment	33.0	21					
4.2.1 Market capitalization, % GDP	n/a	n/a					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.4	14					
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.2	14					
4.2.4 VC received, value, % GDP	0.0	26					
4.3 Trade, diversification and market scale	63.0	44					
4.3.1 Applied tariff rate, weighted avg., %	1.5	20					
4.3.2 Domestic industry diversification	89.7	50 ○					
4.3.3 Domestic market scale, bn PPP\$	411.0	51					

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Dominican Republic

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
96	89	Upper middle	LCN	11.2	256.4	24,120

	Score/Value	Rank		Score/Value	Rank
 Institutions	49.3	67	 Business sophistication	23.7	86
1.1 Institutional environment	47.3	59	5.1 Knowledge workers	25.0	[78]
1.1.1 Operational stability for businesses*	56.9	55 ●	5.1.1 Knowledge-intensive employment, %	⊖ 15.2	88 ◇
1.1.2 Government effectiveness*	37.6	68	5.1.2 Firms offering formal training, %	⊖ 23.4	70
1.2 Regulatory environment	52.3	93	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	44.4	67	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	36.9	70	5.1.5 Females employed w/advanced degrees, %	⊖ 9.6	77
1.2.3 Cost of redundancy dismissal	26.2	107	5.2 Innovation linkages	19.2	78
1.3 Business environment	48.4	61	5.2.1 University-industry R&D collaboration†	31.1	94
1.3.1 Policies for doing business†	58.8	41 ●	5.2.2 State of cluster development†	43.9	59
1.3.2 Entrepreneurship policies and culture†	⊖ 37.9	50	5.2.3 GERD financed by abroad, % GDP	n/a	n/a
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	123 ○
			5.2.5 Patent families/bn PPP\$ GDP	0.0	65
 Human capital and research	17.5	109 ◇	5.3 Knowledge absorption	26.9	94
2.1 Education	35.8	110 ◇	5.3.1 Intellectual property payments, % total trade	0.4	78
2.1.1 Expenditure on education, % GDP	3.7	80	5.3.2 High-tech imports, % total trade	8.9	52 ●
2.1.2 Government funding/pupil, secondary, % GDP/cap	13.6	80	5.3.3 ICT services imports, % total trade	0.4	112 ◇
2.1.3 School life expectancy, years	⊖ 14.2	70	5.3.4 FDI net inflows, % GDP	3.3	42 ●
2.1.4 PISA scales in reading, maths and science	334.1	79 ○◇	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	13.5	66	 Knowledge and technology outputs	14.4	95
2.2 Tertiary education	16.6	97 ◇	6.1 Knowledge creation	1.0	130 ○◇
2.2.1 Tertiary enrolment, % gross	⊖ 59.9	53 ●	6.1.1 Patents by origin/bn PPP\$ GDP	0.0	126 ○
2.2.2 Graduates in science and engineering, %	⊖ 11.6	106 ◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	84
2.2.3 Tertiary inbound mobility, %	⊖ 1.7	80	6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	66
2.3 Research and development (R&D)	0.0	[119]	6.1.4 Scientific and technical articles/bn PPP\$ GDP	0.8	130 ○◇
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index	2.4	123
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	6.2 Knowledge impact	24.4	76
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.2.1 Labor productivity growth, %	3.0	16 ●
2.3.4 QS university ranking, top 3*	0.0	71 ○◇	6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
			6.2.3 Software spending, % GDP	0.0	122 ◇
 Infrastructure	37.0	76	6.2.4 High-tech manufacturing, %	n/a	n/a
3.1 Information and communication technologies (ICTs)	58.2	85	6.3 Knowledge diffusion	17.7	85
3.1.1 ICT access*	61.6	97 ◇	6.3.1 Intellectual property receipts, % total trade	0.0	114 ○◇
3.1.2 ICT use*	69.3	74	6.3.2 Production and export complexity	52.2	61
3.1.3 Government's online service*	57.8	79	6.3.3 High-tech exports, % total trade	2.4	53 ●
3.1.4 E-participation*	44.2	83	6.3.4 ICT services exports, % total trade	0.3	114
3.2 General infrastructure	20.8	88	6.3.5 ISO 9001 quality/bn PPP\$ GDP	1.0	107
3.2.1 Electricity output, GWh/mn pop.	⊖ 1,533.0	91 ◇	 Creative outputs	14.1	94
3.2.2 Logistics performance*	22.7	82	7.1 Intangible assets	9.8	108 ◇
3.2.3 Gross capital formation, % GDP	31.5	20 ●◆	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	31.9	49 ●	7.1.2 Trademarks by origin/bn PPP\$ GDP	43.1	53 ●
3.3.1 GDP/unit of energy use	21.2	7 ●◆	7.1.3 Global brand value, top 5,000, % GDP	0.2	70
3.3.2 Environmental performance*	39.5	65	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.0	119 ○◇
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.1	120	7.2 Creative goods and services	22.3	[46]
			7.2.1 Cultural and creative services exports, % total trade	n/a	n/a
 Market sophistication	25.3	91 ◇	7.2.2 National feature films/mn pop. 15-69	2.1	46
4.1 Credit	10.5	111 ◇	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.1 Finance for startups and scaleups†	⊖ 11.1	83 ○◇	7.2.4 Creative goods exports, % total trade	2.7	21 ●
4.1.2 Domestic credit to private sector, % GDP	30.5	95	7.3 Online creativity	14.6	99
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	2.7	76
4.2 Investment	n/a	[n/a]	7.3.2 Country-code TLDs/th pop. 15-69	1.4	79
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.3 GitHub commits/mn pop. 15-69	3.2	87
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	51.0	101
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a			
4.2.4 VC received, value, % GDP	n/a	n/a			
4.3 Trade, diversification and market scale	40.1	103 ◇			
4.3.1 Applied tariff rate, weighted avg., %	3.9	81			
4.3.2 Domestic industry diversification	n/a	n/a			
4.3.3 Domestic market scale, bn PPP\$	256.4	62			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.





Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
99	98	Upper middle	LCN	18.0	229.8	12,763	
		Score/Value	Rank			Score/Value	Rank
 Institutions		35.1	109	 Business sophistication		23.2	90
1.1 Institutional environment		33.9	95	5.1 Knowledge workers		29.5	72
1.1.1 Operational stability for businesses*		36.8	107	5.1.1 Knowledge-intensive employment, %		12.5	100
1.1.2 Government effectiveness*		31.0	86	5.1.2 Firms offering formal training, %	⊖	73.7	1
1.2 Regulatory environment		39.9	120	5.1.3 GERD performed by business, % GDP	⊖	0.2	56
1.2.1 Regulatory quality*		23.9	112	5.1.4 GERD financed by business, %	⊖	0.2	97
1.2.2 Rule of law*		29.8	83	5.1.5 Females employed w/advanced degrees, %		8.6	81
1.2.3 Cost of redundancy dismissal		31.8	122	5.2 Innovation linkages		11.3	114
1.3 Business environment		31.7	96	5.2.1 University–industry R&D collaboration†		30.9	96
1.3.1 Policies for doing business†		26.0	113	5.2.2 State of cluster development†		21.2	112
1.3.2 Entrepreneurship policies and culture†	⊖	37.3	52	5.2.3 GERD financed by abroad, % GDP	⊖	0.0	64
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	124
				5.2.5 Patent families/bn PPP\$ GDP		0.0	80
 Human capital and research		21.3	98	5.3 Knowledge absorption		28.7	85
2.1 Education		36.5	109	5.3.1 Intellectual property payments, % total trade		0.6	61
2.1.1 Expenditure on education, % GDP		3.7	83	5.3.2 High-tech imports, % total trade		9.7	42
2.1.2 Government funding/pupil, secondary, % GDP/cap		6.0	99	5.3.3 ICT services imports, % total trade		0.6	106
2.1.3 School life expectancy, years		14.8	59	5.3.4 FDI net inflows, % GDP		0.9	101
2.1.4 PISA scales in reading, maths and science		n/a	n/a	5.3.5 Research talent, % in businesses		n/a	n/a
2.1.5 Pupil–teacher ratio, secondary		21.0	102	 Knowledge and technology outputs		13.4	102
2.2 Tertiary education		22.1	85	6.1 Knowledge creation		6.9	99
2.2.1 Tertiary enrolment, % gross		52.6	67	6.1.1 Patents by origin/bn PPP\$ GDP		0.2	104
2.2.2 Graduates in science and engineering, %		19.7	72	6.1.2 PCT patents by origin/bn PPP\$ GDP		0.0	83
2.2.3 Tertiary inbound mobility, %		1.0	89	6.1.3 Utility models by origin/bn PPP\$ GDP		0.1	56
2.3 Research and development (R&D)		5.3	74	6.1.4 Scientific and technical articles/bn PPP\$ GDP		9.8	75
2.3.1 Researchers, FTE/mn pop.	⊖	399.5	74	6.1.5 Citable documents H-index		9.5	83
2.3.2 Gross expenditure on R&D, % GDP	⊖	0.4	65	6.2 Knowledge impact		22.5	91
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	40	6.2.1 Labor productivity growth, %		-0.8	115
2.3.4 QS university ranking, top 3*		9.5	68	6.2.2 Unicorn valuation, % GDP		1.2	32
				6.2.3 Software spending, % GDP		0.2	69
				6.2.4 High-tech manufacturing, %		10.3	89
 Infrastructure		36.8	78	6.3 Knowledge diffusion		10.9	104
3.1 Information and communication technologies (ICTs)		65.3	76	6.3.1 Intellectual property receipts, % total trade		0.0	91
3.1.1 ICT access*		58.9	99	6.3.2 Production and export complexity		29.5	113
3.1.2 ICT use*		58.6	95	6.3.3 High-tech exports, % total trade		0.3	102
3.1.3 Government's online service*		74.0	50	6.3.4 ICT services exports, % total trade		0.3	108
3.1.4 E-participation*		69.8	41	6.3.5 ISO 9001 quality/bn PPP\$ GDP		6.0	47
3.2 General infrastructure		17.0	102	 Creative outputs		12.9	99
3.2.1 Electricity output, GWh/mn pop.		1,807.9	86	7.1 Intangible assets		17.7	90
3.2.2 Logistics performance*		n/a	n/a	7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
3.2.3 Gross capital formation, % GDP		27.1	37	7.1.2 Trademarks by origin/bn PPP\$ GDP		66.9	28
3.3 Ecological sustainability		28.0	57	7.1.3 Global brand value, top 5,000, % GDP		0.0	74
3.3.1 GDP/unit of energy use		12.5	40	7.1.4 Industrial designs by origin/bn PPP\$ GDP		0.4	90
3.3.2 Environmental performance*		46.8	52	7.2 Creative goods and services		0.3	[127]
3.3.3 ISO 14001 environment/bn PPP\$ GDP		1.0	65	7.2.1 Cultural and 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 and media market/th pop. 15–69		n/a	n/a
				7.2.4 Creative goods exports, % total trade		0.0	115
 Market sophistication		23.3	103	7.3 Online creativity		15.8	92
4.1 Credit		22.5	85	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69		2.1	80
4.1.1 Finance for startups and scaleups†	⊖	31.3	68	7.3.2 Country-code TLDs/th pop. 15–69		1.2	85
4.1.2 Domestic credit to private sector, % GDP		47.4	75	7.3.3 GitHub commits/mn pop. 15–69		3.9	80
4.1.3 Loans from microfinance institutions, % GDP	⊖	1.7	19	7.3.4 Mobile app creation/bn PPP\$ GDP		56.0	93
4.2 Investment		2.7	[96]				
4.2.1 Market capitalization, % GDP		n/a	n/a				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		n/a	n/a				
4.2.3 VC recipients, deals/bn PPP\$ GDP	⊖	0.0	96				
4.2.4 VC received, value, % GDP	⊖	0.0	66				
4.3 Trade, diversification and market scale		44.8	97				
4.3.1 Applied tariff rate, weighted avg., %		6.2	98				
4.3.2 Domestic industry diversification		69.7	95				
4.3.3 Domestic market scale, bn PPP\$		229.8	65				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Egypt

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
74	99	Lower middle	NAWA	111.0	1,662.0	15,959

	Score/Value	Rank		Score/Value	Rank
 Institutions	36.6	103	 Business sophistication	21.4	100
1.1 Institutional environment	31.9	98	5.1 Knowledge workers	11.3	120 ◊◊
1.1.1 Operational stability for businesses*	38.9	96	5.1.1 Knowledge-intensive employment, %	⊙ 22.8	65
1.1.2 Government effectiveness*	24.8	97	5.1.2 Firms offering formal training, %	7.9	95 ◊◊
1.2 Regulatory environment	36.8	124 ◊	5.1.3 GERD performed by business, % GDP	⊙ 0.0	77
1.2.1 Regulatory quality*	29.0	99	5.1.4 GERD financed by business, %	⊙ 3.9	84 ◊
1.2.2 Rule of law*	32.5	76	5.1.5 Females employed w/advanced degrees, %	⊙ 5.7	92
1.2.3 Cost of redundancy dismissal	36.8	125 ◊◊	5.2 Innovation linkages	27.6	47 ●◆
1.3 Business environment	41.2	81	5.2.1 University–industry R&D collaboration†	50.7	50
1.3.1 Policies for doing business†	53.7	53	5.2.2 State of cluster development†	83.5	7 ●◆
1.3.2 Entrepreneurship policies and culture†	28.7	62	5.2.3 GERD financed by abroad, % GDP	⊙ 0.0	85
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	99
			5.2.5 Patent families/bn PPP\$ GDP	0.0	90
 Human capital and research	21.9	95	5.3 Knowledge absorption	25.3	101
2.1 Education	42.1	91	5.3.1 Intellectual property payments, % total trade	0.5	73
2.1.1 Expenditure on education, % GDP	⊙ 3.9	75	5.3.2 High-tech imports, % total trade	7.4	75
2.1.2 Government funding/pupil, secondary, % GDP/cap	12.5	86	5.3.3 ICT services imports, % total trade	1.2	72
2.1.3 School life expectancy, years	⊙ 13.6	75	5.3.4 FDI net inflows, % GDP	1.9	73
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	⊙ 6.3	66
2.1.5 Pupil–teacher ratio, secondary	⊙ 15.8	81			
2.2 Tertiary education	11.7	109	 Knowledge and technology outputs	19.9	77
2.2.1 Tertiary enrolment, % gross	42.7	76	6.1 Knowledge creation	12.2	73
2.2.2 Graduates in science and engineering, %	⊙ 11.2	107 ◊◊	6.1.1 Patents by origin/bn PPP\$ GDP	0.6	73
2.2.3 Tertiary inbound mobility, %	0.9	90	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	79
2.3 Research and development (R&D)	11.8	55	6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	74 ◊
2.3.1 Researchers, FTE/mn pop.	854.3	55	6.1.4 Scientific and technical articles/bn PPP\$ GDP	15.7	47 ●◆
2.3.2 Gross expenditure on R&D, % GDP	1.0	42 ●◆	6.1.5 Citable documents H-index	19.2	47 ●◆
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ◊◊	6.2 Knowledge impact	31.1	53
2.3.4 QS university ranking, top 3*	21.5	49 ●◆	6.2.1 Labor productivity growth, %	3.3	12 ●
			6.2.2 Unicorn valuation, % GDP	0.2	45 ●
			6.2.3 Software spending, % GDP	0.2	72
			6.2.4 High-tech manufacturing, %	⊙ 22.6	57
 Infrastructure	31.9	90	6.3 Knowledge diffusion	16.2	90
3.1 Information and communication technologies (ICTs)	53.7	92	6.3.1 Intellectual property receipts, % total trade	0.0	106
3.1.1 ICT access*	73.3	83	6.3.2 Production and export complexity	50.6	68
3.1.2 ICT use*	55.1	99	6.3.3 High-tech exports, % total trade	0.7	81
3.1.3 Government's online service*	52.8	87	6.3.4 ICT services exports, % total trade	1.7	65
3.1.4 E-participation*	33.7	97	6.3.5 ISO 9001 quality/bn PPP\$ GDP	1.6	92
3.2 General infrastructure	18.3	98	 Creative outputs	21.2	73
3.2.1 Electricity output, GWh/mn pop.	⊙ 1,875.3	84	7.1 Intangible assets	31.3	66
3.2.2 Logistics performance*	45.5	56 ◆	7.1.1 Intangible asset intensity, top 15, %	47.8	51
3.2.3 Gross capital formation, % GDP	11.8	126 ◊◊	7.1.2 Trademarks by origin/bn PPP\$ GDP	29.7	77
3.3 Ecological sustainability	23.7	66 ◆	7.1.3 Global brand value, top 5,000, % GDP	0.6	61
3.3.1 GDP/unit of energy use	15.2	24 ●◆	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.5	51
3.3.2 Environmental performance*	28.1	91	7.2 Creative goods and services	6.7	78
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.7	76	7.2.1 Cultural and creative services exports, % total trade	n/a	n/a
			7.2.2 National feature films/mn pop. 15–69	0.4	74 ◊
			7.2.3 Entertainment and media market/th pop. 15–69	1.2	54 ◊
			7.2.4 Creative goods exports, % total trade	1.4	38 ●
 Market sophistication	27.6	88	7.3 Online creativity	15.6	93
4.1 Credit	20.6	91	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.2	94
4.1.1 Finance for startups and scaleups†	48.1	50	7.3.2 Country-code TLDs/th pop. 15–69	0.0	129 ◊
4.1.2 Domestic credit to private sector, % GDP	27.1	104	7.3.3 GitHub commits/mn pop. 15–69	2.5	95
4.1.3 Loans from microfinance institutions, % GDP	0.4	39	7.3.4 Mobile app creation/bn PPP\$ GDP	58.7	87
4.2 Investment	7.7	59			
4.2.1 Market capitalization, % GDP	14.2	66			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	68			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	45			
4.2.4 VC received, value, % GDP	0.0	50			
4.3 Trade, diversification and market scale	54.7	76			
4.3.1 Applied tariff rate, weighted avg., %	⊙ 10.4	120 ◊			
4.3.2 Domestic industry diversification	⊙ 95.8	25 ●◆			
4.3.3 Domestic market scale, bn PPP\$	1,662.0	18 ●◆			

NOTES: ● indicates a strength; ◊ a weakness; ◆ an income group strength; ◊ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
90	102	Lower middle	LCN	6.3	69.3	10,576	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		37.8	101	5.1 Knowledge workers		23.8	85
1.1.1	Operational stability for businesses*	37.7	83	5.1.1	Knowledge-intensive employment, %	29.9	69
1.1.2	Government effectiveness*	47.2	75	5.1.2	Firms offering formal training, %	14.8	90
1.2 Regulatory environment		47.3	107	5.1.3	GERD performed by business, % GDP	53.8	15 ◆◆
1.2.1	Regulatory quality*	33.2	91	5.1.4	GERD financed by business, %	0.1	70
1.2.2	Rule of law*	14.9	111	5.1.5	Females employed w/advanced degrees, %	35.1	54
1.2.3	Cost of redundancy dismissal	22.9	99	5.2 Innovation linkages		8.4	122 ◇
1.3 Business environment		28.4	104	5.2.1	University-industry R&D collaboration†	22.5	112
1.3.1	Policies for doing business†	17.9	122 ○◇	5.2.2	State of cluster development†	13.8	122 ○◇
1.3.2	Entrepreneurship policies and culture†	38.8	49	5.2.3	GERD financed by abroad, % GDP	0.0	70
Human capital and research		18.3	106	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	91
2.1 Education		35.4	111	5.2.5	Patent families/bn PPP\$ GDP	0.0	95 ○◇
2.1.1	Expenditure on education, % GDP	4.6	51 ●	5.3 Knowledge absorption		33.3	65
2.1.2	Government funding/pupil, secondary, % GDP/cap	13.1	82	5.3.1	Intellectual property payments, % total trade	1.0	38 ◆◆
2.1.3	School life expectancy, years	12.5	89	5.3.2	High-tech imports, % total trade	10.8	30 ●
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	0.7	98
2.1.5	Pupil-teacher ratio, secondary	27.6	117 ◇	5.3.4	FDI net inflows, % GDP	2.3	67
2.2 Tertiary education		18.5	94	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	29.9	88	Knowledge and technology outputs		14.6	94
2.2.2	Graduates in science and engineering, %	21.8	62	6.1 Knowledge creation		1.3	128 ○◇
2.2.3	Tertiary inbound mobility, %	0.4	102	6.1.1	Patents by origin/bn PPP\$ GDP	0.0	125 ○
2.3 Research and development (R&D)		0.9	102	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	101 ○◇
2.3.1	Researchers, FTE/mn pop.	73.0	93	6.1.3	Utility models by origin/bn PPP\$ GDP	0.1	58
2.3.2	Gross expenditure on R&D, % GDP	0.2	94	6.1.4	Scientific and technical articles/bn PPP\$ GDP	1.4	128 ○
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.1.5	Citable documents H-index	2.2	126 ○
2.3.4	QS university ranking, top 3*	0.0	71 ○◇	6.2 Knowledge impact		19.1	109
Infrastructure		28.8	99	6.2.1	Labor productivity growth, %	1.0	65
3.1 Information and communication technologies (ICTs)		47.7	103	6.2.2	Unicorn valuation, % GDP	0.0	48 ○◇
3.1.1	ICT access*	59.7	98	6.2.3	Software spending, % GDP	0.0	107
3.1.2	ICT use*	56.1	97	6.2.4	High-tech manufacturing, %	n/a	n/a
3.1.3	Government's online service*	41.1	108	6.3 Knowledge diffusion		23.4	62
3.1.4	E-participation*	33.7	97	6.3.1	Intellectual property receipts, % total trade	0.0	93
3.2 General infrastructure		16.5	104	6.3.2	Production and export complexity	53.0	60
3.2.1	Electricity output, GWh/mn pop.	974.4	97	6.3.3	High-tech exports, % total trade	2.9	47 ●
3.2.2	Logistics performance*	27.3	76	6.3.4	ICT services exports, % total trade	2.7	48 ●
3.2.3	Gross capital formation, % GDP	22.6	77	6.3.5	ISO 9001 quality/bn PPP\$ GDP	2.9	75
3.3 Ecological sustainability		22.3	72 ◆	Creative outputs		19.2	[77]
3.3.1	GDP/unit of energy use	11.7	50 ●	7.1 Intangible assets		28.8	[69]
3.3.2	Environmental performance*	37.1	71 ◆	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.3	102	7.1.2	Trademarks by origin/bn PPP\$ GDP	77.5	20 ◆◆
Market sophistication		24.8	95	7.1.3	Global brand value, top 5,000, % GDP	n/a	n/a
4.1 Credit		27.8	69	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.3	100
4.1.1	Finance for startups and scaleups†	31.6	67	7.2 Creative goods and services		4.0	[91]
4.1.2	Domestic credit to private sector, % GDP	66.3	55 ●	7.2.1	Cultural and creative services exports, % total trade	0.0	105 ○
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
4.2 Investment		2.0	[103]	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	n/a	n/a	7.2.4	Creative goods exports, % total trade	0.7	54 ●
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	72	7.3 Online creativity		15.2	97
4.2.3	VC recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	2.8	75
4.2.4	VC received, value, % GDP	n/a	n/a	7.3.2	Country-code TLDs/th pop. 15-69	0.6	97
4.3 Trade, diversification and market scale		44.5	98	7.3.3	GitHub commits/mn pop. 15-69	3.8	82
4.3.1	Applied tariff rate, weighted avg., %	1.9	59 ◆	7.3.4	Mobile app creation/bn PPP\$ GDP	53.7	98
4.3.2	Domestic industry diversification	n/a	n/a				
4.3.3	Domestic market scale, bn PPP\$	69.3	98				

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Estonia

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
16	14	High	EUR	1.3	61.4	46,126

	Score/Value	Rank		Score/Value	Rank
 Institutions	78.6	11	 Business sophistication	49.2	25
1.1 Institutional environment	75.3	17	5.1 Knowledge workers	58.8	22
1.1.1 Operational stability for businesses*	75.7	15	5.1.1 Knowledge-intensive employment, %	46.8	17
1.1.2 Government effectiveness*	74.9	19	5.1.2 Firms offering formal training, %	40.7	31
1.2 Regulatory environment	86.2	16	5.1.3 GERD performed by business, % GDP	1.0	23
1.2.1 Regulatory quality*	82.6	15	5.1.4 GERD financed by business, %	50.1	29
1.2.2 Rule of law*	81.5	18	5.1.5 Females employed w/advanced degrees, %	28.1	8
1.2.3 Cost of redundancy dismissal	12.9	40	5.2 Innovation linkages	37.3	30
1.3 Business environment	74.3	16	5.2.1 University-industry R&D collaboration†	54.1	44
1.3.1 Policies for doing business†	60.7	37	5.2.2 State of cluster development†	41.9	62
1.3.2 Entrepreneurship policies and culture†	88.0	3			
 Human capital and research	42.9	34	5.2.3 GERD financed by abroad, % GDP	0.2	19
2.1 Education	62.5	21	5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	18
2.1.1 Expenditure on education, % GDP	5.3	26	5.2.5 Patent families/bn PPP\$ GDP	0.9	28
2.1.2 Government funding/pupil, secondary, % GDP/cap	20.3	51	5.3 Knowledge absorption	51.5	17
2.1.3 School life expectancy, years	16.0	39	5.3.1 Intellectual property payments, % total trade	0.3	87
2.1.4 PISA scales in reading, maths and science	525.5	4	5.3.2 High-tech imports, % total trade	8.4	60
2.1.5 Pupil-teacher ratio, secondary	9.8	29	5.3.3 ICT services imports, % total trade	10.0	1
2.2 Tertiary education	43.4	24	5.3.4 FDI net inflows, % GDP	13.7	8
2.2.1 Tertiary enrolment, % gross	69.0	43	5.3.5 Research talent, % in businesses	43.2	33
2.2.2 Graduates in science and engineering, %	27.5	31	 Knowledge and technology outputs	43.7	20
2.2.3 Tertiary inbound mobility, %	12.3	20	6.1 Knowledge creation	28.4	34
2.3 Research and development (R&D)	22.7	42	6.1.1 Patents by origin/bn PPP\$ GDP	1.7	41
2.3.1 Researchers, FTE/mn pop.	4,037.4	27	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.6	30
2.3.2 Gross expenditure on R&D, % GDP	1.8	22	6.1.3 Utility models by origin/bn PPP\$ GDP	0.6	30
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.1.4 Scientific and technical articles/bn PPP\$ GDP	36.3	13
2.3.4 QS university ranking, top 3*	17.6	56	6.1.5 Citable documents H-index	18.5	48
 Infrastructure	64.3	5	6.2 Knowledge impact	52.4	10
3.1 Information and communication technologies (ICTs)	95.6	2	6.2.1 Labor productivity growth, %	1.9	35
3.1.1 ICT access*	90.0	23	6.2.2 Unicorn valuation, % GDP	23.8	1
3.1.2 ICT use*	94.8	12	6.2.3 Software spending, % GDP	0.1	89
3.1.3 Government's online service*	100.0	1	6.2.4 High-tech manufacturing, %	29.9	37
3.1.4 E-participation*	97.7	3	6.3 Knowledge diffusion	50.3	17
3.2 General infrastructure	40.1	33	6.3.1 Intellectual property receipts, % total trade	0.5	27
3.2.1 Electricity output, GWh/mn pop.	5,500.4	40	6.3.2 Production and export complexity	73.2	27
3.2.2 Logistics performance*	68.2	25	6.3.3 High-tech exports, % total trade	9.7	18
3.2.3 Gross capital formation, % GDP	26.6	41	6.3.4 ICT services exports, % total trade	7.2	8
3.3 Ecological sustainability	57.2	9	6.3.5 ISO 9001 quality/bn PPP\$ GDP	17.9	16
3.3.1 GDP/unit of energy use	9.5	76	 Creative outputs	48.8	15
3.3.2 Environmental performance*	72.0	14	7.1 Intangible assets	48.3	29
3.3.3 ISO 14001 environment/bn PPP\$ GDP	10.0	4	7.1.1 Intangible asset intensity, top 15, %	46.9	53
 Market sophistication	67.6	5	7.1.2 Trademarks by origin/bn PPP\$ GDP	104.1	9
4.1 Credit	50.8	27	7.1.3 Global brand value, top 5,000, % GDP	0.0	74
4.1.1 Finance for startups and scaleups†	76.0	11	7.1.4 Industrial designs by origin/bn PPP\$ GDP	4.2	24
4.1.2 Domestic credit to private sector, % GDP	63.4	57	7.2 Creative goods and services	47.2	7
4.1.3 Loans from microfinance institutions, % GDP	4.6	8	7.2.1 Cultural and creative services exports, % total trade	2.1	11
4.2 Investment	89.2	2	7.2.2 National feature films/mn pop. 15-69	13.1	3
4.2.1 Market capitalization, % GDP	n/a	n/a	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	1.3	5	7.2.4 Creative goods exports, % total trade	1.3	40
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.7	1	7.3 Online creativity	51.3	23
4.2.4 VC received, value, % GDP	0.0	1	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	13.1	37
4.3 Trade, diversification and market scale	62.9	46	7.3.2 Country-code TLDs/th pop. 15-69	50.1	17
4.3.1 Applied tariff rate, weighted avg., %	1.5	20	7.3.3 GitHub commits/mn pop. 15-69	58.1	13
4.3.2 Domestic industry diversification	97.0	17	7.3.4 Mobile app creation/bn PPP\$ GDP	83.9	6
4.3.3 Domestic market scale, bn PPP\$	61.4	101			

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Ethiopia

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
109	130	Low	SSA	123.4	347.8	3,434	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		18.6	123	5.1 Knowledge workers		5.0	128
1.1.1 Operational stability for businesses*		17.4	126	5.1.1 Knowledge-intensive employment, %		4.4	121
1.1.2 Government effectiveness*		19.8	103	5.1.2 Firms offering formal training, %		20.8	77
1.2 Regulatory environment		49.0	103	5.1.3 GERD performed by business, % GDP		0.0	86
1.2.1 Regulatory quality*		18.0	123	5.1.4 GERD financed by business, %		1.5	90
1.2.2 Rule of law*		22.0	101	5.1.5 Females employed w/advanced degrees, %		0.3	126
1.2.3 Cost of redundancy dismissal		19.1	83	5.2 Innovation linkages		12.8	108
1.3 Business environment		30.5	[99]	5.2.1 University-industry R&D collaboration†		33.4	90
1.3.1 Policies for doing business†		30.5	105	5.2.2 State of cluster development†		19.1	114
1.3.2 Entrepreneurship policies and culture†		n/a	n/a	5.2.3 GERD financed by abroad, % GDP		0.1	48
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	106
				5.2.5 Patent families/bn PPP\$ GDP		0.0	95
Human capital and research		Score/Value	Rank	5.3 Knowledge absorption		Score/Value	Rank
2.1 Education		18.6	[130]	5.3.1 Intellectual property payments, % total trade		0.0	111
2.1.1 Expenditure on education, % GDP		3.7	82	5.3.2 High-tech imports, % total trade		9.8	40
2.1.2 Government funding/pupil, secondary, % GDP/cap		17.0	66	5.3.3 ICT services imports, % total trade		1.8	43
2.1.3 School life expectancy, years		n/a	n/a	5.3.4 FDI net inflows, % GDP		2.9	48
2.1.4 PISA scales in reading, maths and science		n/a	n/a	5.3.5 Research talent, % in businesses		2.2	76
2.1.5 Pupil-teacher ratio, secondary		43.7	124	Knowledge and technology outputs		17.9	84
2.2 Tertiary education		4.1	[123]	6.1 Knowledge creation		19.2	56
2.2.1 Tertiary enrolment, % gross		10.4	113	6.1.1 Patents by origin/bn PPP\$ GDP		0.0	127
2.2.2 Graduates in science and engineering, %		n/a	n/a	6.1.2 PCT patents by origin/bn PPP\$ GDP		n/a	n/a
2.2.3 Tertiary inbound mobility, %		n/a	n/a	6.1.3 Utility models by origin/bn PPP\$ GDP		1.3	19
2.3 Research and development (R&D)		1.4	96	6.1.4 Scientific and technical articles/bn PPP\$ GDP		18.1	40
2.3.1 Researchers, FTE/mn pop.		90.5	90	6.1.5 Citable documents H-index		9.7	81
2.3.2 Gross expenditure on R&D, % GDP		0.3	81	6.2 Knowledge impact		24.1	79
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	40	6.2.1 Labor productivity growth, %		4.0	8
2.3.4 QS university ranking, top 3*		0.0	71	6.2.2 Unicorn valuation, % GDP		0.0	48
				6.2.3 Software spending, % GDP		0.0	130
				6.2.4 High-tech manufacturing, %		13.5	81
Infrastructure		Score/Value	Rank	6.3 Knowledge diffusion		Score/Value	Rank
3.1 Information and communication technologies (ICTs)		17.0	132	6.3.1 Intellectual property receipts, % total trade		0.0	112
3.1.1 ICT access*		9.9	131	6.3.2 Production and export complexity		37.8	96
3.1.2 ICT use*		9.8	131	6.3.3 High-tech exports, % total trade		0.2	112
3.1.3 Government's online service*		30.7	122	6.3.4 ICT services exports, % total trade		1.2	81
3.1.4 E-participation*		17.4	125	6.3.5 ISO 9001 quality/bn PPP\$ GDP		0.3	129
3.2 General infrastructure		8.8	126	Creative outputs		4.5	[126]
3.2.1 Electricity output, GWh/mn pop.		134.8	119	7.1 Intangible assets		2.1	[127]
3.2.2 Logistics performance*		n/a	n/a	7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
3.2.3 Gross capital formation, % GDP		22.2	79	7.1.2 Trademarks by origin/bn PPP\$ GDP		5.5	120
3.3 Ecological sustainability		10.5	125	7.1.3 Global brand value, top 5,000, % GDP		0.4	66
3.3.1 GDP/unit of energy use		5.5	114	7.1.4 Industrial designs by origin/bn PPP\$ GDP		n/a	n/a
3.3.2 Environmental performance*		21.9	103	7.2 Creative goods and services		0.4	[126]
3.3.3 ISO 14001 environment/bn PPP\$ GDP		0.1	131	7.2.1 Cultural and creative services exports, % total trade		0.0	104
				7.2.2 National feature films/mn pop. 15-69		n/a	n/a
				7.2.3 Entertainment and media market/th pop. 15-69		n/a	n/a
				7.2.4 Creative goods exports, % total trade		0.1	108
Market sophistication		Score/Value	Rank	7.3 Online creativity		13.6	103
4.1 Credit		n/a	[n/a]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		0.0	131
4.1.1 Finance for startups and scaleups†		n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69		0.0	132
4.1.2 Domestic credit to private sector, % GDP		n/a	n/a	7.3.3 GitHub commits/mn pop. 15-69		1.2	113
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP		53.3	99
4.2 Investment		0.4	111				
4.2.1 Market capitalization, % GDP		n/a	n/a				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		0.0	93				
4.2.3 VC recipients, deals/bn PPP\$ GDP		0.0	95				
4.2.4 VC received, value, % GDP		0.0	98				
4.3 Trade, diversification and market scale		39.3	105				
4.3.1 Applied tariff rate, weighted avg., %		12.1	127				
4.3.2 Domestic industry diversification		88.9	52				
4.3.3 Domestic market scale, bn PPP\$		347.8	55				



NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Finland

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
9	5	High	EUR	5.5	324.8	58,659	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
85.4		3	◆	65.8		4	◆
1.1 Institutional environment	84.0	8		5.1 Knowledge workers	66.6	11	
1.1.1 Operational stability for businesses*	77.1	13		5.1.1 Knowledge-intensive employment, %	47.4	15	
1.1.2 Government effectiveness*	90.9	4	◆◆	5.1.2 Firms offering formal training, %	50.2	19	
1.2 Regulatory environment	95.7	2	◆◆	5.1.3 GERD performed by business, % GDP	2.1	11	
1.2.1 Regulatory quality*	91.4	3	●	5.1.4 GERD financed by business, %	56.0	20	
1.2.2 Rule of law*	100.0	1	◆◆	5.1.5 Females employed w/advanced degrees, %	26.4	15	
1.2.3 Cost of redundancy dismissal	10.1	31		5.2 Innovation linkages	74.2	5	◆
1.3 Business environment	76.6	13		5.2.1 University-industry R&D collaboration†	81.5	14	
1.3.1 Policies for doing business†	79.6	8		5.2.2 State of cluster development†	69.2	23	
1.3.2 Entrepreneurship policies and culture†	73.6	12	⊙	5.2.3 GERD financed by abroad, % GDP	0.4	7	◆
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.2	12	
				5.2.5 Patent families/bn PPP\$ GDP	6.1	1	◆◆
				5.3 Knowledge absorption	56.6	7	
				5.3.1 Intellectual property payments, % total trade	1.0	36	
				5.3.2 High-tech imports, % total trade	7.4	78	○
				5.3.3 ICT services imports, % total trade	4.8	4	◆◆
				5.3.4 FDI net inflows, % GDP	4.3	28	
				5.3.5 Research talent, % in businesses	62.0	10	
Human capital and research		Score/Value	Rank	Knowledge and technology outputs		Score/Value	Rank
60.0		5		61.6		4	◆◆
2.1 Education	69.2	8		6.1 Knowledge creation	61.3	7	
2.1.1 Expenditure on education, % GDP	6.4	14	⊙	6.1.1 Patents by origin/bn PPP\$ GDP	12.3	6	
2.1.2 Government funding/pupil, secondary, % GDP/cap	24.2	24		6.1.2 PCT patents by origin/bn PPP\$ GDP	5.4	1	◆◆
2.1.3 School life expectancy, years	19.1	7	◆	6.1.3 Utility models by origin/bn PPP\$ GDP	0.8	24	
2.1.4 PISA scales in reading, maths and science	516.4	8		6.1.4 Scientific and technical articles/bn PPP\$ GDP	42.5	5	◆
2.1.5 Pupil-teacher ratio, secondary	12.6	58	○	6.1.5 Citable documents H-index	43.0	19	
2.2 Tertiary education	46.0	19		6.2 Knowledge impact	55.5	8	
2.2.1 Tertiary enrolment, % gross	95.0	7		6.2.1 Labor productivity growth, %	-0.5	108	○
2.2.2 Graduates in science and engineering, %	27.9	28		6.2.2 Unicorn valuation, % GDP	4.4	10	
2.2.3 Tertiary inbound mobility, %	8.0	32		6.2.3 Software spending, % GDP	0.6	14	
2.3 Research and development (R&D)	64.7	9		6.2.4 High-tech manufacturing, %	38.1	28	⊙
2.3.1 Researchers, FTE/mn pop.	7,870.6	3	◆◆	6.3 Knowledge diffusion	68.1	1	◆◆
2.3.2 Gross expenditure on R&D, % GDP	3.0	10		6.3.1 Intellectual property receipts, % total trade	3.2	8	
2.3.3 Global corporate R&D investors, top 3, mn USD	73.2	11		6.3.2 Production and export complexity	81.9	14	
2.3.4 QS university ranking, top 3*	50.5	18		6.3.3 High-tech exports, % total trade	4.7	39	
				6.3.4 ICT services exports, % total trade	13.0	1	◆◆
				6.3.5 ISO 9001 quality/bn PPP\$ GDP	9.8	29	
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank
69.2		1	◆◆	47.5		16	
3.1 Information and communication technologies (ICTs)	94.7	4	◆◆	7.1 Intangible assets	50.1	26	
3.1.1 ICT access*	89.1	28		7.1.1 Intangible asset intensity, top 15, %	73.0	14	
3.1.2 ICT use*	96.1	7		7.1.2 Trademarks by origin/bn PPP\$ GDP	38.4	60	○
3.1.3 Government's online service*	98.2	2	◆◆	7.1.3 Global brand value, top 5,000, % GDP	11.8	13	
3.1.4 E-participation*	95.3	6		7.1.4 Industrial designs by origin/bn PPP\$ GDP	3.6	29	
3.2 General infrastructure	60.5	7	◆	7.2 Creative goods and services	31.0	30	
3.2.1 Electricity output, GWh/mn pop.	12,939.4	11		7.2.1 Cultural and creative services exports, % total trade	0.5	54	○
3.2.2 Logistics performance*	95.5	2	◆◆	7.2.2 National feature films/mn pop. 15-69	8.0	9	
3.2.3 Gross capital formation, % GDP	24.1	66	○	7.2.3 Entertainment and media market/th pop. 15-69	56.1	12	
3.3 Ecological sustainability	52.4	18		7.2.4 Creative goods exports, % total trade	0.6	59	○
3.3.1 GDP/unit of energy use	7.7	89	○	7.3 Online creativity	58.9	14	
3.3.2 Environmental performance*	97.6	3	◆◆	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	33.8	21	
3.3.3 ISO 14001 environment/bn PPP\$ GDP	5.5	19	◆	7.3.2 Country-code TLDs/th pop. 15-69	42.4	18	
				7.3.3 GitHub commits/mn pop. 15-69	78.2	7	
				7.3.4 Mobile app creation/bn PPP\$ GDP	81.1	9	
Market sophistication		Score/Value	Rank				
58.7		12					
4.1 Credit	68.7	6					
4.1.1 Finance for startups and scaleups†	100.0	1	◆◆				
4.1.2 Domestic credit to private sector, % GDP	100.2	30					
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a					
4.2 Investment	42.3	14					
4.2.1 Market capitalization, % GDP	n/a	n/a					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.3	19					
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.2	9					
4.2.4 VC received, value, % GDP	0.0	15					
4.3 Trade, diversification and market scale	65.0	29					
4.3.1 Applied tariff rate, weighted avg., %	1.5	20	○				
4.3.2 Domestic industry diversification	97.6	13	⊙				
4.3.3 Domestic market scale, bn PPP\$	324.8	57	○				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
11	17	High	EUR	64.6	3,688.3	56,200


	Score/Value	Rank		Score/Value	Rank
 Institutions	70.0	27	 Business sophistication	56.1	17
1.1 Institutional environment	66.4	34 ◇	5.1 Knowledge workers	69.1	7 ●
1.1.1 Operational stability for businesses*	61.1	43 ◇	5.1.1 Knowledge-intensive employment, %	47.7	14
1.1.2 Government effectiveness*	71.7	25	5.1.2 Firms offering formal training, %	67.9	2 ●◆
1.2 Regulatory environment	83.0	22	5.1.3 GERD performed by business, % GDP	1.5	17
1.2.1 Regulatory quality*	74.2	24	5.1.4 GERD financed by business, %	56.8	19
1.2.2 Rule of law*	77.5	22	5.1.5 Females employed w/advanced degrees, %	25.3	19
1.2.3 Cost of redundancy dismissal	13.0	41	5.2 Innovation linkages	47.3	23 ◇
1.3 Business environment	60.6	33	5.2.1 University-industry R&D collaboration†	58.6	38 ◇
1.3.1 Policies for doing business†	58.9	40 ◇	5.2.2 State of cluster development†	69.2	24
1.3.2 Entrepreneurship policies and culture†	62.3	20	5.2.3 GERD financed by abroad, % GDP	0.2	23
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	24
			5.2.5 Patent families/bn PPP\$ GDP	2.9	13
 Human capital and research	54.0	17	5.3 Knowledge absorption	51.9	15
2.1 Education	60.3	35	5.3.1 Intellectual property payments, % total trade	1.4	23
2.1.1 Expenditure on education, % GDP	5.4	25	5.3.2 High-tech imports, % total trade	9.4	44
2.1.2 Government funding/pupil, secondary, % GDP/cap	25.1	19	5.3.3 ICT services imports, % total trade	3.0	17
2.1.3 School life expectancy, years	15.9	41 ○	5.3.4 FDI net inflows, % GDP	1.8	80 ○
2.1.4 PISA scales in reading, maths and science	493.7	25	5.3.5 Research talent, % in businesses	61.8	11
2.1.5 Pupil-teacher ratio, secondary	13.4	64 ○	 Knowledge and technology outputs	46.7	16
2.2 Tertiary education	39.2	35	6.1 Knowledge creation	43.7	21
2.2.1 Tertiary enrolment, % gross	69.3	41	6.1.1 Patents by origin/bn PPP\$ GDP	7.2	12
2.2.2 Graduates in science and engineering, %	25.9	39	6.1.2 PCT patents by origin/bn PPP\$ GDP	2.1	15
2.2.3 Tertiary inbound mobility, %	9.2	28	6.1.3 Utility models by origin/bn PPP\$ GDP	0.1	53 ○
2.3 Research and development (R&D)	62.5	12	6.1.4 Scientific and technical articles/bn PPP\$ GDP	18.6	39
2.3.1 Researchers, FTE/mn pop.	5,025.4	18	6.1.5 Citable documents H-index	77.9	5 ●
2.3.2 Gross expenditure on R&D, % GDP	2.2	17	6.2 Knowledge impact	51.2	12
2.3.3 Global corporate R&D investors, top 3, mn USD	80.4	9 ●	6.2.1 Labor productivity growth, %	-0.3	105 ○
2.3.4 QS university ranking, top 3*	77.9	9 ●	6.2.2 Unicorn valuation, % GDP	2.1	18
			6.2.3 Software spending, % GDP	0.7	7 ●
 Infrastructure	57.2	22	6.2.4 High-tech manufacturing, %	48.8	12
3.1 Information and communication technologies (ICTs)	84.1	23	6.3 Knowledge diffusion	45.3	23
3.1.1 ICT access*	83.7	60 ○	6.3.1 Intellectual property receipts, % total trade	1.7	14
3.1.2 ICT use*	95.6	9 ●	6.3.2 Production and export complexity	79.5	18
3.1.3 Government's online service*	86.4	20	6.3.3 High-tech exports, % total trade	10.4	17
3.1.4 E-participation*	70.9	37	6.3.4 ICT services exports, % total trade	2.4	50 ○
3.2 General infrastructure	48.1	22	6.3.5 ISO 9001 quality/bn PPP\$ GDP	6.6	44
3.2.1 Electricity output, GWh/mn pop.	8,069.8	18	 Creative outputs	58.2	6 ●
3.2.2 Logistics performance*	81.8	13	7.1 Intangible assets	74.9	3 ●◆
3.2.3 Gross capital formation, % GDP	24.9	56 ○	7.1.1 Intangible asset intensity, top 15, %	88.0	2 ●◆
3.3 Ecological sustainability	39.3	33	7.1.2 Trademarks by origin/bn PPP\$ GDP	97.6	15
3.3.1 GDP/unit of energy use	12.2	46 ○	7.1.3 Global brand value, top 5,000, % GDP	18.4	4 ●
3.3.2 Environmental performance*	73.9	12	7.1.4 Industrial designs by origin/bn PPP\$ GDP	11.0	8 ●◆
3.3.3 ISO 14001 environment/bn PPP\$ GDP	1.9	48 ○	7.2 Creative goods and services	33.1	22
			7.2.1 Cultural and creative services exports, % total trade	1.1	25
 Market sophistication	60.7	9 ●	7.2.2 National feature films/mn pop. 15-69	6.1	17
4.1 Credit	58.1	19	7.2.3 Entertainment and media market/th pop. 15-69	51.6	15
4.1.1 Finance for startups and scaleups†	70.3	17	7.2.4 Creative goods exports, % total trade	1.6	31
4.1.2 Domestic credit to private sector, % GDP	122.0	20	7.3 Online creativity	49.9	26
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	49.3	16
4.2 Investment	35.4	18	7.3.2 Country-code TLDs/th pop. 15-69	27.2	26
4.2.1 Market capitalization, % GDP	92.7	18	7.3.3 GitHub commits/mn pop. 15-69	46.8	23
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.3	24	7.3.4 Mobile app creation/bn PPP\$ GDP	76.4	17
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.2	12			
4.2.4 VC received, value, % GDP	0.0	17			
4.3 Trade, diversification and market scale	88.5	8 ●◆			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	95.7	27			
4.3.3 Domestic market scale, bn PPP\$	3,688.3	10 ●◆			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Georgia

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
77	54	Upper middle	NAWA	3.7	73.6	19,789

	Score/Value	Rank		Score/Value	Rank
 Institutions	70.6	25 ●◆	 Business sophistication	29.4	58
1.1 Institutional environment	52.4	51	5.1 Knowledge workers	33.3	63
1.1.1 Operational stability for businesses*	50.0	71	5.1.1 Knowledge-intensive employment, %	⊙ 24.7	57
1.1.2 Government effectiveness*	54.8	41 ◆	5.1.2 Firms offering formal training, %	32.0	50
1.2 Regulatory environment	78.0	30 ●◆	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	69.6	29 ●◆	5.1.4 GERD financed by business, %	⊙ 1.7	89 ○◇
1.2.2 Rule of law*	44.7	57	5.1.5 Females employed w/advanced degrees, %	⊙ 18.1	39
1.2.3 Cost of redundancy dismissal	8.6	16 ●◆	5.2 Innovation linkages	24.1	58
1.3 Business environment	81.5	4 ●◆	5.2.1 University–industry R&D collaboration†	56.5	41
1.3.1 Policies for doing business†	70.5	25 ●◆	5.2.2 State of cluster development†	52.9	41
1.3.2 Entrepreneurship policies and culture†	⊙ 92.4	2	5.2.3 GERD financed by abroad, % GDP	⊙ 0.0	56
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	69
			5.2.5 Patent families/bn PPP\$ GDP	0.0	83
 Human capital and research	30.2	69	5.3 Knowledge absorption	30.7	78
2.1 Education	51.7	64	5.3.1 Intellectual property payments, % total trade	0.6	65
2.1.1 Expenditure on education, % GDP	3.6	84	5.3.2 High-tech imports, % total trade	7.4	76
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	1.0	88
2.1.3 School life expectancy, years	15.9	40	5.3.4 FDI net inflows, % GDP	6.1	16 ●◆
2.1.4 PISA scales in reading, maths and science	386.7	70 ○	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil–teacher ratio, secondary	8.0	9 ●◆	 Knowledge and technology outputs	21.4	72
2.2 Tertiary education	33.8	55	6.1 Knowledge creation	16.2	62
2.2.1 Tertiary enrolment, % gross	72.5	30 ●	6.1.1 Patents by origin/bn PPP\$ GDP	1.4	46
2.2.2 Graduates in science and engineering, %	19.6	75	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	59
2.2.3 Tertiary inbound mobility, %	9.1	29 ◆	6.1.3 Utility models by origin/bn PPP\$ GDP	1.0	22
2.3 Research and development (R&D)	5.3	75	6.1.4 Scientific and technical articles/bn PPP\$ GDP	11.6	68
2.3.1 Researchers, FTE/mn pop.	1,623.7	46	6.1.5 Citable documents H-index	10.8	72
2.3.2 Gross expenditure on R&D, % GDP	0.3	83	6.2 Knowledge impact	28.8	59
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.2.1 Labor productivity growth, %	5.8	3 ●◆
2.3.4 QS university ranking, top 3*	0.0	71 ○◇	6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
			6.2.3 Software spending, % GDP	0.1	97
 Infrastructure	36.2	80	6.2.4 High-tech manufacturing, %	10.4	88 ○
3.1 Information and communication technologies (ICTs)	69.8	67	6.3 Knowledge diffusion	19.3	78
3.1.1 ICT access*	89.3	25 ●	6.3.1 Intellectual property receipts, % total trade	0.0	81
3.1.2 ICT use*	80.6	56	6.3.2 Production and export complexity	50.9	67
3.1.3 Government's online service*	57.0	82	6.3.3 High-tech exports, % total trade	1.0	72
3.1.4 E-participation*	52.3	71	6.3.4 ICT services exports, % total trade	2.3	53
3.2 General infrastructure	19.2	94	6.3.5 ISO 9001 quality/bn PPP\$ GDP	3.6	70
3.2.1 Electricity output, GWh/mn pop.	3,410.6	61	 Creative outputs	18.8	81
3.2.2 Logistics performance*	27.3	76	7.1 Intangible assets	20.6	84
3.2.3 Gross capital formation, % GDP	19.8	100 ○	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	19.7	81	7.1.2 Trademarks by origin/bn PPP\$ GDP	45.6	51
3.3.1 GDP/unit of energy use	10.1	65	7.1.3 Global brand value, top 5,000, % GDP	1.3	52
3.3.2 Environmental performance*	34.2	76	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.6	49
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.3	104 ○	7.2 Creative goods and services	8.4	73
			7.2.1 Cultural and creative services exports, % total trade	0.2	68
 Market sophistication	32.3	77	7.2.2 National feature films/mn pop. 15–69	⊙ 2.7	41
4.1 Credit	36.7	46	7.2.3 Entertainment and media market/th pop. 15–69	n/a	n/a
4.1.1 Finance for startups and scaleups†	⊙ 53.6	41	7.2.4 Creative goods exports, % total trade	0.3	69
4.1.2 Domestic credit to private sector, % GDP	79.9	43	7.3 Online creativity	25.7	50
4.1.3 Loans from microfinance institutions, % GDP	2.3	17	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	2.2	79
4.2 Investment	1.2 [106]		7.3.2 Country-code TLDs/th pop. 15–69	6.4	50
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.3 GitHub commits/mn pop. 15–69	30.3	34 ◆
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	80 ○	7.3.4 Mobile app creation/bn PPP\$ GDP	64.0	70
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a			
4.2.4 VC received, value, % GDP	n/a	n/a			
4.3 Trade, diversification and market scale	58.9	63			
4.3.1 Applied tariff rate, weighted avg., %	0.2	4 ●◆			
4.3.2 Domestic industry diversification	76.6	83 ○◇			
4.3.3 Domestic market scale, bn PPP\$	73.6	94			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Germany

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
6	13	High	EUR	83.4	5,316.9	63,835




	Score/Value	Rank		Score/Value	Rank
 Institutions	71.9	22	 Business sophistication	56.9	16
1.1 Institutional environment	71.8	20	5.1 Knowledge workers	59.0	21
1.1.1 Operational stability for businesses*	70.1	28	5.1.1 Knowledge-intensive employment, %	46.1	20
1.1.2 Government effectiveness*	73.5	22	5.1.2 Firms offering formal training, %	44.1	25
1.2 Regulatory environment	79.4	29	5.1.3 GERD performed by business, % GDP	2.1	9
1.2.1 Regulatory quality*	84.4	11	5.1.4 GERD financed by business, %	62.6	11
1.2.2 Rule of law*	86.8	14	5.1.5 Females employed w/advanced degrees, %	15.6	48 ○◇
1.2.3 Cost of redundancy dismissal	21.6	93 ○◇	5.2 Innovation linkages	63.1	10
1.3 Business environment	64.6	29	5.2.1 University–industry R&D collaboration†	76.2	17
1.3.1 Policies for doing business†	75.8	15	5.2.2 State of cluster development†	82.6	9 ●
1.3.2 Entrepreneurship policies and culture†	53.5	29	5.2.3 GERD financed by abroad, % GDP	0.2	16
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	26 ◇
			5.2.5 Patent families/bn PPP\$ GDP	5.0	1 ●◆
 Human capital and research	61.1	4 ●	5.3 Knowledge absorption	48.6	26
2.1 Education	62.2	23	5.3.1 Intellectual property payments, % total trade	1.0	37
2.1.1 Expenditure on education, % GDP	5.1	36 ○	5.3.2 High-tech imports, % total trade	10.3	33
2.1.2 Government funding/pupil, secondary, % GDP/cap	24.3	23	5.3.3 ICT services imports, % total trade	2.6	27
2.1.3 School life expectancy, years	16.9	20	5.3.4 FDI net inflows, % GDP	2.4	63 ○
2.1.4 PISA scales in reading, maths and science	500.4	18	5.3.5 Research talent, % in businesses	60.1	15
2.1.5 Pupil–teacher ratio, secondary	11.5	47 ○	 Knowledge and technology outputs	55.4	9 ●
2.2 Tertiary education	51.4	8 ●	6.1 Knowledge creation	61.5	6 ●
2.2.1 Tertiary enrolment, % gross	73.0	29	6.1.1 Patents by origin/bn PPP\$ GDP	13.5	5 ●
2.2.2 Graduates in science and engineering, %	35.8	8 ◆	6.1.2 PCT patents by origin/bn PPP\$ GDP	3.3	10
2.2.3 Tertiary inbound mobility, %	11.2	23	6.1.3 Utility models by origin/bn PPP\$ GDP	1.4	15
2.3 Research and development (R&D)	69.6	7 ●	6.1.4 Scientific and technical articles/bn PPP\$ GDP	20.5	35
2.3.1 Researchers, FTE/mn pop.	5,538.0	14	6.1.5 Citable documents H-index	86.8	3 ●◆
2.3.2 Gross expenditure on R&D, % GDP	3.1	9	6.2 Knowledge impact	50.7	15
2.3.3 Global corporate R&D investors, top 3, mn USD	92.0	3 ●◆	6.2.1 Labor productivity growth, %	-0.0	98 ○
2.3.4 QS university ranking, top 3*	72.9	11	6.2.2 Unicorn valuation, % GDP	2.0	21
			6.2.3 Software spending, % GDP	0.6	15
 Infrastructure	57.1	23	6.2.4 High-tech manufacturing, %	52.9	9
3.1 Information and communication technologies (ICTs)	82.0	32	6.3 Knowledge diffusion	54.1	10
3.1.1 ICT access*	88.0	34	6.3.1 Intellectual property receipts, % total trade	2.5	11
3.1.2 ICT use*	91.2	19	6.3.2 Production and export complexity	93.6	3 ●◆
3.1.3 Government's online service*	76.8	44 ◇	6.3.3 High-tech exports, % total trade	11.3	15
3.1.4 E-participation*	72.1	32	6.3.4 ICT services exports, % total trade	2.1	56 ○
3.2 General infrastructure	48.3	21	6.3.5 ISO 9001 quality/bn PPP\$ GDP	10.1	28
3.2.1 Electricity output, GWh/mn pop.	7,102.1	27	 Creative outputs	58.2	7 ●
3.2.2 Logistics performance*	90.9	3 ●◆	7.1 Intangible assets	65.5	7 ●
3.2.3 Gross capital formation, % GDP	22.7	76 ○	7.1.1 Intangible asset intensity, top 15, %	73.6	13
3.3 Ecological sustainability	41.2	30	7.1.2 Trademarks by origin/bn PPP\$ GDP	69.1	24
3.3.1 GDP/unit of energy use	14.2	30	7.1.3 Global brand value, top 5,000, % GDP	15.6	8 ●
3.3.2 Environmental performance*	73.7	13	7.1.4 Industrial designs by origin/bn PPP\$ GDP	10.5	9 ◆
3.3.3 ISO 14001 environment/bn PPP\$ GDP	1.9	50 ○	7.2 Creative goods and services	32.2	24
			7.2.1 Cultural and creative services exports, % total trade	0.9	37
 Market sophistication	56.5	14	7.2.2 National feature films/mn pop. 15–69	4.4	27
4.1 Credit	49.3	30	7.2.3 Entertainment and media market/th pop. 15–69	56.4	11
4.1.1 Finance for startups and scaleups†	67.3	21	7.2.4 Creative goods exports, % total trade	2.2	24
4.1.2 Domestic credit to private sector, % GDP	84.8	37	7.3 Online creativity	69.4	8 ●
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	60.9	12
4.2 Investment	24.9	28	7.3.2 Country-code TLDs/th pop. 15–69	88.6	6 ●◆
4.2.1 Market capitalization, % GDP	52.3	33 ○	7.3.3 GitHub commits/mn pop. 15–69	57.0	16
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.2	25	7.3.4 Mobile app creation/bn PPP\$ GDP	71.1	47 ○
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	22			
4.2.4 VC received, value, % GDP	0.0	25			
4.3 Trade, diversification and market scale	95.2	2 ●◆			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	95.1	29			
4.3.3 Domestic market scale, bn PPP\$	5,316.9	1 ●◆			

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

Ghana

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
85	107	Lower middle	SSA	33.5	217.5	6,780

	Score/Value	Rank		Score/Value	Rank
 Institutions	41.1	93	 Business sophistication	24.2	83
1.1 Institutional environment	39.2	79	5.1 Knowledge workers	23.1	[89]
1.1.1 Operational stability for businesses*	45.8	79	5.1.1 Knowledge-intensive employment, %	9.6	107
1.1.2 Government effectiveness*	32.6	81	5.1.2 Firms offering formal training, %	40.1	34
1.2 Regulatory environment	27.2	128 ◊	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	36.9	82	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	37.3	67 ◆	5.1.5 Females employed w/advanced degrees, %	2.9	104
1.2.3 Cost of redundancy dismissal	49.8	127 ◊	5.2 Innovation linkages	25.0	53 ◆◆
1.3 Business environment	56.8	[42]	5.2.1 University-industry R&D collaboration†	45.2	61
1.3.1 Policies for doing business†	56.8	45 ●	5.2.2 State of cluster development†	49.4	47 ●
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	n/a	n/a
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	75
			5.2.5 Patent families/bn PPP\$ GDP	0.0	95 ◊
 Human capital and research	18.4	105	5.3 Knowledge absorption	24.6	106
2.1 Education	43.4	87	5.3.1 Intellectual property payments, % total trade	0.7	56 ◆
2.1.1 Expenditure on education, % GDP	3.9	78	5.3.2 High-tech imports, % total trade	2.8	129 ◊
2.1.2 Government funding/pupil, secondary, % GDP/cap	19.5	57	5.3.3 ICT services imports, % total trade	0.6	105
2.1.3 School life expectancy, years	12.3	91	5.3.4 FDI net inflows, % GDP	3.9	32 ●
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	16.1	83	 Knowledge and technology outputs	11.7	111
2.2 Tertiary education	11.7	110	6.1 Knowledge creation	7.3	98
2.2.1 Tertiary enrolment, % gross	19.5	100	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	119
2.2.2 Graduates in science and engineering, %	16.7	93	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	101 ◊
2.2.3 Tertiary inbound mobility, %	0.9	91	6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	71
2.3 Research and development (R&D)	0.3	114	6.1.4 Scientific and technical articles/bn PPP\$ GDP	13.1	58
2.3.1 Researchers, FTE/mn pop.	89.1	91	6.1.5 Citable documents H-index	9.6	82
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	6.2 Knowledge impact	18.9	110
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ◊	6.2.1 Labor productivity growth, %	2.0	32 ●
2.3.4 QS university ranking, top 3*	0.0	71 ◊	6.2.2 Unicorn valuation, % GDP	0.0	48 ◊
			6.2.3 Software spending, % GDP	0.0	127 ◊
			6.2.4 High-tech manufacturing, %	11.0	86
 Infrastructure	26.8	105	6.3 Knowledge diffusion	9.0	111
3.1 Information and communication technologies (ICTs)	51.2	98	6.3.1 Intellectual property receipts, % total trade	0.2	42 ◆◆
3.1.1 ICT access*	58.2	100	6.3.2 Production and export complexity	31.1	111
3.1.2 ICT use*	53.6	101	6.3.3 High-tech exports, % total trade	0.0	128 ◊
3.1.3 Government's online service*	48.7	93	6.3.4 ICT services exports, % total trade	0.6	96
3.1.4 E-participation*	44.2	83	6.3.5 ISO 9001 quality/bn PPP\$ GDP	0.7	113
3.2 General infrastructure	10.5	121	 Creative outputs	22.6	71
3.2.1 Electricity output, GWh/mn pop.	634.3	105	7.1 Intangible assets	27.4	74
3.2.2 Logistics performance*	18.2	89	7.1.1 Intangible asset intensity, top 15, %	-52.8	78 ◊
3.2.3 Gross capital formation, % GDP	18.0	111 ◊	7.1.2 Trademarks by origin/bn PPP\$ GDP	4.8	123
3.3 Ecological sustainability	18.6	87	7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a
3.3.1 GDP/unit of energy use	15.3	23 ◆◆	7.1.4 Industrial designs by origin/bn PPP\$ GDP	5.2	20 ◆◆
3.3.2 Environmental performance*	14.9	126 ◊	7.2 Creative goods and services	26.3	[39]
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.4	96	7.2.1 Cultural and creative services exports, % total trade	2.6	8 ◆◆
			7.2.2 National feature films/mn pop. 15-69	n/a	n/a
 Market sophistication	17.1	117	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1 Credit	2.2	130 ◊	7.2.4 Creative goods exports, % total trade	0.0	120
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.3 Online creativity	9.5	116
4.1.2 Domestic credit to private sector, % GDP	13.2	122	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.6	106
4.1.3 Loans from microfinance institutions, % GDP	0.1	50	7.3.2 Country-code TLDs/th pop. 15-69	0.0	127 ◊
4.2 Investment	7.5	61	7.3.3 GitHub commits/mn pop. 15-69	2.9	92
4.2.1 Market capitalization, % GDP	13.2	68	7.3.4 Mobile app creation/bn PPP\$ GDP	34.3	117 ◊
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	57			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	43 ●			
4.2.4 VC received, value, % GDP	0.0	56			
4.3 Trade, diversification and market scale	41.5	100			
4.3.1 Applied tariff rate, weighted avg., %	10.5	121			
4.3.2 Domestic industry diversification	88.0	56			
4.3.3 Domestic market scale, bn PPP\$	217.5	66			





NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◊ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
41	42	High	EUR	10.4	387.8	36,466	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		53.3	49	5.1 Knowledge workers		39.0	50
1.1.1	Operational stability for businesses*	57.6	53	5.1.1	Knowledge-intensive employment, %	32.0	46
1.1.2	Government effectiveness*	49.0	47	5.1.2	Firms offering formal training, %	21.6	76
1.2 Regulatory environment		68.1	48	5.1.3	GERD performed by business, % GDP	0.7	34
1.2.1	Regulatory quality*	53.6	50	5.1.4	GERD financed by business, %	38.4	45
1.2.2	Rule of law*	50.0	49	5.1.5	Females employed w/advanced degrees, %	20.1	34
1.2.3	Cost of redundancy dismissal	15.9	67	5.2 Innovation linkages		17.7	87
1.3 Business environment		31.3	97	5.2.1	University-industry R&D collaboration†	19.9	118
1.3.1	Policies for doing business†	42.9	77	5.2.2	State of cluster development†	15.5	120
1.3.2	Entrepreneurship policies and culture†	19.7	69	5.2.3	GERD financed by abroad, % GDP	0.2	20
Human capital and research		45.1	29	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	38
2.1 Education		58.6	42	5.2.5	Patent families/bn PPP\$ GDP	0.3	38
2.1.1	Expenditure on education, % GDP	3.6	86	5.3 Knowledge absorption		29.4	80
2.1.2	Government funding/pupil, secondary, % GDP/cap	20.1	53	5.3.1	Intellectual property payments, % total trade	0.4	76
2.1.3	School life expectancy, years	20.1	3	5.3.2	High-tech imports, % total trade	6.5	90
2.1.4	PISA scales in reading, maths and science	453.5	43	5.3.3	ICT services imports, % total trade	1.0	85
2.1.5	Pupil-teacher ratio, secondary	8.4	15	5.3.4	FDI net inflows, % GDP	2.3	66
2.2 Tertiary education		53.6	6	5.3.5	Research talent, % in businesses	29.8	44
2.2.1	Tertiary enrolment, % gross	150.9	1	Knowledge and technology outputs		31.2	43
2.2.2	Graduates in science and engineering, %	27.4	32	6.1 Knowledge creation		25.4	38
2.2.3	Tertiary inbound mobility, %	2.8	71	6.1.1	Patents by origin/bn PPP\$ GDP	1.7	40
2.3 Research and development (R&D)		23.1	41	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.4	34
2.3.1	Researchers, FTE/mn pop.	4,164.9	26	6.1.3	Utility models by origin/bn PPP\$ GDP	0.0	64
2.3.2	Gross expenditure on R&D, % GDP	1.5	28	6.1.4	Scientific and technical articles/bn PPP\$ GDP	30.6	19
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40	6.1.5	Citable documents H-index	34.3	29
2.3.4	QS university ranking, top 3*	23.2	47	6.2 Knowledge impact		36.6	39
Infrastructure		53.7	38	6.2.1	Labor productivity growth, %	-0.6	109
3.1 Information and communication technologies (ICTs)		76.9	44	6.2.2	Unicorn valuation, % GDP	1.5	29
3.1.1	ICT access*	85.9	48	6.2.3	Software spending, % GDP	0.6	13
3.1.2	ICT use*	86.0	33	6.2.4	High-tech manufacturing, %	17.1	71
3.1.3	Government's online service*	75.2	48	6.3 Knowledge diffusion		31.6	50
3.1.4	E-participation*	60.5	55	6.3.1	Intellectual property receipts, % total trade	0.1	62
3.2 General infrastructure		36.2	40	6.3.2	Production and export complexity	57.7	50
3.2.1	Electricity output, GWh/mn pop.	4,987.3	45	6.3.3	High-tech exports, % total trade	2.4	54
3.2.2	Logistics performance*	72.7	18	6.3.4	ICT services exports, % total trade	1.5	70
3.2.3	Gross capital formation, % GDP	18.3	109	6.3.5	ISO 9001 quality/bn PPP\$ GDP	20.6	11
3.3 Ecological sustainability		47.9	24	Creative outputs		33.7	39
3.3.1	GDP/unit of energy use	14.7	27	7.1 Intangible assets		41.7	39
3.3.2	Environmental performance*	63.2	28	7.1.1	Intangible asset intensity, top 15, %	56.0	42
3.3.3	ISO 14001 environment/bn PPP\$ GDP	5.6	18	7.1.2	Trademarks by origin/bn PPP\$ GDP	n/a	n/a
Market sophistication		34.7	66	7.1.3	Global brand value, top 5,000, % GDP	0.7	57
4.1 Credit		35.7	51	7.1.4	Industrial designs by origin/bn PPP\$ GDP	3.3	31
4.1.1	Finance for startups and scaleups†	41.1	57	7.2 Creative goods and services		20.7	48
4.1.2	Domestic credit to private sector, % GDP	82.3	39	7.2.1	Cultural and creative services exports, % total trade	0.8	41
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.2	National feature films/mn pop. 15-69	4.8	24
4.2 Investment		5.4	74	7.2.3	Entertainment and media market/th pop. 15-69	22.9	26
4.2.1	Market capitalization, % GDP	23.7	55	7.2.4	Creative goods exports, % total trade	1.1	44
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	48	7.3 Online creativity		30.8	39
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	86	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	15.3	34
4.2.4	VC received, value, % GDP	0.0	64	7.3.2	Country-code TLDs/th pop. 15-69	22.2	30
4.3 Trade, diversification and market scale		63.0	43	7.3.3	GitHub commits/mn pop. 15-69	21.1	42
4.3.1	Applied tariff rate, weighted avg., %	1.5	20	7.3.4	Mobile app creation/bn PPP\$ GDP	64.5	66
4.3.2	Domestic industry diversification	90.3	47				
4.3.3	Domestic market scale, bn PPP\$	387.8	53				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Guatemala

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
115	121	Upper middle	LCN	17.8	185.8	9,931	
		Score/Value	Rank			Score/Value	Rank
 Institutions		31.3	120	 Business sophistication		22.9	93
1.1 Institutional environment		26.7	108	5.1 Knowledge workers		21.1	95
1.1.1 Operational stability for businesses*		37.5	103	5.1.1 Knowledge-intensive employment, %	⊖	9.3	109
1.1.2 Government effectiveness*		16.0	115	5.1.2 Firms offering formal training, %	⊖	55.7	12
1.2 Regulatory environment		41.6	117	5.1.3 GERD performed by business, % GDP	⊖	0.0	90
1.2.1 Regulatory quality*		33.9	90	5.1.4 GERD financed by business, %	⊖	11.1	74
1.2.2 Rule of law*		7.7	124	5.1.5 Females employed w/advanced degrees, %	⊖	2.7	105
1.2.3 Cost of redundancy dismissal		27.0	108	5.2 Innovation linkages		14.4	98
1.3 Business environment		25.5	109	5.2.1 University–industry R&D collaboration†		33.9	87
1.3.1 Policies for doing business†		36.2	98	5.2.2 State of cluster development†		37.0	83
1.3.2 Entrepreneurship policies and culture†		14.7	72	5.2.3 GERD financed by abroad, % GDP	⊖	0.0	94
 Human capital and research		13.2	122	5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	122
2.1 Education		34.4	112	5.2.5 Patent families/bn PPP\$ GDP		0.0	95
2.1.1 Expenditure on education, % GDP		3.1	105	5.3 Knowledge absorption		33.1	68
2.1.2 Government funding/pupil, secondary, % GDP/cap		5.4	100	5.3.1 Intellectual property payments, % total trade		1.5	22
2.1.3 School life expectancy, years	⊖	10.6	102	5.3.2 High-tech imports, % total trade		10.8	29
2.1.4 PISA scales in reading, maths and science		n/a	n/a	5.3.3 ICT services imports, % total trade		1.5	59
2.1.5 Pupil–teacher ratio, secondary		9.6	26	5.3.4 FDI net inflows, % GDP		2.3	68
2.2 Tertiary education		5.0	122	5.3.5 Research talent, % in businesses	⊖	3.5	73
2.2.1 Tertiary enrolment, % gross	⊖	22.1	98	 Knowledge and technology outputs		13.7	99
2.2.2 Graduates in science and engineering, %	⊖	9.8	109	6.1 Knowledge creation		1.5	127
2.2.3 Tertiary inbound mobility, %	⊖	0.2	108	6.1.1 Patents by origin/bn PPP\$ GDP		0.1	121
2.3 Research and development (R&D)		0.2	115	6.1.2 PCT patents by origin/bn PPP\$ GDP		0.0	97
2.3.1 Researchers, FTE/mn pop.		13.9	106	6.1.3 Utility models by origin/bn PPP\$ GDP		0.0	70
2.3.2 Gross expenditure on R&D, % GDP		0.1	110	6.1.4 Scientific and technical articles/bn PPP\$ GDP		1.3	129
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	40	6.1.5 Citable documents H-index		4.2	112
2.3.4 QS university ranking, top 3*		0.0	71	6.2 Knowledge impact		19.9	104
 Infrastructure		20.7	118	6.2.1 Labor productivity growth, %		1.5	46
3.1 Information and communication technologies (ICTs)		38.5	110	6.2.2 Unicorn valuation, % GDP		0.0	48
3.1.1 ICT access*		49.8	107	6.2.3 Software spending, % GDP		0.0	125
3.1.2 ICT use*		23.6	122	6.2.4 High-tech manufacturing, %		n/a	n/a
3.1.3 Government's online service*		49.3	92	6.3 Knowledge diffusion		19.8	76
3.1.4 E-participation*		31.4	103	6.3.1 Intellectual property receipts, % total trade		0.1	59
3.2 General infrastructure		10.4	122	6.3.2 Production and export complexity		45.4	81
3.2.1 Electricity output, GWh/mn pop.		844.5	102	6.3.3 High-tech exports, % total trade		1.6	67
3.2.2 Logistics performance*		22.7	82	6.3.4 ICT services exports, % total trade		3.1	40
3.2.3 Gross capital formation, % GDP		14.4	123	6.3.5 ISO 9001 quality/bn PPP\$ GDP		1.3	100
3.3 Ecological sustainability		13.1	114	 Creative outputs		6.3	[119]
3.3.1 GDP/unit of energy use		10.0	67	7.1 Intangible assets		5.3	[119]
3.3.2 Environmental performance*		15.4	124	7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
3.3.3 ISO 14001 environment/bn PPP\$ GDP		0.2	112	7.1.2 Trademarks by origin/bn PPP\$ GDP		n/a	n/a
 Market sophistication		20.1	112	7.1.3 Global brand value, top 5,000, % GDP		n/a	n/a
4.1 Credit		13.0	106	7.1.4 Industrial designs by origin/bn PPP\$ GDP		0.2	105
4.1.1 Finance for startups and scaleups†		14.0	82	7.2 Creative goods and services		2.5	[100]
4.1.2 Domestic credit to private sector, % GDP		35.9	89	7.2.1 Cultural and creative services exports, % total trade		0.1	89
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a	7.2.2 National feature films/mn pop. 15–69		n/a	n/a
4.2 Investment		0.6	[110]	7.2.3 Entertainment and media market/th pop. 15–69		n/a	n/a
4.2.1 Market capitalization, % GDP		n/a	n/a	7.2.4 Creative goods exports, % total trade		0.3	70
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		0.0	87	7.3 Online creativity		12.2	108
4.2.3 VC recipients, deals/bn PPP\$ GDP		n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69		4.4	58
4.2.4 VC received, value, % GDP		n/a	n/a	7.3.2 Country-code TLDs/th pop. 15–69		0.6	98
4.3 Trade, diversification and market scale		46.8	94	7.3.3 GitHub commits/mn pop. 15–69		2.0	99
4.3.1 Applied tariff rate, weighted avg., %		1.6	51	7.3.4 Mobile app creation/bn PPP\$ GDP		41.8	111
4.3.2 Domestic industry diversification		n/a	n/a				
4.3.3 Domestic market scale, bn PPP\$		185.8	72				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Guinea

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
119	131	Low	SSA	13.9	43.9	2,993	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
38.7		98	●	15.6		127	
1.1 Institutional environment	23.4	116		5.1 Knowledge workers	9.0	[124]	
1.1.1 Operational stability for businesses*	35.4	108		5.1.1 Knowledge-intensive employment, %	⊖	7.4	114
1.1.2 Government effectiveness*	11.5	124		5.1.2 Firms offering formal training, %	⊖	16.0	90 ◊
1.2 Regulatory environment	53.9	90	●	5.1.3 GERD performed by business, % GDP	n/a	n/a	
1.2.1 Regulatory quality*	17.1	125	◊	5.1.4 GERD financed by business, %	n/a	n/a	
1.2.2 Rule of law*	6.6	127	◊	5.1.5 Females employed w/advanced degrees, %	⊖	2.2	107
1.2.3 Cost of redundancy dismissal	10.1	30	●	5.2 Innovation linkages	20.3	70	●
1.3 Business environment	38.6	[92]		5.2.1 University–industry R&D collaboration†	⊖	46.3	59 ●◆
1.3.1 Policies for doing business†	⊖	38.6	89 ●	5.2.2 State of cluster development†	⊖	28.6	97 ●
1.3.2 Entrepreneurship policies and culture†	n/a	n/a		5.2.3 GERD financed by abroad, % GDP	n/a	n/a	
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	66	●
				5.2.5 Patent families/bn PPP\$ GDP	0.0	95	◊◊
Human capital and research		Score/Value	Rank	Knowledge and technology outputs		Score/Value	Rank
7.9		[132]		9.8		125	
2.1 Education	22.0	126	◊	6.1 Knowledge creation	1.8	125	◊
2.1.1 Expenditure on education, % GDP	2.1	118	◊	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	114	
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊖	8.4	94 ◊	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	86	●◆
2.1.3 School life expectancy, years	⊖	9.0	107	6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	75	◊◊
2.1.4 PISA scales in reading, maths and science	n/a	n/a		6.1.4 Scientific and technical articles/bn PPP\$ GDP	2.8	118	◊
2.1.5 Pupil–teacher ratio, secondary	22.1	105		6.1.5 Citable documents H-index	2.2	125	
2.2 Tertiary education	1.6	[126]		6.2 Knowledge impact	24.9	73	●◆
2.2.1 Tertiary enrolment, % gross	6.7	121		6.2.1 Labor productivity growth, %	2.9	18	●
2.2.2 Graduates in science and engineering, %	n/a	n/a		6.2.2 Unicorn valuation, % GDP	0.0	48	◊◊
2.2.3 Tertiary inbound mobility, %	n/a	n/a		6.2.3 Software spending, % GDP	0.0	109	
2.3 Research and development (R&D)	0.0	[119]		6.2.4 High-tech manufacturing, %	n/a	n/a	
2.3.1 Researchers, FTE/mn pop.	n/a	n/a		6.3 Knowledge diffusion	2.7	129	◊
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a		6.3.1 Intellectual property receipts, % total trade	0.0	114	◊◊
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	◊◊	6.3.2 Production and export complexity	12.5	119	◊
2.3.4 QS university ranking, top 3*	0.0	71	◊◊	6.3.3 High-tech exports, % total trade	⊖	0.0	130 ◊
				6.3.4 ICT services exports, % total trade	0.0	130	◊
				6.3.5 ISO 9001 quality/bn PPP\$ GDP	0.3	128	
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank
16.9		127		9.1		[110]	
3.1 Information and communication technologies (ICTs)	26.8	125		7.1 Intangible assets	15.0	[98]	
3.1.1 ICT access*	24.9	124		7.1.1 Intangible asset intensity, top 15, %	n/a	n/a	
3.1.2 ICT use*	17.4	127		7.1.2 Trademarks by origin/bn PPP\$ GDP	7.6	113	
3.1.3 Government's online service*	38.3	110		7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a	
3.1.4 E-participation*	26.7	106		7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.5	53	●
3.2 General infrastructure	12.9	115		7.2 Creative goods and services	0.1	[132]	
3.2.1 Electricity output, GWh/mn pop.	n/a	n/a		7.2.1 Cultural and creative services exports, % total trade	n/a	n/a	
3.2.2 Logistics performance*	18.2	89		7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
3.2.3 Gross capital formation, % GDP	16.5	116		7.2.3 Entertainment and media market/th pop. 15–69	n/a	n/a	
3.3 Ecological sustainability	11.1	123		7.2.4 Creative goods exports, % total trade	⊖	0.0	128
3.3.1 GDP/unit of energy use	n/a	n/a		7.3 Online creativity	6.4	121	
3.3.2 Environmental performance*	21.5	105		7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.1	126	
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.2	119		7.3.2 Country-code TLDs/th pop. 15–69	0.0	131	◊
				7.3.3 GitHub commits/mn pop. 15–69	0.0	131	◊
				7.3.4 Mobile app creation/bn PPP\$ GDP	25.6	121	
Market sophistication		Score/Value	Rank				
6.9		132	◊◊				
4.1 Credit	3.0	128					
4.1.1 Finance for startups and scaleups†	n/a	n/a					
4.1.2 Domestic credit to private sector, % GDP	10.0	128	◊◊				
4.1.3 Loans from microfinance institutions, % GDP	0.4	40	●				
4.2 Investment	n/a	[n/a]					
4.2.1 Market capitalization, % GDP	n/a	n/a					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a					
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a					
4.2.4 VC received, value, % GDP	n/a	n/a					
4.3 Trade, diversification and market scale	10.9	129	◊				
4.3.1 Applied tariff rate, weighted avg., %	12.2	130	◊				
4.3.2 Domestic industry diversification	n/a	n/a					
4.3.3 Domestic market scale, bn PPP\$	43.9	114					

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Honduras

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
114	115	Lower middle	LCN	10.4	69.7	6,769	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		24.6	115	5.1 Knowledge workers		23.5	85
1.1.1	Operational stability for businesses*	34.0	112	5.1.1	Knowledge-intensive employment, %	⊙	12.3 101
1.1.2	Government effectiveness*	15.2	118	5.1.2	Firms offering formal training, %	⊙	47.7 22 ●◆
1.2 Regulatory environment		37.1	123	5.1.3	GERD performed by business, % GDP	⊙	0.0 88
1.2.1	Regulatory quality*	28.6	100	5.1.4	GERD financed by business, %	⊙	21.1 66
1.2.2	Rule of law*	8.3	121	5.1.5	Females employed w/advanced degrees, %	⊙	4.8 95
1.2.3	Cost of redundancy dismissal	30.3	119	5.2 Innovation linkages		10.6	117
1.3 Business environment		16.7	[125]	5.2.1	University–industry R&D collaboration†		24.0 106
1.3.1	Policies for doing business†	16.7	123	5.2.2	State of cluster development†		27.0 101
1.3.2	Entrepreneurship policies and culture†	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	⊙	0.0 82
Human capital and research		23.7	90	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	⊙	0.0 120
2.1 Education		58.4	[43]	5.2.5	Patent families/bn PPP\$ GDP		0.0 95 ○◇
2.1.1	Expenditure on education, % GDP	⊙	6.1 18 ●◆	5.3 Knowledge absorption		28.2	87
2.1.2	Government funding/pupil, secondary, % GDP/cap	⊙	20.7 47	5.3.1	Intellectual property payments, % total trade		0.8 47 ●◆
2.1.3	School life expectancy, years		n/a n/a	5.3.2	High-tech imports, % total trade		7.9 71
2.1.4	PISA scales in reading, maths and science		n/a n/a	5.3.3	ICT services imports, % total trade		1.6 56 ●
2.1.5	Pupil–teacher ratio, secondary		11.6 49 ●◆	5.3.4	FDI net inflows, % GDP		2.6 59 ●
2.2 Tertiary education		12.0	108	5.3.5	Research talent, % in businesses	⊙	3.4 74
2.2.1	Tertiary enrolment, % gross	⊙	25.5 91	Knowledge and technology outputs		12.5	107
2.2.2	Graduates in science and engineering, %	⊙	15.7 97	6.1 Knowledge creation		1.2	129
2.2.3	Tertiary inbound mobility, %	⊙	0.8 95	6.1.1	Patents by origin/bn PPP\$ GDP		0.0 132 ○◇
2.3 Research and development (R&D)		0.7	106	6.1.2	PCT patents by origin/bn PPP\$ GDP		0.0 95
2.3.1	Researchers, FTE/mn pop.	⊙	189.9 82	6.1.3	Utility models by origin/bn PPP\$ GDP	⊙	0.0 75 ○◇
2.3.2	Gross expenditure on R&D, % GDP	⊙	0.1 109	6.1.4	Scientific and technical articles/bn PPP\$ GDP		2.2 123
2.3.3	Global corporate R&D investors, top 3, mn USD		0.0 40 ○◇	6.1.5	Citable documents H-index		2.3 124
2.3.4	QS university ranking, top 3*		0.0 71 ○◇	6.2 Knowledge impact		24.4	77
Infrastructure		23.5	112	6.2.1	Labor productivity growth, %		0.9 71
3.1 Information and communication technologies (ICTs)		30.2	119	6.2.2	Unicorn valuation, % GDP		0.0 48 ○◇
3.1.1	ICT access*		49.3 108	6.2.3	Software spending, % GDP		0.2 66
3.1.2	ICT use*		47.2 105	6.2.4	High-tech manufacturing, %		n/a n/a
3.1.3	Government's online service*		16.2 130 ○◇	6.3 Knowledge diffusion		11.9	99
3.1.4	E-participation*		8.1 130 ○◇	6.3.1	Intellectual property receipts, % total trade		0.0 114 ○◇
3.2 General infrastructure		22.6	80	6.3.2	Production and export complexity		39.0 94
3.2.1	Electricity output, GWh/mn pop.	⊙	1,019.7 96	6.3.3	High-tech exports, % total trade		0.2 108
3.2.2	Logistics performance*		36.4 65	6.3.4	ICT services exports, % total trade		1.2 78
3.2.3	Gross capital formation, % GDP		28.0 32 ●	6.3.5	ISO 9001 quality/bn PPP\$ GDP		2.5 81
3.3 Ecological sustainability		17.8	91	Creative outputs		7.6	114
3.3.1	GDP/unit of energy use		8.7 83	7.1 Intangible assets		8.5	111
3.3.2	Environmental performance*		29.8 88	7.1.1	Intangible asset intensity, top 15, %		n/a n/a
3.3.3	ISO 14001 environment/bn PPP\$ GDP		0.6 78	7.1.2	Trademarks by origin/bn PPP\$ GDP		36.4 64 ●
Market sophistication		22.2	[107]	7.1.3	Global brand value, top 5,000, % GDP		0.0 74 ○◇
4.1 Credit		25.4	[77]	7.1.4	Industrial designs by origin/bn PPP\$ GDP	⊙	0.1 117
4.1.1	Finance for startups and scaleups†		n/a n/a	7.2 Creative goods and services		1.0	[116]
4.1.2	Domestic credit to private sector, % GDP		69.8 53 ●	7.2.1	Cultural and creative services exports, % total trade		n/a n/a
4.1.3	Loans from microfinance institutions, % GDP		n/a n/a	7.2.2	National feature films/mn pop. 15–69		n/a n/a
4.2 Investment		1.3	[105]	7.2.3	Entertainment and media market/th pop. 15–69		n/a n/a
4.2.1	Market capitalization, % GDP		n/a n/a	7.2.4	Creative goods exports, % total trade		0.1 101
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP		0.0 78	7.3 Online creativity		12.5	105
4.2.3	VC recipients, deals/bn PPP\$ GDP		n/a n/a	7.3.1	Generic top-level domains (TLDs)/th pop. 15–69		0.6 108
4.2.4	VC received, value, % GDP		n/a n/a	7.3.2	Country-code TLDs/th pop. 15–69		0.3 104
4.3 Trade, diversification and market scale		40.0	104	7.3.3	GitHub commits/mn pop. 15–69		1.6 104
4.3.1	Applied tariff rate, weighted avg., %		3.3 76	7.3.4	Mobile app creation/bn PPP\$ GDP		47.6 104
4.3.2	Domestic industry diversification		n/a n/a				
4.3.3	Domestic market scale, bn PPP\$		69.7 97				

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Hong Kong, China

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
24	8	High	SEAO	7.5	518.7	69,987

	Score/Value	Rank		Score/Value	Rank
 Institutions	81.4	8	 Business sophistication	47.0	28
1.1 Institutional environment	74.2	18	5.1 Knowledge workers	45.4	40
1.1.1 Operational stability for businesses*	69.4	29	5.1.1 Knowledge-intensive employment, %	40.7	29
1.1.2 Government effectiveness*	78.9	12	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	91.3	7	5.1.3 GERD performed by business, % GDP	0.4	46
1.2.1 Regulatory quality*	83.2	13	5.1.4 GERD financed by business, %	49.2	32
1.2.2 Rule of law*	82.1	17	5.1.5 Females employed w/advanced degrees, %	15.8	47
1.2.3 Cost of redundancy dismissal	8.0	1	5.2 Innovation linkages	46.9	24
1.3 Business environment	78.7	9	5.2.1 University-industry R&D collaboration†	74.9	18
1.3.1 Policies for doing business†	74.5	20	5.2.2 State of cluster development†	75.6	18
1.3.2 Entrepreneurship policies and culture†	82.9	6	5.2.3 GERD financed by abroad, % GDP	0.0	54
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.2	7
			5.2.5 Patent families/bn PPP\$ GDP	0.7	29
 Human capital and research	54.4	15	5.3 Knowledge absorption	48.8	23
2.1 Education	63.2	18	5.3.1 Intellectual property payments, % total trade	0.3	84
2.1.1 Expenditure on education, % GDP	4.0	71	5.3.2 High-tech imports, % total trade	59.1	1
2.1.2 Government funding/pupil, secondary, % GDP/cap	26.0	16	5.3.3 ICT services imports, % total trade	0.4	119
2.1.3 School life expectancy, years	17.1	18	5.3.4 FDI net inflows, % GDP	29.1	3
2.1.4 PISA scales in reading, maths and science	530.7	3	5.3.5 Research talent, % in businesses	35.6	37
2.1.5 Pupil-teacher ratio, secondary	10.8	39	 Knowledge and technology outputs	26.9	51
2.2 Tertiary education	50.6	9	6.1 Knowledge creation	24.5	[40]
2.2.1 Tertiary enrolment, % gross	88.4	13	6.1.1 Patents by origin/bn PPP\$ GDP	0.8	65
2.2.2 Graduates in science and engineering, %	n/a	n/a	6.1.2 PCT patents by origin/bn PPP\$ GDP	n/a	n/a
2.2.3 Tertiary inbound mobility, %	16.5	12	6.1.3 Utility models by origin/bn PPP\$ GDP	0.8	25
2.3 Research and development (R&D)	49.3	20	6.1.4 Scientific and technical articles/bn PPP\$ GDP	n/a	n/a
2.3.1 Researchers, FTE/mn pop.	4,553.4	23	6.1.5 Citable documents H-index	39.4	23
2.3.2 Gross expenditure on R&D, % GDP	1.0	41	6.2 Knowledge impact	49.9	16
2.3.3 Global corporate R&D investors, top 3, mn USD	n/a	n/a	6.2.1 Labor productivity growth, %	0.5	78
2.3.4 QS university ranking, top 3*	83.6	4	6.2.2 Unicorn valuation, % GDP	5.3	6
			6.2.3 Software spending, % GDP	0.4	26
			6.2.4 High-tech manufacturing, %	20.0	63
 Infrastructure	62.9	9	6.3 Knowledge diffusion	6.4	122
3.1 Information and communication technologies (ICTs)	95.1	[3]	6.3.1 Intellectual property receipts, % total trade	0.1	53
3.1.1 ICT access*	97.8	5	6.3.2 Production and export complexity	n/a	n/a
3.1.2 ICT use*	92.5	16	6.3.3 High-tech exports, % total trade	0.1	121
3.1.3 Government's online service*	n/a	n/a	6.3.4 ICT services exports, % total trade	0.5	101
3.1.4 E-participation*	n/a	n/a	6.3.5 ISO 9001 quality/bn PPP\$ GDP	6.2	45
3.2 General infrastructure	40.1	32	 Creative outputs	59.2	3
3.2.1 Electricity output, GWh/mn pop.	4,707.9	48	7.1 Intangible assets	57.5	11
3.2.2 Logistics performance*	86.4	7	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.2.3 Gross capital formation, % GDP	18.0	110	7.1.2 Trademarks by origin/bn PPP\$ GDP	63.8	34
3.3 Ecological sustainability	53.6	13	7.1.3 Global brand value, top 5,000, % GDP	27.6	1
3.3.1 GDP/unit of energy use	32.7	2	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.9	42
3.3.2 Environmental performance*	n/a	n/a	7.2 Creative goods and services	50.9	3
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.3	38	7.2.1 Cultural and creative services exports, % total trade	0.1	86
			7.2.2 National feature films/mn pop. 15-69	8.2	7
			7.2.3 Entertainment and media market/th pop. 15-69	48.8	19
			7.2.4 Creative goods exports, % total trade	12.7	1
 Market sophistication	71.8	2	7.3 Online creativity	70.9	6
4.1 Credit	92.2	1	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	86.4	7
4.1.1 Finance for startups and scaleups†	84.3	5	7.3.2 Country-code TLDs/th pop. 15-69	11.8	40
4.1.2 Domestic credit to private sector, % GDP	258.9	1	7.3.3 GitHub commits/mn pop. 15-69	100.0	1
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	85.5	5
4.2 Investment	64.3	7			
4.2.1 Market capitalization, % GDP	1,394.2	1			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	1.3	6			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	25			
4.2.4 VC received, value, % GDP	0.0	9			
4.3 Trade, diversification and market scale	58.8	64			
4.3.1 Applied tariff rate, weighted avg., %	0.0	1			
4.3.2 Domestic industry diversification	65.3	100			
4.3.3 Domestic market scale, bn PPP\$	518.7	46			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Hungary

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
33	36	High	EUR	10.0	409.8	42,132

	Score/Value	Rank		Score/Value	Rank
 Institutions	58.4	47	 Business sophistication	45.1	30
1.1 Institutional environment	62.9	37	5.1 Knowledge workers	47.5	36
1.1.1 Operational stability for businesses*	71.5	26	5.1.1 Knowledge-intensive employment, %	38.7	32
1.1.2 Government effectiveness*	54.3	42	5.1.2 Firms offering formal training, %	29.3	58
1.2 Regulatory environment	72.2	40	5.1.3 GERD performed by business, % GDP	1.2	20
1.2.1 Regulatory quality*	55.0	47	5.1.4 GERD financed by business, %	50.2	28
1.2.2 Rule of law*	55.3	41	5.1.5 Females employed w/advanced degrees, %	18.3	37
1.2.3 Cost of redundancy dismissal	13.4	48	5.2 Innovation linkages	32.2	39
1.3 Business environment	40.2	85	5.2.1 University-industry R&D collaboration†	49.0	52
1.3.1 Policies for doing business†	43.3	75	5.2.2 State of cluster development†	55.7	38
1.3.2 Entrepreneurship policies and culture†	37.0	53	5.2.3 GERD financed by abroad, % GDP	0.3	12
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	64
			5.2.5 Patent families/bn PPP\$ GDP	0.3	37
 Human capital and research	40.2	36	5.3 Knowledge absorption	55.6	9
2.1 Education	54.0	58	5.3.1 Intellectual property payments, % total trade	1.1	31
2.1.1 Expenditure on education, % GDP	4.2	64	5.3.2 High-tech imports, % total trade	15.1	15
2.1.2 Government funding/pupil, secondary, % GDP/cap	19.1	59	5.3.3 ICT services imports, % total trade	1.6	57
2.1.3 School life expectancy, years	15.1	51	5.3.4 FDI net inflows, % GDP	61.0	1
2.1.4 PISA scales in reading, maths and science	479.3	33	5.3.5 Research talent, % in businesses	60.6	13
2.1.5 Pupil-teacher ratio, secondary	10.4	36			
2.2 Tertiary education	29.8	67	 Knowledge and technology outputs	38.4	26
2.2.1 Tertiary enrolment, % gross	55.2	62	6.1 Knowledge creation	22.4	47
2.2.2 Graduates in science and engineering, %	15.5	98	6.1.1 Patents by origin/bn PPP\$ GDP	1.5	45
2.2.3 Tertiary inbound mobility, %	13.5	15	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.4	35
2.3 Research and development (R&D)	36.7	30	6.1.3 Utility models by origin/bn PPP\$ GDP	0.5	32
2.3.1 Researchers, FTE/mn pop.	4,461.8	25	6.1.4 Scientific and technical articles/bn PPP\$ GDP	20.0	37
2.3.2 Gross expenditure on R&D, % GDP	1.6	24	6.1.5 Citable documents H-index	29.7	33
2.3.3 Global corporate R&D investors, top 3, mn USD	51.6	30	6.2 Knowledge impact	41.8	26
2.3.4 QS university ranking, top 3*	19.7	54	6.2.1 Labor productivity growth, %	2.4	24
			6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.3	51
			6.2.4 High-tech manufacturing, %	58.8	5
 Infrastructure	53.0	42	6.3 Knowledge diffusion	51.1	16
3.1 Information and communication technologies (ICTs)	72.1	60	6.3.1 Intellectual property receipts, % total trade	1.0	21
3.1.1 ICT access*	83.5	61	6.3.2 Production and export complexity	84.8	9
3.1.2 ICT use*	83.0	50	6.3.3 High-tech exports, % total trade	13.3	10
3.1.3 Government's online service*	72.0	56	6.3.4 ICT services exports, % total trade	2.0	60
3.1.4 E-participation*	50.0	75	6.3.5 ISO 9001 quality/bn PPP\$ GDP	21.8	7
3.2 General infrastructure	33.6	45			
3.2.1 Electricity output, GWh/mn pop.	3,720.9	59	 Creative outputs	34.1	38
3.2.2 Logistics performance*	50.0	50	7.1 Intangible assets	33.8	57
3.2.3 Gross capital formation, % GDP	31.4	22	7.1.1 Intangible asset intensity, top 15, %	45.3	57
3.3 Ecological sustainability	53.3	15	7.1.2 Trademarks by origin/bn PPP\$ GDP	27.9	81
3.3.1 GDP/unit of energy use	11.5	53	7.1.3 Global brand value, top 5,000, % GDP	0.8	56
3.3.2 Environmental performance*	61.4	31	7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.8	35
3.3.3 ISO 14001 environment/bn PPP\$ GDP	9.1	9	7.2 Creative goods and services	31.4	27
			7.2.1 Cultural and creative services exports, % total trade	0.8	39
			7.2.2 National feature films/mn pop. 15-69	2.4	43
			7.2.3 Entertainment and media market/th pop. 15-69	13.5	29
			7.2.4 Creative goods exports, % total trade	6.8	9
 Market sophistication	35.3	64	7.3 Online creativity	37.6	32
4.1 Credit	36.2	47	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	12.4	39
4.1.1 Finance for startups and scaleups†	59.5	33	7.3.2 Country-code TLDs/th pop. 15-69	35.3	20
4.1.2 Domestic credit to private sector, % GDP	37.9	87	7.3.3 GitHub commits/mn pop. 15-69	34.9	31
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	67.7	58
4.2 Investment	5.1	75			
4.2.1 Market capitalization, % GDP	18.6	61			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	59			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	76			
4.2.4 VC received, value, % GDP	0.0	65			
4.3 Trade, diversification and market scale	64.5	32			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	94.3	32			
4.3.3 Domestic market scale, bn PPP\$	409.8	52			






NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
25	20	High	EUR	0.4	24.9	66,467	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
80.9		9		57.0		15	
1.1 Institutional environment	84.4	5	●	5.1 Knowledge workers	63.5	16	
1.1.1 Operational stability for businesses*	86.8	4	●◆	5.1.1 Knowledge-intensive employment, %	52.2	6	●
1.1.2 Government effectiveness*	82.0	9		5.1.2 Firms offering formal training, %	n/a	n/a	
1.2 Regulatory environment	88.3	13		5.1.3 GERD performed by business, % GDP	2.0	12	
1.2.1 Regulatory quality*	81.9	16		5.1.4 GERD financed by business, %	38.6	44	◇
1.2.2 Rule of law*	91.1	9		5.1.5 Females employed w/advanced degrees, %	26.5	14	
1.2.3 Cost of redundancy dismissal	13.0	41		5.2 Innovation linkages	57.6	14	
1.3 Business environment	70.0	[23]		5.2.1 University-industry R&D collaboration†	63.7	30	
1.3.1 Policies for doing business†	70.0	26		5.2.2 State of cluster development†	45.5	55	◇
1.3.2 Entrepreneurship policies and culture†	n/a	n/a		5.2.3 GERD financed by abroad, % GDP	0.6	3	●◆
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	19	
				5.2.5 Patent families/bn PPP\$ GDP	2.3	17	
Human capital and research		Score/Value	Rank	Knowledge absorption		Score/Value	Rank
49.0		24		49.9		20	
2.1 Education	70.5	5	◆◆	5.3.1 Intellectual property payments, % total trade	0.9	44	
2.1.1 Expenditure on education, % GDP	7.6	6	◆	5.3.2 High-tech imports, % total trade	9.5	43	
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.3	39		5.3.3 ICT services imports, % total trade	4.0	8	
2.1.3 School life expectancy, years	19.4	5	◆◆	5.3.4 FDI net inflows, % GDP	-2.0	128	○
2.1.4 PISA scales in reading, maths and science	481.4	30		5.3.5 Research talent, % in businesses	53.1	22	
2.1.5 Pupil-teacher ratio, secondary	9.3	22					
2.2 Tertiary education	34.6	49		Knowledge and technology outputs		Score/Value	Rank
2.2.1 Tertiary enrolment, % gross	84.3	19		39.2		25	
2.2.2 Graduates in science and engineering, %	18.2	87	○◇	6.1 Knowledge creation	49.9	14	
2.2.3 Tertiary inbound mobility, %	8.5	30		6.1.1 Patents by origin/bn PPP\$ GDP	4.3	20	
2.3 Research and development (R&D)	41.9	25	◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	1.6	18	
2.3.1 Researchers, FTE/mn pop.	6,875.2	7		6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	2.8	13		6.1.4 Scientific and technical articles/bn PPP\$ GDP	50.8	1	◆◆
2.3.3 Global corporate R&D investors, top 3, mn USD	45.9	36	◇	6.1.5 Citable documents H-index	19.5	43	◇
2.3.4 QS university ranking, top 3*	0.0	71	○◇	6.2 Knowledge impact	24.0	80	◇
				6.2.1 Labor productivity growth, %	0.6	76	
				6.2.2 Unicorn valuation, % GDP	0.0	48	○◇
				6.2.3 Software spending, % GDP	0.3	39	
				6.2.4 High-tech manufacturing, %	14.1	80	○◇
Infrastructure		Score/Value	Rank	6.3 Knowledge diffusion	43.6	26	
60.8		10		6.3.1 Intellectual property receipts, % total trade	3.6	1	◆◆
3.1 Information and communication technologies (ICTs)	90.1	13		6.3.2 Production and export complexity	n/a	n/a	
3.1.1 ICT access*	95.7	8	◆	6.3.3 High-tech exports, % total trade	2.4	52	◇
3.1.2 ICT use*	98.1	5	◆◆	6.3.4 ICT services exports, % total trade	3.9	28	
3.1.3 Government's online service*	87.5	16		6.3.5 ISO 9001 quality/bn PPP\$ GDP	4.8	54	
3.1.4 E-participation*	79.1	17					
3.2 General infrastructure	62.0	6	◆◆	Creative outputs		Score/Value	Rank
3.2.1 Electricity output, GWh/mn pop.	52,600.5	1	◆◆	45.9		20	
3.2.2 Logistics performance*	68.2	25	◇	7.1 Intangible assets	33.4	58	◇
3.2.3 Gross capital formation, % GDP	22.7	75		7.1.1 Intangible asset intensity, top 15, %	55.0	43	◇
3.3 Ecological sustainability	30.4	52	◇	7.1.2 Trademarks by origin/bn PPP\$ GDP	64.2	32	
3.3.1 GDP/unit of energy use	3.2	125	○◇	7.1.3 Global brand value, top 5,000, % GDP	0.7	59	◇
3.3.2 Environmental performance*	74.4	10		7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.3	97	○◇
3.3.3 ISO 14001 environment/bn PPP\$ GDP	1.8	52		7.2 Creative goods and services	36.6	18	
				7.2.1 Cultural and creative services exports, % total trade	0.4	62	
				7.2.2 National feature films/mn pop. 15-69	37.9	1	◆◆
				7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a	
				7.2.4 Creative goods exports, % total trade	0.2	81	
				7.3 Online creativity	80.0	3	◆◆
				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	96.3	5	◆◆
				7.3.3 GitHub commits/mn pop. 15-69	64.2	10	
				7.3.4 Mobile app creation/bn PPP\$ GDP	59.5	83	◇
Market sophistication		Score/Value	Rank				
46.5		32					
4.1 Credit	18.6	95	◇				
4.1.1 Finance for startups and scaleups†	n/a	n/a					
4.1.2 Domestic credit to private sector, % GDP	100.0	31					
4.1.3 Loans from microfinance institutions, % GDP	0.0	59	○				
4.2 Investment	66.4	6	◆				
4.2.1 Market capitalization, % GDP	n/a	n/a					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.6	10					
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.4	1	◆◆				
4.2.4 VC received, value, % GDP	0.0	11					
4.3 Trade, diversification and market scale	54.4	79	◇				
4.3.1 Applied tariff rate, weighted avg., %	1.5	50					
4.3.2 Domestic industry diversification	72.6	91	○◇				
4.3.3 Domestic market scale, bn PPP\$	24.9	128	○				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ◎ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

India

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
35	46	Lower middle	CSA	1,417.2	11,665.5	8,293	
		Score/Value	Rank			Score/Value	Rank
 Institutions		53.9	56	 Business sophistication		29.6	57
1.1 Institutional environment	44.5	69	◆	5.1 Knowledge workers	24.4	81	
1.1.1 Operational stability for businesses*	44.4	82		5.1.1 Knowledge-intensive employment, %	13.0	99	○
1.1.2 Government effectiveness*	44.5	53	◆	5.1.2 Firms offering formal training, %	35.9	43	⊙
1.2 Regulatory environment	61.7	68	◆	5.1.3 GERD performed by business, % GDP	0.2	50	◆
1.2.1 Regulatory quality*	40.1	76	◆	5.1.4 GERD financed by business, %	40.6	41	
1.2.2 Rule of law*	37.3	66	◆	5.1.5 Females employed w/advanced degrees, %	2.6	106	○
1.2.3 Cost of redundancy dismissal	15.8	63		5.2 Innovation linkages	23.4	59	
1.3 Business environment	55.6	47		5.2.1 University-industry R&D collaboration†	44.4	66	
1.3.1 Policies for doing business†	37.9	92		5.2.2 State of cluster development†	28.3	98	
1.3.2 Entrepreneurship policies and culture†	73.3	13	◆	5.2.3 GERD financed by abroad, % GDP	n/a	n/a	
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	28	◆
				5.2.5 Patent families/bn PPP\$ GDP	0.2	46	◆
 Human capital and research		35.5	48	5.3 Knowledge absorption		40.9	41
2.1 Education	42.8	88		5.3.1 Intellectual property payments, % total trade	1.4	25	◆
2.1.1 Expenditure on education, % GDP	4.6	49		5.3.2 High-tech imports, % total trade	10.0	37	
2.1.2 Government funding/pupil, secondary, % GDP/cap	18.0	61		5.3.3 ICT services imports, % total trade	2.1	32	◆
2.1.3 School life expectancy, years	12.8	86	○	5.3.4 FDI net inflows, % GDP	1.9	77	
2.1.4 PISA scales in reading, maths and science	n/a	n/a		5.3.5 Research talent, % in businesses	30.7	43	◆
2.1.5 Pupil-teacher ratio, secondary	20.8	101	○				
2.2 Tertiary education	30.5	65		 Knowledge and technology outputs		39.7	22
2.2.1 Tertiary enrolment, % gross	32.1	85		6.1 Knowledge creation	23.6	44	◆
2.2.2 Graduates in science and engineering, %	34.0	11	◆◆	6.1.1 Patents by origin/bn PPP\$ GDP	2.6	28	◆
2.2.3 Tertiary inbound mobility, %	0.1	110	○	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	43	◆
2.3 Research and development (R&D)	33.2	32	◆	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a	
2.3.1 Researchers, FTE/mn pop.	262.3	81	○	6.1.4 Scientific and technical articles/bn PPP\$ GDP	8.9	81	
2.3.2 Gross expenditure on R&D, % GDP	0.6	54	◆	6.1.5 Citable documents H-index	42.8	20	◆
2.3.3 Global corporate R&D investors, top 3, mn USD	70.6	13	◆◆	6.2 Knowledge impact	53.3	9	◆◆
2.3.4 QS university ranking, top 3*	48.2	22	◆	6.2.1 Labor productivity growth, %	1.6	43	
				6.2.2 Unicorn valuation, % GDP	5.0	9	◆◆
				6.2.3 Software spending, % GDP	0.2	56	
				6.2.4 High-tech manufacturing, %	34.2	35	◆
 Infrastructure		34.3	84	6.3 Knowledge diffusion	42.1	29	◆
3.1 Information and communication technologies (ICTs)	60.2	82		6.3.1 Intellectual property receipts, % total trade	0.2	45	◆
3.1.1 ICT access*	56.2	101	○	6.3.2 Production and export complexity	61.2	46	◆
3.1.2 ICT use*	49.2	103	○	6.3.3 High-tech exports, % total trade	4.0	41	◆
3.1.3 Government's online service*	77.2	42	◆	6.3.4 ICT services exports, % total trade	12.1	5	◆◆
3.1.4 E-participation*	58.1	61	◆	6.3.5 ISO 9001 quality/bn PPP\$ GDP	3.6	69	
3.2 General infrastructure	33.1	46	◆				
3.2.1 Electricity output, GWh/mn pop.	1,185.0	93		 Creative outputs		30.3	49
3.2.2 Logistics performance*	59.1	37	◆	7.1 Intangible assets	42.2	38	◆
3.2.3 Gross capital formation, % GDP	32.8	16	●	7.1.1 Intangible asset intensity, top 15, %	78.6	8	◆◆
3.3 Ecological sustainability	9.7	128	○◇	7.1.2 Trademarks by origin/bn PPP\$ GDP	42.7	54	
3.3.1 GDP/unit of energy use	9.8	71		7.1.3 Global brand value, top 5,000, % GDP	5.5	31	◆
3.3.2 Environmental performance*	0.0	131	○◇	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.7	47	
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.9	67		7.2 Creative goods and services	16.9	56	◆
				7.2.1 Cultural and creative services exports, % total trade	1.7	18	◆
				7.2.2 National feature films/mn pop. 15-69	1.8	49	
				7.2.3 Entertainment and media market/th pop. 15-69	0.7	55	○
				7.2.4 Creative goods exports, % total trade	1.8	27	
				7.3 Online creativity	19.8	66	
				7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.0	99	
				7.3.2 Country-code TLDs/th pop. 15-69	0.8	96	
				7.3.3 GitHub commits/mn pop. 15-69	3.9	78	
				7.3.4 Mobile app creation/bn PPP\$ GDP	73.6	36	◆
 Market sophistication		52.9	20				
4.1 Credit	34.0	56					
4.1.1 Finance for startups and scaleups†	78.6	9	◆◆				
4.1.2 Domestic credit to private sector, % GDP	54.7	67					
4.1.3 Loans from microfinance institutions, % GDP	0.3	42					
4.2 Investment	38.6	17	◆				
4.2.1 Market capitalization, % GDP	87.5	19					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	39	◆				
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	24	◆				
4.2.4 VC received, value, % GDP	0.0	6	◆◆				
4.3 Trade, diversification and market scale	85.9	9	◆◆				
4.3.1 Applied tariff rate, weighted avg., %	6.2	97					
4.3.2 Domestic industry diversification	97.9	10	◆◆				
4.3.3 Domestic market scale, bn PPP\$	11,665.5	1	◆◆				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
63	64	Lower middle	SEAO	275.5	4,023.5	14,638	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		46.5	63	5.1 Knowledge workers		8.7	125
1.1.1	Operational stability for businesses*	45.8	78	5.1.1	Knowledge-intensive employment, %	10.9	105
1.1.2	Government effectiveness*	47.2	49	5.1.2	Firms offering formal training, %	7.7	97
1.2 Regulatory environment		21.5	129	5.1.3	GERD performed by business, % GDP	0.0	82
1.2.1	Regulatory quality*	49.8	56	5.1.4	GERD financed by business, %	8.0	78
1.2.2	Rule of law*	33.1	74	5.1.5	Females employed w/advanced degrees, %	6.3	89
1.2.3	Cost of redundancy dismissal	57.8	129	5.2 Innovation linkages		35.2	35
1.3 Business environment		78.2	11	5.2.1	University-industry R&D collaboration [†]	87.4	5
1.3.1	Policies for doing business [†]	72.8	24	5.2.2	State of cluster development [†]	86.5	5
1.3.2	Entrepreneurship policies and culture [†]	83.6	5	5.2.3	GERD financed by abroad, % GDP	0.0	93
Human capital and research		25.8	85	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	111
2.1 Education		34.3	113	5.2.5	Patent families/bn PPP\$ GDP	0.0	91
2.1.1	Expenditure on education, % GDP	2.8	109	5.3 Knowledge absorption		32.9	70
2.1.2	Government funding/pupil, secondary, % GDP/cap	10.6	90	5.3.1	Intellectual property payments, % total trade	0.9	46
2.1.3	School life expectancy, years	13.6	74	5.3.2	High-tech imports, % total trade	10.4	31
2.1.4	PISA scales in reading, maths and science	381.9	72	5.3.3	ICT services imports, % total trade	2.1	35
2.1.5	Pupil-teacher ratio, secondary	15.2	78	5.3.4	FDI net inflows, % GDP	1.9	72
2.2 Tertiary education		17.4	95	5.3.5	Research talent, % in businesses	7.5	63
2.2.1	Tertiary enrolment, % gross	36.3	81	Knowledge and technology outputs		23.7	61
2.2.2	Graduates in science and engineering, %	19.4	79	6.1 Knowledge creation		9.5	82
2.2.3	Tertiary inbound mobility, %	0.1	111	6.1.1	Patents by origin/bn PPP\$ GDP	0.4	85
2.3 Research and development (R&D)		25.6	39	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	100
2.3.1	Researchers, FTE/mn pop.	395.7	75	6.1.3	Utility models by origin/bn PPP\$ GDP	0.9	23
2.3.2	Gross expenditure on R&D, % GDP	0.3	79	6.1.4	Scientific and technical articles/bn PPP\$ GDP	1.7	126
2.3.3	Global corporate R&D investors, top 3, mn USD	53.6	28	6.1.5	Citable documents H-index	14.8	57
2.3.4	QS university ranking, top 3*	40.0	32	6.2 Knowledge impact		41.4	28
Infrastructure		39.2	69	6.2.1	Labor productivity growth, %	1.3	54
3.1 Information and communication technologies (ICTs)		73.9	54	6.2.2	Unicorn valuation, % GDP	2.1	19
3.1.1	ICT access*	84.9	49	6.2.3	Software spending, % GDP	0.4	25
3.1.2	ICT use*	65.8	80	6.2.4	High-tech manufacturing, %	29.8	39
3.1.3	Government's online service*	74.0	51	6.3 Knowledge diffusion		20.2	73
3.1.4	E-participation*	70.9	37	6.3.1	Intellectual property receipts, % total trade	0.0	73
3.2 General infrastructure		25.5	71	6.3.2	Production and export complexity	51.0	66
3.2.1	Electricity output, GWh/mn pop.	1,118.4	95	6.3.3	High-tech exports, % total trade	3.2	45
3.2.2	Logistics performance*	40.9	60	6.3.4	ICT services exports, % total trade	0.8	93
3.2.3	Gross capital formation, % GDP	30.3	24	6.3.5	ISO 9001 quality/bn PPP\$ GDP	2.3	85
3.3 Ecological sustainability		18.2	88	Creative outputs		23.8	68
3.3.1	GDP/unit of energy use	13.5	34	7.1 Intangible assets		33.3	59
3.3.2	Environmental performance*	15.8	122	7.1.1	Intangible asset intensity, top 15, %	69.7	19
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.8	74	7.1.2	Trademarks by origin/bn PPP\$ GDP	25.6	83
Market sophistication		45.0	37	7.1.3	Global brand value, top 5,000, % GDP	3.2	43
4.1 Credit		31.2	63	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.8	76
4.1.1	Finance for startups and scaleups [†]	80.4	8	7.2 Creative goods and services		9.4	68
4.1.2	Domestic credit to private sector, % GDP	38.7	84	7.2.1	Cultural and creative services exports, % total trade	0.0	98
4.1.3	Loans from microfinance institutions, % GDP	0.0	58	7.2.2	National feature films/mn pop. 15-69	0.5	70
4.2 Investment		13.8	48	7.2.3	Entertainment and media market/th pop. 15-69	3.3	48
4.2.1	Market capitalization, % GDP	46.8	38	7.2.4	Creative goods exports, % total trade	2.7	22
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	71	7.3 Online creativity		19.0	71
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	59	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1.7	91
4.2.4	VC received, value, % GDP	0.0	30	7.3.2	Country-code TLDs/th pop. 15-69	1.1	87
4.3 Trade, diversification and market scale		90.1	5	7.3.3	GitHub commits/mn pop. 15-69	6.0	68
4.3.1	Applied tariff rate, weighted avg., %	2.0	62	7.3.4	Mobile app creation/bn PPP\$ GDP	67.3	60
4.3.2	Domestic industry diversification	97.1	16				
4.3.3	Domestic market scale, bn PPP\$	4,023.5	7				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Iran (Islamic Republic of)

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
48	87	Lower middle	CSA	88.6	1,599.2	18,663

	Score/Value	Rank		Score/Value	Rank
Institutions	20.6	131 ○◇	Business sophistication	17.7	117
1.1 Institutional environment	15.2	127 ○◇	5.1 Knowledge workers	18.8	[102]
1.1.1 Operational stability for businesses*	17.4	126 ○◇	5.1.1 Knowledge-intensive employment, %	⊙ 19.9	76
1.1.2 Government effectiveness*	13.1	121	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	38.0	121	5.1.3 GERD performed by business, % GDP	⊙ 0.2	53
1.2.1 Regulatory quality*	0.0	132 ○◇	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	12.0	118	5.1.5 Females employed w/advanced degrees, %	⊙ 7.6	85
1.2.3 Cost of redundancy dismissal	23.1	100	5.2 Innovation linkages	11.4	113
1.3 Business environment	8.7	128 ○◇	5.2.1 University-industry R&D collaboration†	⊙ 12.2	124 ○◇
1.3.1 Policies for doing business†	⊙ 13.7	124 ○◇	5.2.2 State of cluster development†	⊙ 33.1	87
1.3.2 Entrepreneurship policies and culture†	3.6	83 ○◇	5.2.3 GERD financed by abroad, % GDP	n/a	n/a
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	126 ○◇
			5.2.5 Patent families/bn PPP\$ GDP	0.0	85
Human capital and research	32.6	60 ◆	5.3 Knowledge absorption	22.9	116
2.1 Education	41.5	96	5.3.1 Intellectual property payments, % total trade	0.2	89
2.1.1 Expenditure on education, % GDP	⊙ 3.2	100	5.3.2 High-tech imports, % total trade	⊙ 5.1	114
2.1.2 Government funding/pupil, secondary, % GDP/cap	16.0	72	5.3.3 ICT services imports, % total trade	0.7	96
2.1.3 School life expectancy, years	14.6	64 ◆	5.3.4 FDI net inflows, % GDP	0.5	112
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	⊙ 19.2	54
2.1.5 Pupil-teacher ratio, secondary	⊙ 19.0	96			
2.2 Tertiary education	41.8	31 ◆◆	Knowledge and technology outputs	25.9	55 ◆
2.2.1 Tertiary enrolment, % gross	58.2	55 ◆	6.1 Knowledge creation	32.0	29 ◆◆
2.2.2 Graduates in science and engineering, %	39.0	3 ◆◆	6.1.1 Patents by origin/bn PPP\$ GDP	7.0	13 ◆◆
2.2.3 Tertiary inbound mobility, %	0.8	96	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	41 ◆
2.3 Research and development (R&D)	14.5	49 ◆	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1 Researchers, FTE/mn pop.	⊙ 1,659.5	45 ◆	6.1.4 Scientific and technical articles/bn PPP\$ GDP	25.9	27 ◆◆
2.3.2 Gross expenditure on R&D, % GDP	⊙ 0.8	46 ◆	6.1.5 Citable documents H-index	23.4	40 ◆◆
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.2 Knowledge impact	35.2	40 ●
2.3.4 QS university ranking, top 3*	27.0	44 ◆	6.2.1 Labor productivity growth, %	0.4	82
			6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
			6.2.3 Software spending, % GDP	0.6	16 ◆◆
			6.2.4 High-tech manufacturing, %	⊙ 28.6	44 ◆
Infrastructure	29.3	97	6.3 Knowledge diffusion	10.5	107
3.1 Information and communication technologies (ICTs)	51.2	97	6.3.1 Intellectual property receipts, % total trade	0.0	88
3.1.1 ICT access*	77.5	80	6.3.2 Production and export complexity	44.4	84
3.1.2 ICT use*	75.3	61 ◆	6.3.3 High-tech exports, % total trade	⊙ 0.2	109
3.1.3 Government's online service*	35.9	115	6.3.4 ICT services exports, % total trade	0.2	122
3.1.4 E-participation*	16.3	127 ○◇	6.3.5 ISO 9001 quality/bn PPP\$ GDP	1.0	108
3.2 General infrastructure	25.0	74			
3.2.1 Electricity output, GWh/mn pop.	⊙ 3,867.6	58 ◆	Creative outputs	33.1	43 ◆
3.2.2 Logistics performance*	9.1	106 ○	7.1 Intangible assets	55.7	13 ◆◆
3.2.3 Gross capital formation, % GDP	40.1	9 ◆◆	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	11.8	120	7.1.2 Trademarks by origin/bn PPP\$ GDP	349.8	1 ◆◆
3.3.1 GDP/unit of energy use	4.7	118 ○	7.1.3 Global brand value, top 5,000, % GDP	0.0	73
3.3.2 Environmental performance*	26.4	95	7.1.4 Industrial designs by origin/bn PPP\$ GDP	9.6	11 ◆◆
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.2	108	7.2 Creative goods and services	4.3	90
			7.2.1 Cultural and creative services exports, % total trade	0.2	74
			7.2.2 National feature films/mn pop. 15-69	1.6	52
			7.2.3 Entertainment and media market/th pop. 15-69	2.8	51
			7.2.4 Creative goods exports, % total trade	⊙ 0.1	96
			7.3 Online creativity	16.8	86
Market sophistication	52.9	19 ◆◆	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	2.0	85
4.1 Credit	27.7	70	7.3.2 Country-code TLDs/th pop. 15-69	6.9	47 ◆
4.1.1 Finance for startups and scaleups†	33.8	61	7.3.3 GitHub commits/mn pop. 15-69	1.6	105
4.1.2 Domestic credit to private sector, % GDP	⊙ 60.3	59	7.3.4 Mobile app creation/bn PPP\$ GDP	56.6	91
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a			
4.2 Investment	83.5	[3]			
4.2.1 Market capitalization, % GDP	221.5	5 ◆◆			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a			
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a			
4.2.4 VC received, value, % GDP	n/a	n/a			
4.3 Trade, diversification and market scale	47.8	90			
4.3.1 Applied tariff rate, weighted avg., %	12.1	126 ○			
4.3.2 Domestic industry diversification	⊙ 87.3	59			
4.3.3 Domestic market scale, bn PPP\$	1,599.2	20 ●			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
18	26	High	EUR	5.0	666.3	131,034	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		77.4	15	5.1 Knowledge workers		57.0	14
1.1.1	Operational stability for businesses*	75.6	16	5.1.1	Knowledge-intensive employment, %	68.3	8 ●
1.1.2	Government effectiveness*	72.9	20	5.1.2	Firms offering formal training, %	47.2	16
1.2 Regulatory environment		78.3	14	5.1.3	GERD performed by business, % GDP	59.8	8 ●
1.2.1	Regulatory quality*	85.5	18	5.1.4	GERD financed by business, %	0.8	29
1.2.2	Rule of law*	82.6	14	5.1.5	Females employed w/advanced degrees, %	62.8	10
1.2.3	Cost of redundancy dismissal	84.5	16	5.2 Innovation linkages		29.5	4 ●◆
1.3 Business environment		14.3	55	5.2.1	University-industry R&D collaboration†	48.3	21
1.3.1	Policies for doing business†	71.2	22	5.2.2	State of cluster development†	78.6	15
1.3.2	Entrepreneurship policies and culture†	78.5	12	5.2.3	GERD financed by abroad, % GDP	63.6	34
Human capital and research		63.9	19	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.2	26
2.1 Education		45.2	28	5.2.5	Patent families/bn PPP\$ GDP	0.1	23
2.1.1	Expenditure on education, % GDP	47.2	75 ○◆	5.3 Knowledge absorption		2.3	18
2.1.2	Government funding/pupil, secondary, % GDP/cap	3.3	98 ○◆	5.3.1	Intellectual property payments, % total trade	54.5	12 ●
2.1.3	School life expectancy, years	11.6	88 ○◆	5.3.2	High-tech imports, % total trade	20.4	1 ●◆
2.1.4	PISA scales in reading, maths and science	18.8	9 ●	5.3.3	ICT services imports, % total trade	6.9	88 ○
2.1.5	Pupil-teacher ratio, secondary	504.6	10	5.3.4	FDI net inflows, % GDP	1.7	52
2.2 Tertiary education		n/a	n/a	5.3.5	Research talent, % in businesses	4.2	29
2.2.1	Tertiary enrolment, % gross	41.8	29	Knowledge and technology outputs		46.8	14
2.2.2	Graduates in science and engineering, %	74.7	28	6.1 Knowledge creation		23.9	43
2.2.3	Tertiary inbound mobility, %	26.4	36	6.1.1	Patents by origin/bn PPP\$ GDP	1.8	38
2.3 Research and development (R&D)		10.2	27	6.1.2	PCT patents by origin/bn PPP\$ GDP	1.2	22
2.3.1	Researchers, FTE/mn pop.	46.7	21	6.1.3	Utility models by origin/bn PPP\$ GDP	0.2	45
2.3.2	Gross expenditure on R&D, % GDP	4,592.6	21	6.1.4	Scientific and technical articles/bn PPP\$ GDP	13.6	54
2.3.3	Global corporate R&D investors, top 3, mn USD	1.1	38	6.1.5	Citable documents H-index	35.5	28
2.3.4	QS university ranking, top 3*	72.4	12	6.2 Knowledge impact		51.3	11 ●
Infrastructure		59.2	18	6.2.1	Labor productivity growth, %	-0.1	102 ○
3.1 Information and communication technologies (ICTs)		78.3	42	6.2.2	Unicorn valuation, % GDP	1.8	23
3.1.1	ICT access*	82.4	65	6.2.3	Software spending, % GDP	0.6	17
3.1.2	ICT use*	87.7	27	6.2.4	High-tech manufacturing, %	58.5	6
3.1.3	Government's online service*	75.6	45	6.3 Knowledge diffusion		65.3	3 ●◆
3.1.4	E-participation*	67.4	47	6.3.1	Intellectual property receipts, % total trade	2.8	10 ●
3.2 General infrastructure		40.4	31	6.3.2	Production and export complexity	80.8	15
3.2.1	Electricity output, GWh/mn pop.	6,302.1	31	6.3.3	High-tech exports, % total trade	8.7	21
3.2.2	Logistics performance*	68.2	25	6.3.4	ICT services exports, % total trade	35.2	1 ●◆
3.2.3	Gross capital formation, % GDP	24.7	59	6.3.5	ISO 9001 quality/bn PPP\$ GDP	3.8	65 ○
3.3 Ecological sustainability		59.0	4 ●◆	Creative outputs		44.1	26
3.3.1	GDP/unit of energy use	36.3	1 ●◆	7.1 Intangible assets		43.8	36
3.3.2	Environmental performance*	65.3	24	7.1.1	Intangible asset intensity, top 15, %	81.8	5 ●
3.3.3	ISO 14001 environment/bn PPP\$ GDP	1.5	56	7.1.2	Trademarks by origin/bn PPP\$ GDP	n/a	n/a
Market sophistication		37.9	51	7.1.3	Global brand value, top 5,000, % GDP	4.3	37
4.1 Credit		36.1	48	7.1.4	Industrial designs by origin/bn PPP\$ GDP	1.1	64 ○
4.1.1	Finance for startups and scaleups†	61.6	30	7.2 Creative goods and services		36.0	20
4.1.2	Domestic credit to private sector, % GDP	32.4	93 ○◆	7.2.1	Cultural and creative services exports, % total trade	0.9	35
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.2	National feature films/mn pop. 15-69	9.5	6 ●
4.2 Investment		18.5	38	7.2.3	Entertainment and media market/th pop. 15-69	51.8	14
4.2.1	Market capitalization, % GDP	37.4	41	7.2.4	Creative goods exports, % total trade	1.1	45
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.3	22	7.3 Online creativity		52.9	21
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.1	28	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	56.0	15
4.2.4	VC received, value, % GDP	0.0	42	7.3.2	Country-code TLDs/th pop. 15-69	27.7	25
4.3 Trade, diversification and market scale		59.0	61	7.3.3	GitHub commits/mn pop. 15-69	53.3	18
4.3.1	Applied tariff rate, weighted avg., %	1.5	20	7.3.4	Mobile app creation/bn PPP\$ GDP	74.4	29
4.3.2	Domestic industry diversification	72.4	92				
4.3.3	Domestic market scale, bn PPP\$	666.3	39				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
13	21	High	NAWA	9.0	496.8	52,173	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
62.6		40	◇	65.1		6	
1.1 Institutional environment	63.6	36	◇	5.1 Knowledge workers	64.9	14	
1.1.1 Operational stability for businesses*	54.9	61	◇	5.1.1 Knowledge-intensive employment, %	⊙ 51.9	7	
1.1.2 Government effectiveness*	72.4	23		5.1.2 Firms offering formal training, %	⊙ 18.6	84	
1.2 Regulatory environment	65.9	57	◇	5.1.3 GERD performed by business, % GDP	5.1	1	◆◆
1.2.1 Regulatory quality*	73.5	26		5.1.4 GERD financed by business, %	40.0	43	◇
1.2.2 Rule of law*	67.3	29	◇	5.1.5 Females employed w/advanced degrees, %	⊙ 24.2	21	
1.2.3 Cost of redundancy dismissal	27.4	114	◇	5.2 Innovation linkages	89.6	1	◆◆
1.3 Business environment	58.1	38		5.2.1 University-industry R&D collaboration†	100.0	1	◆◆
1.3.1 Policies for doing business†	59.9	39	◇	5.2.2 State of cluster development†	56.2	37	◇
1.3.2 Entrepreneurship policies and culture†	56.2	26		5.2.3 GERD financed by abroad, % GDP	2.9	1	◆◆
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.3	3	◆◆
				5.2.5 Patent families/bn PPP\$ GDP	4.9	7	◆
Human capital and research		Score/Value	Rank	Knowledge absorption		Score/Value	Rank
52.5		20		40.8		42	◇
2.1 Education	57.3	48	◇	5.3.1 Intellectual property payments, % total trade	0.9	41	
2.1.1 Expenditure on education, % GDP	⊙ 6.1	17		5.3.2 High-tech imports, % total trade	10.2	34	
2.1.2 Government funding/pupil, secondary, % GDP/cap	19.6	56	◇	5.3.3 ICT services imports, % total trade	2.2	28	
2.1.3 School life expectancy, years	16.1	35		5.3.4 FDI net inflows, % GDP	4.8	23	
2.1.4 PISA scales in reading, maths and science	465.2	39	◇	5.3.5 Research talent, % in businesses	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	14.1	71	◇				
2.2 Tertiary education	33.2	57	◇	Knowledge and technology outputs		Score/Value	Rank
2.2.1 Tertiary enrolment, % gross	61.1	52		61.6		5	◆◆
2.2.2 Graduates in science and engineering, %	26.9	34		6.1 Knowledge creation	60.0	10	
2.2.3 Tertiary inbound mobility, %	3.4	61	◇	6.1.1 Patents by origin/bn PPP\$ GDP	3.6	22	
2.3 Research and development (R&D)	66.9	8		6.1.2 PCT patents by origin/bn PPP\$ GDP	4.0	1	◆◆
2.3.1 Researchers, FTE/mn pop.	n/a	n/a		6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	5.6	1	◆◆	6.1.4 Scientific and technical articles/bn PPP\$ GDP	29.5	22	
2.3.3 Global corporate R&D investors, top 3, mn USD	64.4	21		6.1.5 Citable documents H-index	46.7	16	
2.3.4 QS university ranking, top 3*	36.2	36		6.2 Knowledge impact	58.4	5	◆
				6.2.1 Labor productivity growth, %	2.4	25	◆
				6.2.2 Unicorn valuation, % GDP	9.6	1	◆◆
				6.2.3 Software spending, % GDP	0.2	68	◇
				6.2.4 High-tech manufacturing, %	⊙ 38.0	29	
Infrastructure		Score/Value	Rank	6.3 Knowledge diffusion	66.4	2	◆◆
54.2		36	◇	6.3.1 Intellectual property receipts, % total trade	1.2	19	
3.1 Information and communication technologies (ICTs)	82.6	30		6.3.2 Production and export complexity	76.5	21	
3.1.1 ICT access*	84.1	58	◇	6.3.3 High-tech exports, % total trade	12.3	12	
3.1.2 ICT use*	89.5	23		6.3.4 ICT services exports, % total trade	19.2	1	◆◆
3.1.3 Government's online service*	86.1	21		6.3.5 ISO 9001 quality/bn PPP\$ GDP	20.5	12	◆
3.1.4 E-participation*	70.9	37					
3.2 General infrastructure	43.9	27		Creative outputs		Score/Value	Rank
3.2.1 Electricity output, GWh/mn pop.	7,896.6	21		38.3		33	◇
3.2.2 Logistics performance*	68.2	25	◇	7.1 Intangible assets	31.9	65	◇
3.2.3 Gross capital formation, % GDP	26.1	44		7.1.1 Intangible asset intensity, top 15, %	66.8	25	
3.3 Ecological sustainability	36.1	39		7.1.2 Trademarks by origin/bn PPP\$ GDP	11.6	107	◇
3.3.1 GDP/unit of energy use	17.0	16		7.1.3 Global brand value, top 5,000, % GDP	2.4	44	◇
3.3.2 Environmental performance*	49.7	46	◇	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.4	54	
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.0	46		7.2 Creative goods and services	38.5	13	
				7.2.1 Cultural and creative services exports, % total trade	3.2	5	◆◆
				7.2.2 National feature films/mn pop. 15-69	5.5	21	
				7.2.3 Entertainment and media market/th pop. 15-69	37.7	21	
				7.2.4 Creative goods exports, % total trade	1.5	37	
				7.3 Online creativity	50.9	24	
				7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	23.4	28	◇
				7.3.2 Country-code TLDs/th pop. 15-69	14.5	33	◇
				7.3.3 GitHub commits/mn pop. 15-69	78.7	6	
				7.3.4 Mobile app creation/bn PPP\$ GDP	87.2	3	◆◆
Market sophistication		Score/Value	Rank				
59.0		11					
4.1 Credit	45.7	33					
4.1.1 Finance for startups and scaleups†	66.8	22					
4.1.2 Domestic credit to private sector, % GDP	67.6	54	◇				
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a					
4.2 Investment	68.3	5	◆◆				
4.2.1 Market capitalization, % GDP	57.4	31					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.9	8					
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.7	1	◆◆				
4.2.4 VC received, value, % GDP	0.0	1	◆◆				
4.3 Trade, diversification and market scale	63.1	42					
4.3.1 Applied tariff rate, weighted avg., %	⊙ 1.8	58	◇				
4.3.2 Domestic industry diversification	⊙ 90.6	46					
4.3.3 Domestic market scale, bn PPP\$	496.8	48					

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
19	35	High	EUR	59.0	3,022.2	51,062	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		55.4	52	5.1 Knowledge workers		41.3	33
1.1.1	Operational stability for businesses*	55.6	56	5.1.1	Knowledge-intensive employment, %	37.9	52
1.1.2	Government effectiveness*	46.7	50	5.1.2	Firms offering formal training, %	35.7	40
1.2 Regulatory environment		76.0	32	5.1.3	GERD performed by business, % GDP	12.6	93
1.2.1	Regulatory quality*	56.2	45	5.1.4	GERD financed by business, %	0.9	25
1.2.2	Rule of law*	47.6	52	5.1.5	Females employed w/advanced degrees, %	52.8	23
1.2.3	Cost of redundancy dismissal	8.0	1	5.2 Innovation linkages		13.9	53
1.3 Business environment		39.2	87	5.2.1	University-industry R&D collaboration†	45.6	26
1.3.1	Policies for doing business†	52.4	56	5.2.2	State of cluster development†	74.0	19
1.3.2	Entrepreneurship policies and culture†	26.1	65	5.2.3	GERD financed by abroad, % GDP	80.2	12
Human capital and research		43.7	33	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.2	25
2.1 Education		57.2	49	5.2.5	Patent families/bn PPP\$ GDP	1.8	22
2.1.1	Expenditure on education, % GDP	4.1	68	5.3 Knowledge absorption		40.4	43
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.2	31	5.3.1	Intellectual property payments, % total trade	0.8	50
2.1.3	School life expectancy, years	16.3	28	5.3.2	High-tech imports, % total trade	8.3	65
2.1.4	PISA scales in reading, maths and science	477.0	34	5.3.3	ICT services imports, % total trade	2.0	36
2.1.5	Pupil-teacher ratio, secondary	9.8	30	5.3.4	FDI net inflows, % GDP	0.4	117
2.2 Tertiary education		30.5	64	5.3.5	Research talent, % in businesses	48.8	26
2.2.1	Tertiary enrolment, % gross	69.5	39	Knowledge and technology outputs		44.3	18
2.2.2	Graduates in science and engineering, %	22.7	58	6.1 Knowledge creation		41.2	23
2.2.3	Tertiary inbound mobility, %	2.9	69	6.1.1	Patents by origin/bn PPP\$ GDP	5.6	15
2.3 Research and development (R&D)		43.4	23	6.1.2	PCT patents by origin/bn PPP\$ GDP	1.1	26
2.3.1	Researchers, FTE/mn pop.	2,920.8	32	6.1.3	Utility models by origin/bn PPP\$ GDP	0.7	29
2.3.2	Gross expenditure on R&D, % GDP	1.5	27	6.1.4	Scientific and technical articles/bn PPP\$ GDP	25.3	28
2.3.3	Global corporate R&D investors, top 3, mn USD	67.3	17	6.1.5	Citable documents H-index	68.6	8
2.3.4	QS university ranking, top 3*	49.5	19	6.2 Knowledge impact		40.5	29
Infrastructure		57.2	21	6.2.1	Labor productivity growth, %	0.2	89
3.1 Information and communication technologies (ICTs)		81.1	35	6.2.2	Unicorn valuation, % GDP	0.1	47
3.1.1	ICT access*	82.9	62	6.2.3	Software spending, % GDP	0.7	3
3.1.2	ICT use*	84.0	44	6.2.4	High-tech manufacturing, %	38.3	27
3.1.3	Government's online service*	85.2	23	6.3 Knowledge diffusion		51.2	15
3.1.4	E-participation*	72.1	32	6.3.1	Intellectual property receipts, % total trade	0.8	25
3.2 General infrastructure		37.9	36	6.3.2	Production and export complexity	80.5	16
3.2.1	Electricity output, GWh/mn pop.	4,818.3	46	6.3.3	High-tech exports, % total trade	6.4	29
3.2.2	Logistics performance*	72.7	18	6.3.4	ICT services exports, % total trade	1.4	73
3.2.3	Gross capital formation, % GDP	21.9	82	6.3.5	ISO 9001 quality/bn PPP\$ GDP	34.3	3
3.3 Ecological sustainability		52.8	17	Creative outputs		45.3	21
3.3.1	GDP/unit of energy use	15.5	22	7.1 Intangible assets		60.1	9
3.3.2	Environmental performance*	65.8	23	7.1.1	Intangible asset intensity, top 15, %	77.6	9
3.3.3	ISO 14001 environment/bn PPP\$ GDP	6.8	14	7.1.2	Trademarks by origin/bn PPP\$ GDP	53.8	43
Market sophistication		44.3	40	7.1.3	Global brand value, top 5,000, % GDP	10.0	17
4.1 Credit		41.4	40	7.1.4	Industrial designs by origin/bn PPP\$ GDP	13.9	7
4.1.1	Finance for startups and scaleups†	52.1	43	7.2 Creative goods and services		26.5	38
4.1.2	Domestic credit to private sector, % GDP	83.1	38	7.2.1	Cultural and creative services exports, % total trade	0.5	57
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.2	National feature films/mn pop. 15-69	5.9	19
4.2 Investment		6.7	67	7.2.3	Entertainment and media market/th pop. 15-69	30.4	23
4.2.1	Market capitalization, % GDP	26.3	50	7.2.4	Creative goods exports, % total trade	2.4	23
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	64	7.3 Online creativity		34.5	35
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	67	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	27.3	25
4.2.4	VC received, value, % GDP	0.0	58	7.3.2	Country-code TLDs/th pop. 15-69	24.9	29
4.3 Trade, diversification and market scale		84.9	10	7.3.3	GitHub commits/mn pop. 15-69	18.5	47
4.3.1	Applied tariff rate, weighted avg., %	1.5	20	7.3.4	Mobile app creation/bn PPP\$ GDP	67.4	59
4.3.2	Domestic industry diversification	99.3	5				
4.3.3	Domestic market scale, bn PPP\$	3,022.2	12				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Jamaica

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
69	82	Upper middle	LCN	2.8	32.8	11,962	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		55.2	53	5.1 Knowledge workers		27.7	69
1.1.1	Operational stability for businesses*	54.6	46 ◆	5.1.1	Knowledge-intensive employment, %	21.9	[92]
1.1.2	Government effectiveness*	61.1	43	5.1.2	Firms offering formal training, %	21.6	71
1.2 Regulatory environment		48.2	48	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	64.6	61	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	47.2	59	5.1.5	Females employed w/advanced degrees, %	4.1	96 ◇
1.2.3	Cost of redundancy dismissal	34.8	73	5.2 Innovation linkages		24.7	56
1.3 Business environment		14.0	53	5.2.1	University-industry R&D collaboration†	42.6	69
1.3.1	Policies for doing business†	46.5	63	5.2.2	State of cluster development†	37.6	81
1.3.2	Entrepreneurship policies and culture†	55.2	51	5.2.3	GERD financed by abroad, % GDP	n/a	n/a
		37.8	51	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	27 ◆◆
				5.2.5	Patent families/bn PPP\$ GDP	0.0	95 ○◇
Human capital and research		Score/Value	Rank	Knowledge and technology outputs		Score/Value	Rank
2.1 Education		23.1	[91]	6.1 Knowledge creation		14.7	92
2.1.1	Expenditure on education, % GDP	53.9	[59]	6.1.1	Patents by origin/bn PPP\$ GDP	6.3	104
2.1.2	Government funding/pupil, secondary, % GDP/cap	5.2	33 ●	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.5	78
2.1.3	School life expectancy, years	27.3	12 ◆◆	6.1.3	Utility models by origin/bn PPP\$ GDP	0.1	72
2.1.4	PISA scales in reading, maths and science	n/a	n/a	6.1.4	Scientific and technical articles/bn PPP\$ GDP	n/a	n/a
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	6.1.5	Citable documents H-index	5.2	105
2.2 Tertiary education		18.2	93	6.2 Knowledge impact		19.7	107
2.2.1	Tertiary enrolment, % gross	15.5	[101]	6.2.1	Labor productivity growth, %	-1.9	125 ○◇
2.2.2	Graduates in science and engineering, %	27.1	90 ◇	6.2.2	Unicorn valuation, % GDP	0.0	48 ○◇
2.2.3	Tertiary inbound mobility, %	n/a	n/a	6.2.3	Software spending, % GDP	0.3	29 ◆◆
2.3 Research and development (R&D)		0.0	[119]	6.2.4	High-tech manufacturing, %	n/a	n/a
2.3.1	Researchers, FTE/mn pop.	0.0	40 ○◇	6.3 Knowledge diffusion		18.0	81
2.3.2	Gross expenditure on R&D, % GDP	0.0	71 ○◇	6.3.1	Intellectual property receipts, % total trade	0.1	51
2.3.3	Global corporate R&D investors, top 3, mn USD	n/a	n/a	6.3.2	Production and export complexity	45.0	82
2.3.4	QS university ranking, top 3*	n/a	n/a	6.3.3	High-tech exports, % total trade	0.1	114 ○◇
				6.3.4	ICT services exports, % total trade	4.6	21 ●
				6.3.5	ISO 9001 quality/bn PPP\$ GDP	1.2	101
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank
3.1 Information and communication technologies (ICTs)		31.3	91 ◇	7.1 Intangible assets		29.8	54
3.1.1	ICT access*	52.6	95 ◇	7.1.1	Intangible asset intensity, top 15, %	51.8	22 ◆◆
3.1.2	ICT use*	78.4	78	7.1.2	Trademarks by origin/bn PPP\$ GDP	53.4	45
3.1.3	Government's online service*	61.6	89	7.1.3	Global brand value, top 5,000, % GDP	86.4	18 ●
3.1.4	E-participation*	43.8	101 ◇	7.1.4	Industrial designs by origin/bn PPP\$ GDP	8.1	25 ◆◆
3.2 General infrastructure		26.7	106 ○◇	7.2 Creative goods and services		2.1	103 ◇
3.2.1	Electricity output, GWh/mn pop.	16.6	103	7.2.1	Cultural and creative services exports, % total trade	0.1	77
3.2.2	Logistics performance*	1,459.0	92 ◇	7.2.2	National feature films/mn pop. 15-69	0.5	71
3.2.3	Gross capital formation, % GDP	18.2	89 ○◇	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
3.3 Ecological sustainability		26.7	39	7.2.4	Creative goods exports, % total trade	0.1	109
3.3.1	GDP/unit of energy use	24.6	64	7.3 Online creativity		13.5	104
3.3.2	Environmental performance*	10.8	59	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1.9	87
3.3.3	ISO 14001 environment/bn PPP\$ GDP	45.3	56	7.3.2	Country-code TLDs/th pop. 15-69	1.1	88
		0.5	85	7.3.3	GitHub commits/mn pop. 15-69	3.1	89
				7.3.4	Mobile app creation/bn PPP\$ GDP	47.8	103 ◇
Market sophistication		Score/Value	Rank				
4.1 Credit		22.0	109 ◇				
4.1.1	Finance for startups and scaleups†	25.7	76				
4.1.2	Domestic credit to private sector, % GDP	31.3	69				
4.1.3	Loans from microfinance institutions, % GDP	56.3	64				
4.2 Investment		n/a	n/a				
4.2.1	Market capitalization, % GDP	17.3	[43]				
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	87.0	20 ●				
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	73				
4.2.4	VC received, value, % GDP	n/a	n/a				
4.3 Trade, diversification and market scale		n/a	n/a				
4.3.1	Applied tariff rate, weighted avg., %	23.1	123 ○◇				
4.3.2	Domestic industry diversification	8.4	107 ◇				
4.3.3	Domestic market scale, bn PPP\$	n/a	n/a				
		32.8	122 ○				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
14	11	High	SEAO	124.0	6,110.0	48,813	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
72.3		21		59.9		11	
1.1 Institutional environment	79.7	11	5.1 Knowledge workers	62.9	18		
1.1.1 Operational stability for businesses*	84.0	7	5.1.1 Knowledge-intensive employment, %	20.8	73	○◇	
1.1.2 Government effectiveness*	75.5	17	5.1.2 Firms offering formal training, %	n/a	n/a		
1.2 Regulatory environment	90.9	8	5.1.3 GERD performed by business, % GDP	2.6	4	●	
1.2.1 Regulatory quality*	77.8	19	5.1.4 GERD financed by business, %	78.1	2	●◆	
1.2.2 Rule of law*	86.0	15	5.1.5 Females employed w/advanced degrees, %	⊙	22.9	25	
1.2.3 Cost of redundancy dismissal	8.0	1	●	50.2	20		
1.3 Business environment	46.1	64	◇	5.2.1 University-industry R&D collaboration†	64.0	28	
1.3.1 Policies for doing business†	64.8	33		5.2.2 State of cluster development†	72.3	20	
1.3.2 Entrepreneurship policies and culture†	27.4	64	○◇	5.2.3 GERD financed by abroad, % GDP	0.0	62	○◇
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	42	◇
				5.2.5 Patent families/bn PPP\$ GDP	13.0	1	●◆
Human capital and research		Score/Value	Rank	Knowledge absorption		Score/Value	Rank
53.8		18		66.6		4 ●◆	
2.1 Education	60.7	33	5.3 Knowledge absorption	66.6	4	●◆	
2.1.1 Expenditure on education, % GDP	⊙	3.2	104	○◇	5.3.1 Intellectual property payments, % total trade	3.2	7
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a		5.3.2 High-tech imports, % total trade	15.0	16	
2.1.3 School life expectancy, years	15.1	48	◇	5.3.3 ICT services imports, % total trade	2.7	23	
2.1.4 PISA scales in reading, maths and science	520.0	5		5.3.4 FDI net inflows, % GDP	0.9	100	○
2.1.5 Pupil-teacher ratio, secondary	10.7	38		5.3.5 Research talent, % in businesses	75.1	5	◆
2.2 Tertiary education	29.0	71	○◇	Knowledge and technology outputs		Score/Value	Rank
2.2.1 Tertiary enrolment, % gross	65.3	48		51.1		13	
2.2.2 Graduates in science and engineering, %	19.5	77	○	6.1 Knowledge creation	59.1	12	
2.2.3 Tertiary inbound mobility, %	5.7	44		6.1.1 Patents by origin/bn PPP\$ GDP	39.7	3	●◆
2.3 Research and development (R&D)	71.5	5	●	6.1.2 PCT patents by origin/bn PPP\$ GDP	8.2	1	●◆
2.3.1 Researchers, FTE/mn pop.	5,613.5	11		6.1.3 Utility models by origin/bn PPP\$ GDP	0.7	28	
2.3.2 Gross expenditure on R&D, % GDP	3.3	5	●	6.1.4 Scientific and technical articles/bn PPP\$ GDP	13.5	57	◇
2.3.3 Global corporate R&D investors, top 3, mn USD	88.0	6	●	6.1.5 Citable documents H-index	67.2	9	
2.3.4 QS university ranking, top 3*	80.8	8		6.2 Knowledge impact	35.0	41	○
				6.2.1 Labor productivity growth, %	-0.6	111	○
				6.2.2 Unicorn valuation, % GDP	0.2	46	◇
				6.2.3 Software spending, % GDP	0.3	42	
				6.2.4 High-tech manufacturing, %	⊙	54.6	8
				6.3 Knowledge diffusion	59.2	6	●
				6.3.1 Intellectual property receipts, % total trade	5.3	1	●◆
				6.3.2 Production and export complexity	100.0	1	●◆
				6.3.3 High-tech exports, % total trade	12.6	11	
				6.3.4 ICT services exports, % total trade	1.1	83	○
				6.3.5 ISO 9001 quality/bn PPP\$ GDP	7.3	37	
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank
60.3		13		44.1		25	
3.1 Information and communication technologies (ICTs)	90.3	12	7.1 Intangible assets	55.7	14		
3.1.1 ICT access*	84.6	54	7.1.1 Intangible asset intensity, top 15, %	69.0	20		
3.1.2 ICT use*	86.5	31	◇	7.1.2 Trademarks by origin/bn PPP\$ GDP	48.1	48	
3.1.3 Government's online service*	90.0	10		7.1.3 Global brand value, top 5,000, % GDP	16.0	7	
3.1.4 E-participation*	100.0	1	●◆	7.1.4 Industrial designs by origin/bn PPP\$ GDP	3.9	25	
3.2 General infrastructure	48.3	19	7.2 Creative goods and services	35.3	21		
3.2.1 Electricity output, GWh/mn pop.	7,964.2	20	7.2.1 Cultural and creative services exports, % total trade	0.4	58	○	
3.2.2 Logistics performance*	81.8	13	7.2.2 National feature films/mn pop. 15-69	6.1	18		
3.2.3 Gross capital formation, % GDP	25.7	47	7.2.3 Entertainment and media market/th pop. 15-69	72.4	5		
3.3 Ecological sustainability	42.3	28	7.2.4 Creative goods exports, % total trade	1.8	30		
3.3.1 GDP/unit of energy use	12.9	37		7.3 Online creativity	30.0	41	◇
3.3.2 Environmental performance*	64.9	25		7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	19.1	31	◇
3.3.3 ISO 14001 environment/bn PPP\$ GDP	3.9	24		7.3.2 Country-code TLDs/th pop. 15-69	6.4	51	◇
				7.3.3 GitHub commits/mn pop. 15-69	21.9	41	◇
				7.3.4 Mobile app creation/bn PPP\$ GDP	72.6	42	
Market sophistication		Score/Value	Rank				
61.9		8					
4.1 Credit	65.8	8	4.1 Credit	65.8	8		
4.1.1 Finance for startups and scaleups†	57.5	36	◇	4.1.1 Finance for startups and scaleups†	57.5	36	◇
4.1.2 Domestic credit to private sector, % GDP	193.5	3	●◆	4.1.2 Domestic credit to private sector, % GDP	193.5	3	●◆
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a		4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	
4.2 Investment	26.2	26	4.2 Investment	26.2	26		
4.2.1 Market capitalization, % GDP	119.8	10		4.2.1 Market capitalization, % GDP	119.8	10	
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.2	27		4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.2	27	
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	17		4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	17	
4.2.4 VC received, value, % GDP	0.0	51	○◇	4.2.4 VC received, value, % GDP	0.0	51	○◇
4.3 Trade, diversification and market scale	93.6	4	●◆	4.3 Trade, diversification and market scale	93.6	4	●◆
4.3.1 Applied tariff rate, weighted avg., %	2.2	63		4.3.1 Applied tariff rate, weighted avg., %	2.2	63	
4.3.2 Domestic industry diversification	⊙	95.2	28	4.3.2 Domestic industry diversification	⊙	95.2	28
4.3.3 Domestic market scale, bn PPP\$	6,110.0	1	●◆	4.3.3 Domestic market scale, bn PPP\$	6,110.0	1	●◆

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$		
76	70	Upper middle	NAWA	11.3	123.4	11,975		
		Score/Value	Rank			Score/Value	Rank	
🏛️ Institutions		55.9	51	📁 Business sophistication		27.0	70	
1.1 Institutional environment	45.1	65	5.1 Knowledge workers	24.6	[79]			
1.1.1 Operational stability for businesses*	47.2	75	5.1.1 Knowledge-intensive employment, %	⊖ 23.0	64			
1.1.2 Government effectiveness*	43.0	59	5.1.2 Firms offering formal training, %	16.9	88	○◇		
1.2 Regulatory environment	73.0	37 ●◆	5.1.3 GERD performed by business, % GDP	n/a	n/a			
1.2.1 Regulatory quality*	46.0	63	5.1.4 GERD financed by business, %	n/a	n/a			
1.2.2 Rule of law*	46.0	55	5.1.5 Females employed w/advanced degrees, %	⊖ 8.4	82			
1.2.3 Cost of redundancy dismissal	8.0	1 ●◆	5.2 Innovation linkages	34.1	37 ●◆			
1.3 Business environment	49.5	54	5.2.1 University–industry R&D collaboration†	57.0	40	●		
1.3.1 Policies for doing business†	56.6	46	5.2.2 State of cluster development†	67.7	27	●◆		
1.3.2 Entrepreneurship policies and culture†	⊖ 42.4	46	5.2.3 GERD financed by abroad, % GDP	n/a	n/a			
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	41			
			5.2.5 Patent families/bn PPP\$ GDP	0.0	82			
👤 Human capital and research		26.8	82	📄 Knowledge absorption		22.3	119	○◇
2.1 Education	36.9	108 ◇	5.3.1 Intellectual property payments, % total trade	0.2	94	◇		
2.1.1 Expenditure on education, % GDP	3.2	102	5.3.2 High-tech imports, % total trade	7.2	82			
2.1.2 Government funding/pupil, secondary, % GDP/cap	16.9	68	5.3.3 ICT services imports, % total trade	0.2	125	○◇		
2.1.3 School life expectancy, years	10.9	98	○◇	1.6	86			
2.1.4 PISA scales in reading, maths and science	416.0	58	5.3.4 FDI net inflows, % GDP	n/a	n/a			
2.1.5 Pupil–teacher ratio, secondary	15.4	80	5.3.5 Research talent, % in businesses					
2.2 Tertiary education	34.9	47	📡 Knowledge and technology outputs		20.3	76		
2.2.1 Tertiary enrolment, % gross	34.1	84	6.1 Knowledge creation	21.5	50			
2.2.2 Graduates in science and engineering, %	26.9	35	6.1.1 Patents by origin/bn PPP\$ GDP	0.2	95			
2.2.3 Tertiary inbound mobility, %	12.3	19	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	45			
2.3 Research and development (R&D)	8.7	65	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a			
2.3.1 Researchers, FTE/mn pop.	⊖ 596.0	65	6.1.4 Scientific and technical articles/bn PPP\$ GDP	33.3	15	●◆		
2.3.2 Gross expenditure on R&D, % GDP	⊖ 0.7	50	6.1.5 Citable documents H-index	11.1	71			
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	○◇	6.2 Knowledge impact	21.4	95		
2.3.4 QS university ranking, top 3*	16.3	59	6.2.1 Labor productivity growth, %	-1.0	117	○◇		
			6.2.2 Unicorn valuation, % GDP	0.0	48	○◇		
			6.2.3 Software spending, % GDP	0.3	41	◆		
			6.2.4 High-tech manufacturing, %	17.7	67			
⚙️ Infrastructure		32.5	87	◆	🎨 Creative outputs		20.7	75
3.1 Information and communication technologies (ICTs)	58.7	84	6.3 Knowledge diffusion	18.0	82			
3.1.1 ICT access*	53.4	104	6.3.1 Intellectual property receipts, % total trade	0.1	65			
3.1.2 ICT use*	65.7	82	6.3.2 Production and export complexity	53.9	58			
3.1.3 Government's online service*	62.4	73	6.3.3 High-tech exports, % total trade	1.2	71			
3.1.4 E-participation*	53.5	67	6.3.4 ICT services exports, % total trade	0.1	125	○		
3.2 General infrastructure	12.4	118 ○◇	6.3.5 ISO 9001 quality/bn PPP\$ GDP	4.8	55			
3.2.1 Electricity output, GWh/mn pop.	⊖ 2,063.1	81						
3.2.2 Logistics performance*	n/a	n/a						
3.2.3 Gross capital formation, % GDP	20.7	94						
3.3 Ecological sustainability	26.3	60	7.1 Intangible assets	28.7	70			
3.3.1 GDP/unit of energy use	11.0	56	7.1.1 Intangible asset intensity, top 15, %	39.7	62			
3.3.2 Environmental performance*	41.9	60	7.1.2 Trademarks by origin/bn PPP\$ GDP	28.8	80			
3.3.3 ISO 14001 environment/bn PPP\$ GDP	1.5	58	7.1.3 Global brand value, top 5,000, % GDP	0.9	55			
			7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.0	68			
🏢 Market sophistication		37.8	53	🛍️ Creative goods and services		4.4	88	
4.1 Credit	32.8	59	7.2.1 Cultural and creative services exports, % total trade	0.0	106	○◇		
4.1.1 Finance for startups and scaleups†	⊖ 58.1	35	7.2.2 National feature films/mn pop. 15–69	0.6	68			
4.1.2 Domestic credit to private sector, % GDP	82.2	40	●	0.2	57	○◇		
4.1.3 Loans from microfinance institutions, % GDP	0.8	30	7.2.3 Entertainment and media market/th pop. 15–69	1.2	43			
4.2 Investment	23.5	30 ●	7.2.4 Creative goods exports, % total trade					
4.2.1 Market capitalization, % GDP	46.8	37						
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	37	7.3 Online creativity	20.9	63			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	36	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	4.9	57			
4.2.4 VC received, value, % GDP	0.0	16	●◆	0.2	113	○		
4.3 Trade, diversification and market scale	57.1	71	7.3.2 Country-code TLDs/th pop. 15–69	3.7	84			
4.3.1 Applied tariff rate, weighted avg., %	4.0	83	7.3.3 GitHub commits/mn pop. 15–69	74.7	27	●		
4.3.2 Domestic industry diversification	94.6	30	●					
4.3.3 Domestic market scale, bn PPP\$	123.4	83						

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
87	68	Upper middle	CSA	19.4	596.7	30,827	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		44.3	72	5.1 Knowledge workers		40.8	46
1.1.1	Operational stability for businesses*	50.0	71	5.1.1	Knowledge-intensive employment, %	36.9	37
1.1.2	Government effectiveness*	38.5	63	5.1.2	Firms offering formal training, %	21.8	74
1.2 Regulatory environment		66.8	51	5.1.3	GERD performed by business, % GDP	0.1	72
1.2.1	Regulatory quality*	44.4	66	5.1.4	GERD financed by business, %	47.4	34
1.2.2	Rule of law*	25.5	93	5.1.5	Females employed w/advanced degrees, %	20.7	32
1.2.3	Cost of redundancy dismissal	8.7	18	5.2 Innovation linkages		8.4	123
1.3 Business environment		44.7	70	5.2.1	University-industry R&D collaboration†	20.3	117
1.3.1	Policies for doing business†	35.5	99	5.2.2	State of cluster development†	16.6	118
1.3.2	Entrepreneurship policies and culture†	53.8	28	5.2.3	GERD financed by abroad, % GDP	0.0	88
Human capital and research		32.6	59	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	104
2.1 Education		51.5	65	5.2.5	Patent families/bn PPP\$ GDP	0.1	60
2.1.1	Expenditure on education, % GDP	4.5	54	5.3 Knowledge absorption		29.0	83
2.1.2	Government funding/pupil, secondary, % GDP/cap	21.2	45	5.3.1	Intellectual property payments, % total trade	0.3	82
2.1.3	School life expectancy, years	15.8	44	5.3.2	High-tech imports, % total trade	9.9	39
2.1.4	PISA scales in reading, maths and science	402.4	64	5.3.3	ICT services imports, % total trade	0.8	93
2.1.5	Pupil-teacher ratio, secondary	8.3	12	5.3.4	FDI net inflows, % GDP	2.9	51
2.2 Tertiary education		34.5	50	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	70.7	35	Knowledge and technology outputs		18.2	83
2.2.2	Graduates in science and engineering, %	24.1	49	6.1 Knowledge creation		15.5	63
2.2.3	Tertiary inbound mobility, %	5.5	45	6.1.1	Patents by origin/bn PPP\$ GDP	1.8	39
2.3 Research and development (R&D)		11.9	54	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	78
2.3.1	Researchers, FTE/mn pop.	629.9	64	6.1.3	Utility models by origin/bn PPP\$ GDP	1.6	10
2.3.2	Gross expenditure on R&D, % GDP	0.1	100	6.1.4	Scientific and technical articles/bn PPP\$ GDP	3.4	115
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40	6.1.5	Citable documents H-index	6.2	93
2.3.4	QS university ranking, top 3*	39.1	33	6.2 Knowledge impact		19.6	108
Infrastructure		43.1	59	6.2.1	Labor productivity growth, %	1.6	42
3.1 Information and communication technologies (ICTs)		85.2	21	6.2.2	Unicorn valuation, % GDP	0.0	48
3.1.1	ICT access*	86.7	41	6.2.3	Software spending, % GDP	0.0	124
3.1.2	ICT use*	80.9	55	6.2.4	High-tech manufacturing, %	15.3	76
3.1.3	Government's online service*	92.7	8	6.3 Knowledge diffusion		19.5	77
3.1.4	E-participation*	80.2	15	6.3.1	Intellectual property receipts, % total trade	0.0	98
3.2 General infrastructure		26.2	67	6.3.2	Production and export complexity	45.6	80
3.2.1	Electricity output, GWh/mn pop.	5,912.2	33	6.3.3	High-tech exports, % total trade	5.1	36
3.2.2	Logistics performance*	27.3	76	6.3.4	ICT services exports, % total trade	0.3	111
3.2.3	Gross capital formation, % GDP	24.8	57	6.3.5	ISO 9001 quality/bn PPP\$ GDP	0.9	112
3.3 Ecological sustainability		18.1	90	Creative outputs		16.0	90
3.3.1	GDP/unit of energy use	6.9	98	7.1 Intangible assets		20.9	82
3.3.2	Environmental performance*	37.3	69	7.1.1	Intangible asset intensity, top 15, %	13.2	68
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.5	89	7.1.2	Trademarks by origin/bn PPP\$ GDP	24.0	85
Market sophistication		27.7	87	7.1.3	Global brand value, top 5,000, % GDP	0.3	69
4.1 Credit		22.1	87	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.3	98
4.1.1	Finance for startups and scaleups†	45.6	53	7.2 Creative goods and services		3.3	93
4.1.2	Domestic credit to private sector, % GDP	25.6	109	7.2.1	Cultural and creative services exports, % total trade	0.1	90
4.1.3	Loans from microfinance institutions, % GDP	1.1	26	7.2.2	National feature films/mn pop. 15-69	1.0	61
4.2 Investment		2.4	100	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	23.9	54	7.2.4	Creative goods exports, % total trade	0.2	82
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	95	7.3 Online creativity		18.8	73
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	98	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.4	115
4.2.4	VC received, value, % GDP	0.0	99	7.3.2	Country-code TLDs/th pop. 15-69	4.0	59
4.3 Trade, diversification and market scale		58.5	66	7.3.3	GitHub commits/mn pop. 15-69	5.7	70
4.3.1	Applied tariff rate, weighted avg., %	2.0	60	7.3.4	Mobile app creation/bn PPP\$ GDP	65.3	63
4.3.2	Domestic industry diversification	75.6	87				
4.3.3	Domestic market scale, bn PPP\$	596.7	42				






NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Kenya

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
91	104	Lower middle	SSA	54.0	311.8	6,122	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		45.0	84	5.1 Knowledge workers		24.2	84
1.1.1	Operational stability for businesses*	36.8	104	5.1.1	Knowledge-intensive employment, %	13.8	93
1.1.2	Government effectiveness*	27.6	91	5.1.2	Firms offering formal training, %	37.4	41 ●
1.2 Regulatory environment		57.0	81	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	30.5	96	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	28.3	86	5.1.5	Females employed w/advanced degrees, %	1.7	112 ○
1.2.3	Cost of redundancy dismissal	15.8	63	5.2 Innovation linkages		23.2	62
1.3 Business environment		45.8	[67]	5.2.1	University-industry R&D collaboration†	44.6	64
1.3.1	Policies for doing business†	45.8	70	5.2.2	State of cluster development†	41.0	69
1.3.2	Entrepreneurship policies and culture†	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	n/a	n/a
Human capital and research		14.7	[118]	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	58
2.1 Education		40.5	[98]	5.2.5	Patent families/bn PPP\$ GDP	0.0	92
2.1.1	Expenditure on education, % GDP	5.1	37 ●	5.3 Knowledge absorption		26.7	96
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.1	Intellectual property payments, % total trade	0.6	62
2.1.3	School life expectancy, years	n/a	n/a	5.3.2	High-tech imports, % total trade	8.5	59
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	0.4	118 ○
2.1.5	Pupil-teacher ratio, secondary	30.7	122 ○◇	5.3.4	FDI net inflows, % GDP	0.4	115
2.2 Tertiary education		3.5	124 ○◇	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	10.0	114 ○	Knowledge and technology outputs		18.4	81
2.2.2	Graduates in science and engineering, %	n/a	n/a	6.1 Knowledge creation		11.3	77
2.2.3	Tertiary inbound mobility, %	1.3	85	6.1.1	Patents by origin/bn PPP\$ GDP	0.6	74
2.3 Research and development (R&D)		0.0	[119]	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	92
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	6.1.3	Utility models by origin/bn PPP\$ GDP	0.5	34 ●
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	6.1.4	Scientific and technical articles/bn PPP\$ GDP	9.4	77
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.1.5	Citable documents H-index	16.2	53 ●
2.3.4	QS university ranking, top 3*	0.0	71 ○◇	6.2 Knowledge impact		23.8	84
Infrastructure		25.3	107	6.2.1	Labor productivity growth, %	2.5	23 ●
3.1 Information and communication technologies (ICTs)		56.4	87	6.2.2	Unicorn valuation, % GDP	0.0	48 ○◇
3.1.1	ICT access*	68.5	92	6.2.3	Software spending, % GDP	0.1	84
3.1.2	ICT use*	35.2	111 ◇	6.2.4	High-tech manufacturing, %	13.5	82
3.1.3	Government's online service*	64.9	68 ◆	6.3 Knowledge diffusion		20.2	74
3.1.4	E-participation*	57.0	64 ◆	6.3.1	Intellectual property receipts, % total trade	0.4	30 ●◆
3.2 General infrastructure		7.0	129 ○◇	6.3.2	Production and export complexity	41.6	89
3.2.1	Electricity output, GWh/mn pop.	215.9	116 ○	6.3.3	High-tech exports, % total trade	0.6	85
3.2.2	Logistics performance*	n/a	n/a	6.3.4	ICT services exports, % total trade	4.3	24 ●
3.2.3	Gross capital formation, % GDP	19.8	99	6.3.5	ISO 9001 quality/bn PPP\$ GDP	1.8	90
3.3 Ecological sustainability		12.5	116	Creative outputs		14.1	95
3.3.1	GDP/unit of energy use	7.4	93	7.1 Intangible assets		18.9	89
3.3.2	Environmental performance*	20.2	106	7.1.1	Intangible asset intensity, top 15, %	-18.3	72 ◇
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.3	98	7.1.2	Trademarks by origin/bn PPP\$ GDP	21.3	89
Market sophistication		22.1	108	7.1.3	Global brand value, top 5,000, % GDP	1.8	46 ●
4.1 Credit		7.2	120 ○	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.5	85
4.1.1	Finance for startups and scaleups†	n/a	n/a	7.2 Creative goods and services		1.3	112
4.1.2	Domestic credit to private sector, % GDP	32.1	94	7.2.1	Cultural and creative services exports, % total trade	0.0	100 ○
4.1.3	Loans from microfinance institutions, % GDP	0.3	44	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
4.2 Investment		21.5	33 ●	7.2.3	Entertainment and media market/th pop. 15-69	1.7	52
4.2.1	Market capitalization, % GDP	23.1	56	7.2.4	Creative goods exports, % total trade	0.2	87
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	42 ◆	7.3 Online creativity		17.2	84
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.2	13 ●◆	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1.1	97
4.2.4	VC received, value, % GDP	0.0	29 ●	7.3.2	Country-code TLDs/th pop. 15-69	0.9	93
4.3 Trade, diversification and market scale		37.5	109	7.3.3	GitHub commits/mn pop. 15-69	7.5	59
4.3.1	Applied tariff rate, weighted avg., %	9.3	115	7.3.4	Mobile app creation/bn PPP\$ GDP	59.2	84
4.3.2	Domestic industry diversification	66.1	98 ○				
4.3.3	Domestic market scale, bn PPP\$	311.8	59				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
65	67	High	NAWA	4.3	248.1	51,528

	Score/Value	Rank		Score/Value	Rank
 Institutions	44.2	86	 Business sophistication	21.2	[103]
1.1 Institutional environment	38.7	82	5.1 Knowledge workers	16.8	[110]
1.1.1 Operational stability for businesses*	41.7	87	5.1.1 Knowledge-intensive employment, %	22.7	66
1.1.2 Government effectiveness*	35.7	73	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	53.6	91	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	46.6	62	5.1.4 GERD financed by business, %	1.0	92
1.2.2 Rule of law*	47.4	53	5.1.5 Females employed w/advanced degrees, %	n/a	n/a
1.2.3 Cost of redundancy dismissal	28.1	116	5.2 Innovation linkages	19.8	75
1.3 Business environment	40.4	84	5.2.1 University-industry R&D collaboration†	35.6	84
1.3.1 Policies for doing business†	52.0	57	5.2.2 State of cluster development†	53.1	40
1.3.2 Entrepreneurship policies and culture†	28.8	61	5.2.3 GERD financed by abroad, % GDP	0.0	96
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	52
			5.2.5 Patent families/bn PPP\$ GDP	0.0	76
 Human capital and research	33.6	[55]	5.3 Knowledge absorption	27.0	[91]
2.1 Education	60.0	[37]	5.3.1 Intellectual property payments, % total trade	n/a	n/a
2.1.1 Expenditure on education, % GDP	n/a	n/a	5.3.2 High-tech imports, % total trade	7.1	86
2.1.2 Government funding/pupil, secondary, % GDP/cap	17.9	62	5.3.3 ICT services imports, % total trade	0.2	128
2.1.3 School life expectancy, years	14.7	61	5.3.4 FDI net inflows, % GDP	-0.1	123
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	7.6	4	 Knowledge and technology outputs	21.4	73
2.2 Tertiary education	37.2	[40]	6.1 Knowledge creation	6.1	106
2.2.1 Tertiary enrolment, % gross	58.8	54	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	117
2.2.2 Graduates in science and engineering, %	n/a	n/a	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	91
2.2.3 Tertiary inbound mobility, %	n/a	n/a	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	3.7	81	6.1.4 Scientific and technical articles/bn PPP\$ GDP	7.1	91
2.3.1 Researchers, FTE/mn pop.	173.5	85	6.1.5 Citable documents H-index	9.4	84
2.3.2 Gross expenditure on R&D, % GDP	0.2	90	6.2 Knowledge impact	30.7	55
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2.1 Labor productivity growth, %	1.1	59
2.3.4 QS university ranking, top 3*	10.1	64	6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.5	24
			6.2.4 High-tech manufacturing, %	20.9	62
 Infrastructure	48.5	46	6.3 Knowledge diffusion	27.5	57
3.1 Information and communication technologies (ICTs)	74.7	52	6.3.1 Intellectual property receipts, % total trade	n/a	n/a
3.1.1 ICT access*	94.5	9	6.3.2 Production and export complexity	44.0	85
3.1.2 ICT use*	84.2	43	6.3.3 High-tech exports, % total trade	0.3	99
3.1.3 Government's online service*	66.5	66	6.3.4 ICT services exports, % total trade	6.8	11
3.1.4 E-participation*	53.5	67	6.3.5 ISO 9001 quality/bn PPP\$ GDP	3.0	74
3.2 General infrastructure	51.7	14	 Creative outputs	25.1	64
3.2.1 Electricity output, GWh/mn pop.	17,504.1	4	7.1 Intangible assets	39.3	45
3.2.2 Logistics performance*	50.0	50	7.1.1 Intangible asset intensity, top 15, %	51.2	48
3.2.3 Gross capital formation, % GDP	21.5	84	7.1.2 Trademarks by origin/bn PPP\$ GDP	16.4	98
3.3 Ecological sustainability	19.1	82	7.1.3 Global brand value, top 5,000, % GDP	7.9	26
3.3.1 GDP/unit of energy use	4.3	121	7.1.4 Industrial designs by origin/bn PPP\$ GDP	n/a	n/a
3.3.2 Environmental performance*	39.8	63	7.2 Creative goods and services	3.2	[94]
3.3.3 ISO 14001 environment/bn PPP\$ GDP	1.5	57	7.2.1 Cultural and 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 and media market/th pop. 15-69	5.4	42
			7.2.4 Creative goods exports, % total trade	0.1	100
 Market sophistication	35.6	62	7.3 Online creativity	18.6	75
4.1 Credit	48.8	31	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	8.7	45
4.1.1 Finance for startups and scaleups†	49.8	46	7.3.2 Country-code TLDs/th pop. 15-69	0.3	105
4.1.2 Domestic credit to private sector, % GDP	126.5	18	7.3.3 GitHub commits/mn pop. 15-69	1.8	102
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	63.4	73
4.2 Investment	10.7	54			
4.2.1 Market capitalization, % GDP	93.4	17			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	52			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	89			
4.2.4 VC received, value, % GDP	0.0	73			
4.3 Trade, diversification and market scale	47.2	93			
4.3.1 Applied tariff rate, weighted avg., %	3.0	73			
4.3.2 Domestic industry diversification	56.0	102			
4.3.3 Domestic market scale, bn PPP\$	248.1	63			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Kyrgyzstan

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
112	94	Lower middle	CSA	6.6	39.2	5,771	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		31.0	122	5.1 Knowledge workers		18.5	114
1.1.1	Operational stability for businesses*	18.1	124	5.1.1	Knowledge-intensive employment, %	24.6	80
1.1.2	Government effectiveness*	19.4	123	5.1.2	Firms offering formal training, %	18.1	80
1.2 Regulatory environment		49.6	99	5.1.3	GERD performed by business, % GDP	41.4	30
1.2.1	Regulatory quality*	16.7	112	5.1.4	GERD financed by business, %	0.0	78
1.2.2	Rule of law*	27.1	103	5.1.5	Females employed w/advanced degrees, %	6.9	79
1.2.3	Cost of redundancy dismissal	8.3	123	5.2 Innovation linkages		11.7	66
1.3	Business environment	25.4	[110]	5.2.1	University-industry R&D collaboration†	6.8	126
1.3.1	Policies for doing business†	17.3	71	5.2.2	State of cluster development†	6.0	127
1.3.2	Entrepreneurship policies and culture†	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	21.3	110
Human capital and research		35.5	49	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	80
2.1 Education		65.3	[14]	5.2.5	Patent families/bn PPP\$ GDP	0.1	50
2.1.1	Expenditure on education, % GDP	6.6	10	5.3 Knowledge absorption		24.2	110
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.1	Intellectual property payments, % total trade	0.1	96
2.1.3	School life expectancy, years	13.6	76	5.3.2	High-tech imports, % total trade	8.3	62
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	0.5	110
2.1.5	Pupil-teacher ratio, secondary	12.4	55	5.3.4	FDI net inflows, % GDP	0.8	104
2.2 Tertiary education		40.6	33	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	53.5	65	Knowledge and technology outputs		13.9	96
2.2.2	Graduates in science and engineering, %	18.3	86	6.1 Knowledge creation		11.5	75
2.2.3	Tertiary inbound mobility, %	23.0	6	6.1.1	Patents by origin/bn PPP\$ GDP	2.4	30
2.3 Research and development (R&D)		0.5	111	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	101
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	6.1.3	Utility models by origin/bn PPP\$ GDP	0.4	36
2.3.2	Gross expenditure on R&D, % GDP	0.1	106	6.1.4	Scientific and technical articles/bn PPP\$ GDP	7.7	88
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40	6.1.5	Citable documents H-index	4.1	116
2.3.4	QS university ranking, top 3*	0.0	71	6.2 Knowledge impact		12.7	125
Infrastructure		30.9	92	6.2.1	Labor productivity growth, %	-0.0	96
3.1 Information and communication technologies (ICTs)		64.4	78	6.2.2	Unicorn valuation, % GDP	0.0	48
3.1.1	ICT access*	81.8	70	6.2.3	Software spending, % GDP	0.1	96
3.1.2	ICT use*	69.2	75	6.2.4	High-tech manufacturing, %	1.8	110
3.1.3	Government's online service*	57.7	80	6.3 Knowledge diffusion		17.4	86
3.1.4	E-participation*	48.8	78	6.3.1	Intellectual property receipts, % total trade	0.0	75
3.2 General infrastructure		13.7	109	6.3.2	Production and export complexity	55.8	54
3.2.1	Electricity output, GWh/mn pop.	2,340.4	77	6.3.3	High-tech exports, % total trade	1.9	61
3.2.2	Logistics performance*	9.1	106	6.3.4	ICT services exports, % total trade	0.3	112
3.2.3	Gross capital formation, % GDP	24.2	65	6.3.5	ISO 9001 quality/bn PPP\$ GDP	0.3	126
3.3 Ecological sustainability		14.5	105	Creative outputs		7.0	116
3.3.1	GDP/unit of energy use	7.2	95	7.1 Intangible assets		4.5	120
3.3.2	Environmental performance*	28.5	90	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.1	126	7.1.2	Trademarks by origin/bn PPP\$ GDP	14.0	102
Market sophistication		33.6	71	7.1.3	Global brand value, top 5,000, % GDP	0.0	74
4.1 Credit		26.4	75	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.2	107
4.1.1	Finance for startups and scaleups†	n/a	n/a	7.2 Creative goods and services		1.7	[107]
4.1.2	Domestic credit to private sector, % GDP	28.3	100	7.2.1	Cultural and creative services exports, % total trade	n/a	n/a
4.1.3	Loans from microfinance institutions, % GDP	3.7	9	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
4.2 Investment		n/a	[n/a]	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	n/a	n/a	7.2.4	Creative goods exports, % total trade	0.2	89
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a	7.3 Online creativity		17.1	85
4.2.3	VC recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.2	116
4.2.4	VC received, value, % GDP	n/a	n/a	7.3.2	Country-code TLDs/th pop. 15-69	0.8	95
4.3 Trade, diversification and market scale		40.8	102	7.3.3	GitHub commits/mn pop. 15-69	7.0	62
4.3.1	Applied tariff rate, weighted avg., %	2.3	64	7.3.4	Mobile app creation/bn PPP\$ GDP	60.4	81
4.3.2	Domestic industry diversification	36.7	109				
4.3.3	Domestic market scale, bn PPP\$	39.2	119				

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Lao People's Democratic Republic

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
120	100	Lower middle	SEAO	7.5	68.6	9,166	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		39.0	80	5.1 Knowledge workers		18.3	[105]
1.1.1	Operational stability for businesses*	58.3	49 ●◆	5.1.1	Knowledge-intensive employment, %	⊙ 13.6	96
1.1.2	Government effectiveness*	19.7	105	5.1.2	Firms offering formal training, %	⊙ 24.4	66
1.2 Regulatory environment		34.1	126	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	19.1	120	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	20.9	105	5.1.5	Females employed w/advanced degrees, %	⊙ 3.8	97
1.2.3	Cost of redundancy dismissal	34.2	123	5.2 Innovation linkages		24.2	57 ●
1.3 Business environment		49.4	[56]	5.2.1	University–industry R&D collaboration†	47.6	56 ●
1.3.1	Policies for doing business†	49.4	61	5.2.2	State of cluster development†	46.5	53 ●
1.3.2	Entrepreneurship policies and culture†	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	n/a	n/a
Human capital and research		15.1	115	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	108
2.1 Education		29.1	122	5.2.5	Patent families/bn PPP\$ GDP	0.0	95 ○◇
2.1.1	Expenditure on education, % GDP	1.9	121 ◇	5.3 Knowledge absorption		21.3	123
2.1.2	Government funding/pupil, secondary, % GDP/cap ⊙	12.6	84	5.3.1	Intellectual property payments, % total trade	⊙ 0.0	118 ○◇
2.1.3	School life expectancy, years	10.1	104 ◇	5.3.2	High-tech imports, % total trade	3.7	128
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	⊙ 0.6	104
2.1.5	Pupil–teacher ratio, secondary	16.8	85	5.3.4	FDI net inflows, % GDP	4.9	22 ●
2.2 Tertiary education		16.1	99	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	13.0	108	Knowledge and technology outputs		13.9	97
2.2.2	Graduates in science and engineering, % ⊙	23.1	54	6.1 Knowledge creation		2.0	124 ◇
2.2.3	Tertiary inbound mobility, %	0.6	99	6.1.1	Patents by origin/bn PPP\$ GDP	⊙ 0.0	128
2.3 Research and development (R&D)		0.0	[119]	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	94
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	6.1.3	Utility models by origin/bn PPP\$ GDP	⊙ 0.0	69
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	6.1.4	Scientific and technical articles/bn PPP\$ GDP	3.1	116
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.1.5	Citable documents H-index	3.9	117
2.3.4	QS university ranking, top 3*	0.0	71 ○◇	6.2 Knowledge impact		22.4	93
Infrastructure		23.8	109	6.2.1	Labor productivity growth, %	1.6	44 ●
3.1 Information and communication technologies (ICTs)		36.1	112	6.2.2	Unicorn valuation, % GDP	0.0	48 ○◇
3.1.1	ICT access*	49.3	109	6.2.3	Software spending, % GDP	0.3	46 ●
3.1.2	ICT use*	48.0	104	6.2.4	High-tech manufacturing, %	⊙ 4.7	103 ◇
3.1.3	Government's online service*	22.7	128 ○◇	6.3 Knowledge diffusion		17.1	88
3.1.4	E-participation*	24.4	114	6.3.1	Intellectual property receipts, % total trade	⊙ 0.0	114 ○◇
3.2 General infrastructure		20.8	89	6.3.2	Production and export complexity	42.3	88
3.2.1	Electricity output, GWh/mn pop.	⊙ 5,493.4	41 ●◆	6.3.3	High-tech exports, % total trade	3.1	46 ●
3.2.2	Logistics performance*	13.6	103	6.3.4	ICT services exports, % total trade	⊙ 0.6	97
3.2.3	Gross capital formation, % GDP	n/a	n/a	6.3.5	ISO 9001 quality/bn PPP\$ GDP	1.0	110
3.3 Ecological sustainability		14.6	103	Creative outputs		5.1	124 ◇
3.3.1	GDP/unit of energy use	9.8	70	7.1 Intangible assets		0.7	131 ○◇
3.3.2	Environmental performance*	20.0	107	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.3	107	7.1.2	Trademarks by origin/bn PPP\$ GDP	⊙ 4.5	125 ○
Market sophistication		34.9	[65]	7.1.3	Global brand value, top 5,000, % GDP	0.0	74 ○◇
4.1 Credit		9.8	[112]	7.1.4	Industrial designs by origin/bn PPP\$ GDP	⊙ 0.0	120 ○◇
4.1.1	Finance for startups and scaleups†	n/a	n/a	7.2 Creative goods and services		17.2	[54]
4.1.2	Domestic credit to private sector, % GDP	n/a	n/a	7.2.1	Cultural and creative services exports, % total trade	n/a	n/a
4.1.3	Loans from microfinance institutions, % GDP	0.8	31	7.2.2	National feature films/mn pop. 15–69	n/a	n/a
4.2 Investment		n/a	[n/a]	7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a
4.2.1	Market capitalization, % GDP	n/a	n/a	7.2.4	Creative goods exports, % total trade	1.5	36 ●
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a	7.3 Online creativity		1.6	126 ◇
4.2.3	VC recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.1	83
4.2.4	VC received, value, % GDP	n/a	n/a	7.3.2	Country-code TLDs/th pop. 15–69	2.4	67
4.3 Trade, diversification and market scale		60.0	55 ●	7.3.3	GitHub commits/mn pop. 15–69	0.5	121
4.3.1	Applied tariff rate, weighted avg., %	1.0	11 ●◆	7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	n/a
4.3.2	Domestic industry diversification	⊙ 84.8	65				
4.3.3	Domestic market scale, bn PPP\$	68.6	99				

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Latvia

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
39	38	High	EUR	1.9	72.0	38,124

	Score/Value	Rank		Score/Value	Rank
 Institutions	62.8	39	 Business sophistication	38.1	37
1.1 Institutional environment	66.5	33	5.1 Knowledge workers	52.5	26
1.1.1 Operational stability for businesses*	72.2	22	5.1.1 Knowledge-intensive employment, %	44.7	23
1.1.2 Government effectiveness*	60.8	35	5.1.2 Firms offering formal training, %	52.9	17
1.2 Regulatory environment	80.6	28	5.1.3 GERD performed by business, % GDP	0.2	51
1.2.1 Regulatory quality*	73.9	25	5.1.4 GERD financed by business, %	27.0	62
1.2.2 Rule of law*	68.5	28	5.1.5 Females employed w/advanced degrees, %	27.1	12 ●
1.2.3 Cost of redundancy dismissal	13.0	41	5.2 Innovation linkages	27.4	50
1.3 Business environment	41.2	80	5.2.1 University-industry R&D collaboration†	42.8	68
1.3.1 Policies for doing business†	37.1	95 ○◇	5.2.2 State of cluster development†	41.4	65
1.3.2 Entrepreneurship policies and culture†	45.4	40	5.2.3 GERD financed by abroad, % GDP	0.2	17
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	71
			5.2.5 Patent families/bn PPP\$ GDP	0.5	34
 Human capital and research	37.4	43	5.3 Knowledge absorption	34.3	61
2.1 Education	58.7	41	5.3.1 Intellectual property payments, % total trade	0.2	91 ○◇
2.1.1 Expenditure on education, % GDP	4.4	57	5.3.2 High-tech imports, % total trade	13.1	20 ●
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.2	40	5.3.3 ICT services imports, % total trade	1.5	58
2.1.3 School life expectancy, years	16.2	34	5.3.4 FDI net inflows, % GDP	5.1	18 ●
2.1.4 PISA scales in reading, maths and science	487.4	28	5.3.5 Research talent, % in businesses	25.5	51
2.1.5 Pupil-teacher ratio, secondary	9.0	21			
2.2 Tertiary education	41.8	30	 Knowledge and technology outputs	28.0	49
2.2.1 Tertiary enrolment, % gross	94.5	8 ●	6.1 Knowledge creation	21.2	52
2.2.2 Graduates in science and engineering, %	19.3	80 ○	6.1.1 Patents by origin/bn PPP\$ GDP	1.9	36
2.2.3 Tertiary inbound mobility, %	12.8	17 ●	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.6	29
2.3 Research and development (R&D)	11.7	56 ◇	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1 Researchers, FTE/mn pop.	2,403.6	35	6.1.4 Scientific and technical articles/bn PPP\$ GDP	18.0	41
2.3.2 Gross expenditure on R&D, % GDP	0.7	51	6.1.5 Citable documents H-index	9.8	80 ◇
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.2 Knowledge impact	23.9	81 ◇
2.3.4 QS university ranking, top 3*	9.7	67 ◇	6.2.1 Labor productivity growth, %	2.3	27 ◆
			6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
			6.2.3 Software spending, % GDP	0.1	91 ○◇
			6.2.4 High-tech manufacturing, %	18.0	66 ◇
 Infrastructure	54.5	33	6.3 Knowledge diffusion	39.0	36
3.1 Information and communication technologies (ICTs)	83.0	27	6.3.1 Intellectual property receipts, % total trade	0.1	63
3.1.1 ICT access*	87.6	36	6.3.2 Production and export complexity	67.4	35
3.1.2 ICT use*	91.7	17 ●	6.3.3 High-tech exports, % total trade	7.7	25
3.1.3 Government's online service*	79.4	35	6.3.4 ICT services exports, % total trade	4.5	22
3.1.4 E-participation*	73.3	29	6.3.5 ISO 9001 quality/bn PPP\$ GDP	13.1	20
3.2 General infrastructure	33.9	44			
3.2.1 Electricity output, GWh/mn pop.	3,106.7	64 ◇	 Creative outputs	39.4	31
3.2.2 Logistics performance*	63.6	33	7.1 Intangible assets	28.1	72
3.2.3 Gross capital formation, % GDP	25.5	49	7.1.1 Intangible asset intensity, top 15, %	-18.7	73 ○◇
3.3 Ecological sustainability	46.8	25	7.1.2 Trademarks by origin/bn PPP\$ GDP	47.4	49
3.3.1 GDP/unit of energy use	12.5	39	7.1.3 Global brand value, top 5,000, % GDP	0.0	74 ○◇
3.3.2 Environmental performance*	71.5	15 ●	7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.6	38
3.3.3 ISO 14001 environment/bn PPP\$ GDP	4.9	21	7.2 Creative goods and services	62.2	1 ◆◆
			7.2.1 Cultural and creative services exports, % total trade	2.3	10 ●
			7.2.2 National feature films/mn pop. 15-69	15.5	1 ◆◆
			7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
			7.2.4 Creative goods exports, % total trade	3.4	17 ●
			7.3 Online creativity	39.2	31
			7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	12.0	41
			7.3.2 Country-code TLDs/th pop. 15-69	32.9	22
			7.3.3 GitHub commits/mn pop. 15-69	35.9	29
			7.3.4 Mobile app creation/bn PPP\$ GDP	76.0	19
 Market sophistication	36.0	61			
4.1 Credit	34.9	53			
4.1.1 Finance for startups and scaleups†	58.7	34			
4.1.2 Domestic credit to private sector, % GDP	33.5	91 ○◇			
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a			
4.2 Investment	12.4	50			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	35			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	35			
4.2.4 VC received, value, % GDP	0.0	54			
4.3 Trade, diversification and market scale	60.6	52			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	90.0	48			
4.3.3 Domestic market scale, bn PPP\$	72.0	96 ○			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
95	86	Lower middle	NAWA	5.5	NA	NA	
		Score/Value	Rank			Score/Value	Rank
 Institutions		29.6	125 ○	 Business sophistication		25.7	76
1.1 Institutional environment		0.6	132 ○◇	5.1 Knowledge workers		35.8	[58]
1.1.1 Operational stability for businesses*		0.0	132 ○◇	5.1.1 Knowledge-intensive employment, %	⊖	27.5	52 ◆
1.1.2 Government effectiveness*		1.2	131 ○◇	5.1.2 Firms offering formal training, %		20.8	77
1.2 Regulatory environment		56.2	86	5.1.3 GERD performed by business, % GDP		n/a	n/a
1.2.1 Regulatory quality*		19.2	119	5.1.4 GERD financed by business, %		n/a	n/a
1.2.2 Rule of law*		8.3	122 ○◇	5.1.5 Females employed w/advanced degrees, %	⊖	14.6	51 ◆
1.2.3 Cost of redundancy dismissal		8.7	20 ●◆	5.2 Innovation linkages		17.1	89
1.3 Business environment		31.9	95	5.2.1 University–industry R&D collaboration†	⊖	35.2	86
1.3.1 Policies for doing business†	⊖	11.4	125 ○◇	5.2.2 State of cluster development†	⊖	28.1	99
1.3.2 Entrepreneurship policies and culture†	⊖	52.3	30	5.2.3 GERD financed by abroad, % GDP		n/a	n/a
 Human capital and research		29.9	72 ◆	5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	⊖	0.0	84
2.1 Education		31.2	118	5.2.5 Patent families/bn PPP\$ GDP		0.0	73
2.1.1 Expenditure on education, % GDP	⊖	2.4	114	5.3 Knowledge absorption		24.4	108
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊖	6.1	98	5.3.1 Intellectual property payments, % total trade	⊖	0.1	105
2.1.3 School life expectancy, years		n/a	n/a	5.3.2 High-tech imports, % total trade		5.1	113
2.1.4 PISA scales in reading, maths and science		376.8	73 ○	5.3.3 ICT services imports, % total trade	⊖	0.9	89
2.1.5 Pupil–teacher ratio, secondary	⊖	7.7	6 ●◆	5.3.4 FDI net inflows, % GDP		3.8	35 ●
2.2 Tertiary education		44.2	22 ●◆	5.3.5 Research talent, % in businesses		n/a	n/a
2.2.1 Tertiary enrolment, % gross		n/a	n/a	 Knowledge and technology outputs		17.3	86
2.2.2 Graduates in science and engineering, %		28.1	27 ●	6.1 Knowledge creation		29.5	[33]
2.2.3 Tertiary inbound mobility, %		12.4	18 ●◆	6.1.1 Patents by origin/bn PPP\$ GDP	⊖	1.1	56
2.3 Research and development (R&D)		14.2	[50]	6.1.2 PCT patents by origin/bn PPP\$ GDP		n/a	n/a
2.3.1 Researchers, FTE/mn pop.		n/a	n/a	6.1.3 Utility models by origin/bn PPP\$ GDP		n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP		n/a	n/a	6.1.4 Scientific and technical articles/bn PPP\$ GDP	⊖	29.4	24 ●◆
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	40 ○◇	6.1.5 Citable documents H-index		13.7	61
2.3.4 QS university ranking, top 3*		28.5	43 ◆	6.2 Knowledge impact		0.8	132 ○◇
 Infrastructure		29.3	96	6.2.1 Labor productivity growth, %		-4.9	131 ○◇
3.1 Information and communication technologies (ICTs)		51.4	96	6.2.2 Unicorn valuation, % GDP		0.0	48 ○◇
3.1.1 ICT access*		71.9	87	6.2.3 Software spending, % GDP		0.0	113 ○◇
3.1.2 ICT use*		58.8	94	6.2.4 High-tech manufacturing, %		n/a	n/a
3.1.3 Government's online service*		36.5	114	6.3 Knowledge diffusion		21.6	68
3.1.4 E-participation*		38.4	90	6.3.1 Intellectual property receipts, % total trade	⊖	0.1	55
3.2 General infrastructure		13.5	[112]	6.3.2 Production and export complexity		59.4	47 ◆
3.2.1 Electricity output, GWh/mn pop.	⊖	2,669.6	69 ◆	6.3.3 High-tech exports, % total trade		0.4	94
3.2.2 Logistics performance*		n/a	n/a	6.3.4 ICT services exports, % total trade	⊖	2.0	58
3.2.3 Gross capital formation, % GDP		n/a	n/a	6.3.5 ISO 9001 quality/bn PPP\$ GDP		n/a	n/a
3.3 Ecological sustainability		23.1	70 ◆	 Creative outputs		13.8	96
3.3.1 GDP/unit of energy use		10.3	62	7.1 Intangible assets		3.8	[122]
3.3.2 Environmental performance*		22.5	102	7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
3.3.3 ISO 14001 environment/bn PPP\$ GDP		n/a	n/a	7.1.2 Trademarks by origin/bn PPP\$ GDP	⊖	12.7	105
 Market sophistication		39.6	46	7.1.3 Global brand value, top 5,000, % GDP		0.0	74 ○◇
4.1 Credit		57.0	22 ●◆	7.1.4 Industrial designs by origin/bn PPP\$ GDP		n/a	n/a
4.1.1 Finance for startups and scaleups†	⊖	74.0	14 ●◆	7.2 Creative goods and services		24.4	43 ◆
4.1.2 Domestic credit to private sector, % GDP	⊖	106.6	25 ●◆	7.2.1 Cultural and creative services exports, % total trade		2.7	7 ●◆
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a	7.2.2 National feature films/mn pop. 15–69		4.3	29 ◆
4.2 Investment		7.4	62	7.2.3 Entertainment and media market/th pop. 15–69	⊖	0.5	56
4.2.1 Market capitalization, % GDP		17.9	62	7.2.4 Creative goods exports, % total trade		1.3	39
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	⊖	0.2	30 ◆	7.3 Online creativity		23.0	57 ◆
4.2.3 VC recipients, deals/bn PPP\$ GDP	⊖	0.0	49	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69		8.8	44 ◆
4.2.4 VC received, value, % GDP	⊖	0.0	71	7.3.2 Country-code TLDs/th pop. 15–69		0.3	107
4.3 Trade, diversification and market scale		54.5	78	7.3.3 GitHub commits/mn pop. 15–69		8.2	56 ◆
4.3.1 Applied tariff rate, weighted avg., %		2.8	70 ◆	7.3.4 Mobile app creation/bn PPP\$ GDP	⊖	74.8	25 ●◆
4.3.2 Domestic industry diversification	⊖	80.2	75				
4.3.3 Domestic market scale, bn PPP\$	⊖	77.7	92				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Lithuania

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
37	32	High	EUR	2.8	130.7	46,159

	Score/Value	Rank		Score/Value	Rank
 Institutions	73.5	19	 Business sophistication	39.3	35
1.1 Institutional environment	70.5	22	5.1 Knowledge workers	51.7	27
1.1.1 Operational stability for businesses*	75.0	17	5.1.1 Knowledge-intensive employment, %	46.6	19
1.1.2 Government effectiveness*	65.9	30	5.1.2 Firms offering formal training, %	27.5	60 ○
1.2 Regulatory environment	81.9	25	5.1.3 GERD performed by business, % GDP	0.5	37
1.2.1 Regulatory quality*	75.2	23	5.1.4 GERD financed by business, %	37.3	51
1.2.2 Rule of law*	72.2	26	5.1.5 Females employed w/advanced degrees, %	30.8	1 ●◆
1.2.3 Cost of redundancy dismissal	13.0	41	5.2 Innovation linkages	35.4	34
1.3 Business environment	68.1	24	5.2.1 University-industry R&D collaboration†	63.9	29
1.3.1 Policies for doing business†	57.3	44	5.2.2 State of cluster development†	41.1	68
1.3.2 Entrepreneurship policies and culture†	79.0	9 ●◆	5.2.3 GERD financed by abroad, % GDP	0.4	8 ●
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	60
			5.2.5 Patent families/bn PPP\$ GDP	0.4	36
 Human capital and research	37.4	42	5.3 Knowledge absorption	31.0	75 ◇
2.1 Education	55.1	54	5.3.1 Intellectual property payments, % total trade	0.2	90 ○◇
2.1.1 Expenditure on education, % GDP	4.0	73	5.3.2 High-tech imports, % total trade	7.3	80
2.1.2 Government funding/pupil, secondary, % GDP/cap	16.8	69 ○◇	5.3.3 ICT services imports, % total trade	1.3	69
2.1.3 School life expectancy, years	16.2	32	5.3.4 FDI net inflows, % GDP	6.2	15 ●
2.1.4 PISA scales in reading, maths and science	479.7	32	5.3.5 Research talent, % in businesses	30.9	42
2.1.5 Pupil-teacher ratio, secondary	8.0	10 ●◆	 Knowledge and technology outputs	35.3	29
2.2 Tertiary education	37.0	41	6.1 Knowledge creation	21.6	49
2.2.1 Tertiary enrolment, % gross	70.8	33	6.1.1 Patents by origin/bn PPP\$ GDP	1.3	51
2.2.2 Graduates in science and engineering, %	26.0	38	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.3	37
2.2.3 Tertiary inbound mobility, %	6.2	41	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	20.2	43	6.1.4 Scientific and technical articles/bn PPP\$ GDP	23.7	30
2.3.1 Researchers, FTE/mn pop.	3,940.7	28	6.1.5 Citable documents H-index	13.6	62
2.3.2 Gross expenditure on R&D, % GDP	1.1	36	6.2 Knowledge impact	49.5	17
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.2.1 Labor productivity growth, %	2.0	33 ◆
2.3.4 QS university ranking, top 3*	20.3	52	6.2.2 Unicorn valuation, % GDP	8.4	1 ●◆
			6.2.3 Software spending, % GDP	0.1	99 ○◇
			6.2.4 High-tech manufacturing, %	24.5	52
 Infrastructure	51.9	43	6.3 Knowledge diffusion	34.8	43
3.1 Information and communication technologies (ICTs)	79.5	40	6.3.1 Intellectual property receipts, % total trade	0.1	66
3.1.1 ICT access*	92.8	13 ●	6.3.2 Production and export complexity	70.4	29
3.1.2 ICT use*	90.0	22	6.3.3 High-tech exports, % total trade	6.1	31
3.1.3 Government's online service*	81.7	28	6.3.4 ICT services exports, % total trade	2.9	45
3.1.4 E-participation*	53.5	67	6.3.5 ISO 9001 quality/bn PPP\$ GDP	10.8	27
3.2 General infrastructure	26.3	66 ◇	 Creative outputs	33.5	41
3.2.1 Electricity output, GWh/mn pop.	1,559.0	90 ○◇	7.1 Intangible assets	32.4	63
3.2.2 Logistics performance*	59.1	37	7.1.1 Intangible asset intensity, top 15, %	17.5	67 ○
3.2.3 Gross capital formation, % GDP	19.2	103 ○◇	7.1.2 Trademarks by origin/bn PPP\$ GDP	45.8	50
3.3 Ecological sustainability	50.0	22	7.1.3 Global brand value, top 5,000, % GDP	0.0	74 ○◇
3.3.1 GDP/unit of energy use	13.2	36	7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.7	36
3.3.2 Environmental performance*	62.7	30	7.2 Creative goods and services	26.6	37
3.3.3 ISO 14001 environment/bn PPP\$ GDP	7.0	13 ●◆	7.2.1 Cultural and creative services exports, % total trade	0.9	33
			7.2.2 National feature films/mn pop. 15-69	6.7	14
 Market sophistication	45.3	34	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1 Credit	45.3	35	7.2.4 Creative goods exports, % total trade	1.6	33
4.1.1 Finance for startups and scaleups†	78.0	10 ●◆	7.3 Online creativity	42.5	28
4.1.2 Domestic credit to private sector, % GDP	37.4	88 ○◇	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	15.7	33
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	34.8	21
4.2 Investment	28.1	25	7.3.3 GitHub commits/mn pop. 15-69	36.6	28
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	82.8	7 ●◆
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.2	29			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	15			
4.2.4 VC received, value, % GDP	0.0	23			
4.3 Trade, diversification and market scale	62.6	49			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	94.6	31			
4.3.3 Domestic market scale, bn PPP\$	130.7	81			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ☉ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
23	22	High	EUR	0.6	91.1	141,587





	Score/Value	Rank		Score/Value	Rank
 Institutions	81.6	7	 Business sophistication	63.8	7
1.1 Institutional environment	84.1	7	5.1 Knowledge workers	70.2	6
1.1.1 Operational stability for businesses*	84.0	7	5.1.1 Knowledge-intensive employment, %	64.1	1 ●◆
1.1.2 Government effectiveness*	84.2	7	5.1.2 Firms offering formal training, %	66.1	4 ◆
1.2 Regulatory environment	82.4	23	5.1.3 GERD performed by business, % GDP	0.5	40 ◇
1.2.1 Regulatory quality*	91.8	2 ●	5.1.4 GERD financed by business, %	51.3	25
1.2.2 Rule of law*	92.1	8	5.1.5 Females employed w/advanced degrees, %	27.6	11
1.2.3 Cost of redundancy dismissal	21.7	95 ○◇	5.2 Innovation linkages	54.6	16
1.3 Business environment	78.3	10	5.2.1 University–industry R&D collaboration†	76.8	16
1.3.1 Policies for doing business†	94.3	3 ●◆	5.2.2 State of cluster development†	63.9	33
1.3.2 Entrepreneurship policies and culture†	62.2	21	5.2.3 GERD financed by abroad, % GDP	0.0	50 ◇
 Human capital and research	44.4	31 ◇	5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	13
2.1 Education	53.8	60 ◇	5.2.5 Patent families/bn PPP\$ GDP	3.7	10
2.1.1 Expenditure on education, % GDP	3.7	81 ◇	5.3 Knowledge absorption	66.7	3 ●◆
2.1.2 Government funding/pupil, secondary, % GDP/cap	20.3	50	5.3.1 Intellectual property payments, % total trade	4.0	1 ●◆
2.1.3 School life expectancy, years	14.6	62 ◇	5.3.2 High-tech imports, % total trade	1.7	132 ○◇
2.1.4 PISA scales in reading, maths and science	476.7	35 ◇	5.3.3 ICT services imports, % total trade	4.9	1 ●◆
2.1.5 Pupil–teacher ratio, secondary	7.8	8 ◆	5.3.4 FDI net inflows, % GDP	48.7	2 ●◆
2.2 Tertiary education	46.6	16	5.3.5 Research talent, % in businesses	31.6	40 ◇
2.2.1 Tertiary enrolment, % gross	19.2	101 ○◇	 Knowledge and technology outputs	31.9	38 ◇
2.2.2 Graduates in science and engineering, %	19.2	81 ○	6.1 Knowledge creation	44.1	19
2.2.3 Tertiary inbound mobility, %	48.4	1 ●◆	6.1.1 Patents by origin/bn PPP\$ GDP	6.5	14
2.3 Research and development (R&D)	32.8	34 ◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	3.4	8
2.3.1 Researchers, FTE/mn pop.	5,051.0	17	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP	1.0	39 ◇	6.1.4 Scientific and technical articles/bn PPP\$ GDP	16.6	44 ◇
2.3.3 Global corporate R&D investors, top 3, mn USD	60.6	22	6.1.5 Citable documents H-index	12.7	65 ◇
2.3.4 QS university ranking, top 3*	0.0	71 ○◇	6.2 Knowledge impact	30.8	54 ◇
 Infrastructure	55.6	31 ◇	6.2.1 Labor productivity growth, %	-1.2	119 ○◇
3.1 Information and communication technologies (ICTs)	87.0	15	6.2.2 Unicorn valuation, % GDP	2.4	15
3.1.1 ICT access*	99.7	2 ●◆	6.2.3 Software spending, % GDP	0.2	78 ◇
3.1.2 ICT use*	92.6	15	6.2.4 High-tech manufacturing, %	n/a	n/a
3.1.3 Government's online service*	81.4	29	6.3 Knowledge diffusion	20.9	71 ◇
3.1.4 E-participation*	74.4	25	6.3.1 Intellectual property receipts, % total trade	1.5	17
3.2 General infrastructure	29.9	56 ◇	6.3.2 Production and export complexity	n/a	n/a
3.2.1 Electricity output, GWh/mn pop.	2,074.9	80 ◇	6.3.3 High-tech exports, % total trade	0.5	88 ○◇
3.2.2 Logistics performance*	68.2	25 ◇	6.3.4 ICT services exports, % total trade	3.3	37
3.2.3 Gross capital formation, % GDP	18.6	106 ○◇	6.3.5 ISO 9001 quality/bn PPP\$ GDP	1.9	87 ◇
3.3 Ecological sustainability	49.8	23	 Creative outputs	54.2	11
3.3.1 GDP/unit of energy use	20.0	8	7.1 Intangible assets	53.1	17
3.3.2 Environmental performance*	90.5	6	7.1.1 Intangible asset intensity, top 15, %	71.6	18
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.9	68	7.1.2 Trademarks by origin/bn PPP\$ GDP	55.6	42
 Market sophistication	45.2	35 ◇	7.1.3 Global brand value, top 5,000, % GDP	11.6	14
4.1 Credit	44.2	38	7.1.4 Industrial designs by origin/bn PPP\$ GDP	3.8	26
4.1.1 Finance for startups and scaleups†	49.2	48 ◇	7.2 Creative goods and services	38.2	15
4.1.2 Domestic credit to private sector, % GDP	104.9	27	7.2.1 Cultural and creative services exports, % total trade	5.6	1 ●◆
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.2.2 National feature films/mn pop. 15–69	2.1	45 ◇
4.2 Investment	45.3	13	7.2.3 Entertainment and media market/th pop. 15–69	n/a	n/a
4.2.1 Market capitalization, % GDP	67.6	25	7.2.4 Creative goods exports, % total trade	0.1	97 ○
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	1.9	2 ●◆	7.3 Online creativity	72.5	5
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	26	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	97.1	4 ●◆
4.2.4 VC received, value, % GDP	0.0	21	7.3.2 Country-code TLDs/th pop. 15–69	70.7	8
4.3 Trade, diversification and market scale	46.1	95 ○◇	7.3.3 GitHub commits/mn pop. 15–69	48.3	21
4.3.1 Applied tariff rate, weighted avg., %	1.5	20	7.3.4 Mobile app creation/bn PPP\$ GDP	73.7	35
4.3.2 Domestic industry diversification	n/a	n/a			
4.3.3 Domestic market scale, bn PPP\$	91.1	89 ○			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Madagascar

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
82	125	Low	SSA	29.6	51.8	1,790

		Score/ Value	Rank			Score/ Value	Rank
 Institutions		31.2	121	 Business sophistication		16.2	123
1.1 Institutional environment		23.0	119	5.1 Knowledge workers		5.0	[129]
1.1.1 Operational stability for businesses*		36.8	104	5.1.1 Knowledge-intensive employment, %	⊖	3.7	123
1.1.2 Government effectiveness*		9.1	126	5.1.2 Firms offering formal training, %	⊖	12.7	92
1.2 Regulatory environment		52.2	94	5.1.3 GERD performed by business, % GDP		n/a	n/a
1.2.1 Regulatory quality*		20.8	116	5.1.4 GERD financed by business, %		n/a	n/a
1.2.2 Rule of law*		14.3	113	5.1.5 Females employed w/advanced degrees, %	⊖	1.9	111
1.2.3 Cost of redundancy dismissal		14.7	58 ●	5.2 Innovation linkages		11.8	109
1.3 Business environment		18.3	123 ◇	5.2.1 University–industry R&D collaboration†	⊖	20.4	116 ◇
1.3.1 Policies for doing business†	⊖	22.8	117 ◇	5.2.2 State of cluster development†	⊖	21.9	109
1.3.2 Entrepreneurship policies and culture†	⊖	13.8	75	5.2.3 GERD financed by abroad, % GDP		n/a	n/a
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	⊖	0.0	76 ●
				5.2.5 Patent families/bn PPP\$ GDP		0.0	95 ○◇
 Human capital and research		19.8	102	5.3 Knowledge absorption		31.9	71 ●◆
2.1 Education		38.1	[104]	5.3.1 Intellectual property payments, % total trade		0.3	80 ◆
2.1.1 Expenditure on education, % GDP		3.2	101	5.3.2 High-tech imports, % total trade		6.0	104
2.1.2 Government funding/pupil, secondary, % GDP/cap		n/a	n/a	5.3.3 ICT services imports, % total trade		2.0	37 ●
2.1.3 School life expectancy, years	⊖	10.2	103	5.3.4 FDI net inflows, % GDP		2.9	52 ●
2.1.4 PISA scales in reading, maths and science		n/a	n/a	5.3.5 Research talent, % in businesses		n/a	n/a
2.1.5 Pupil–teacher ratio, secondary	⊖	18.1	92				
2.2 Tertiary education		21.3	87 ◆	 Knowledge and technology outputs		10.4	121
2.2.1 Tertiary enrolment, % gross		5.5	124 ○	6.1 Knowledge creation		4.7	116
2.2.2 Graduates in science and engineering, %		29.1	22 ●◆	6.1.1 Patents by origin/bn PPP\$ GDP		0.1	107
2.2.3 Tertiary inbound mobility, %		1.9	77	6.1.2 PCT patents by origin/bn PPP\$ GDP		0.0	89 ◆
2.3 Research and development (R&D)		0.1	117	6.1.3 Utility models by origin/bn PPP\$ GDP		n/a	n/a
2.3.1 Researchers, FTE/mn pop.	⊖	34.0	98	6.1.4 Scientific and technical articles/bn PPP\$ GDP		6.2	100
2.3.2 Gross expenditure on R&D, % GDP	⊖	0.0	112 ○◇	6.1.5 Citable documents H-index		4.3	111
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	40 ○◇	6.2 Knowledge impact		12.7	124
2.3.4 QS university ranking, top 3*		0.0	71 ○◇	6.2.1 Labor productivity growth, %		-0.9	116
				6.2.2 Unicorn valuation, % GDP		0.0	48 ○◇
				6.2.3 Software spending, % GDP		0.0	116
				6.2.4 High-tech manufacturing, %		n/a	n/a
 Infrastructure		12.5	131 ○◇	6.3 Knowledge diffusion		13.9	94 ◆
3.1 Information and communication technologies (ICTs)		22.4	127	6.3.1 Intellectual property receipts, % total trade		0.1	67 ●◆
3.1.1 ICT access*		15.0	127	6.3.2 Production and export complexity		35.5	101
3.1.2 ICT use*		19.6	125	6.3.3 High-tech exports, % total trade		0.1	119
3.1.3 Government's online service*		28.3	126	6.3.4 ICT services exports, % total trade		3.5	36 ●◆
3.1.4 E-participation*		26.7	106	6.3.5 ISO 9001 quality/bn PPP\$ GDP		1.4	98 ◆
3.2 General infrastructure		7.2	128	 Creative outputs		26.0	[62]
3.2.1 Electricity output, GWh/mn pop.	⊖	60.7	125 ○	7.1 Intangible assets		50.7	[23]
3.2.2 Logistics performance*		9.1	106 ○◇	7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
3.2.3 Gross capital formation, % GDP		19.4	102	7.1.2 Trademarks by origin/bn PPP\$ GDP		63.9	33 ●◆
3.3 Ecological sustainability		8.0	132 ○◇	7.1.3 Global brand value, top 5,000, % GDP		n/a	n/a
3.3.1 GDP/unit of energy use		4.7	119	7.1.4 Industrial designs by origin/bn PPP\$ GDP		7.1	15 ●◆
3.3.2 Environmental performance*		15.4	124 ◇	7.2 Creative goods and services		2.2	[102]
3.3.3 ISO 14001 environment/bn PPP\$ GDP		0.2	114	7.2.1 Cultural and creative services exports, % total trade		0.1	82
				7.2.2 National feature films/mn pop. 15–69		n/a	n/a
				7.2.3 Entertainment and media market/th pop. 15–69		n/a	n/a
				7.2.4 Creative goods exports, % total trade		0.2	83 ◆
 Market sophistication		20.0	113	7.3 Online creativity		0.2	130 ○◇
4.1 Credit		12.7	107	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69		0.1	123
4.1.1 Finance for startups and scaleups†	⊖	23.6	76	7.3.2 Country-code TLDs/th pop. 15–69		0.1	125
4.1.2 Domestic credit to private sector, % GDP		16.4	115	7.3.3 GitHub commits/mn pop. 15–69		0.6	120
4.1.3 Loans from microfinance institutions, % GDP		0.9	28 ●	7.3.4 Mobile app creation/bn PPP\$ GDP		0.0	124 ○◇
4.2 Investment		n/a	[n/a]				
4.2.1 Market capitalization, % GDP		n/a	n/a				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		n/a	n/a				
4.2.3 VC recipients, deals/bn PPP\$ GDP		n/a	n/a				
4.2.4 VC received, value, % GDP		n/a	n/a				
4.3 Trade, diversification and market scale		27.2	119				
4.3.1 Applied tariff rate, weighted avg., %		7.2	103				
4.3.2 Domestic industry diversification		n/a	n/a				
4.3.3 Domestic market scale, bn PPP\$		51.8	105				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
46	30	Upper middle	SEAO	33.9	1,096.5	33,113	
		Score/Value	Rank			Score/Value	Rank
🏛️ Institutions		68.7	29	📁 Business sophistication		38.8	36
1.1 Institutional environment	69.6	24	◆	5.1 Knowledge workers	34.0	62	
1.1.1 Operational stability for businesses*	75.0	17	◆	5.1.1 Knowledge-intensive employment, %	⊙ 28.2	51	
1.1.2 Government effectiveness*	64.1	31	◆	5.1.2 Firms offering formal training, %	24.0	69	○
1.2 Regulatory environment	63.5	65		5.1.3 GERD performed by business, % GDP	⊙ 0.5	41	
1.2.1 Regulatory quality*	60.8	43	◆	5.1.4 GERD financed by business, %	⊙ 38.2	46	
1.2.2 Rule of law*	56.1	40	◆	5.1.5 Females employed w/advanced degrees, %	⊙ 14.7	50	
1.2.3 Cost of redundancy dismissal	23.9	104	○	5.2 Innovation linkages	34.2	36	◆
1.3 Business environment	72.9	20	◆	5.2.1 University-industry R&D collaboration†	62.8	31	◆
1.3.1 Policies for doing business†	66.3	30	◆	5.2.2 State of cluster development†	64.3	31	◆
1.3.2 Entrepreneurship policies and culture†	⊙ 79.5	8	◆◆	5.2.3 GERD financed by abroad, % GDP	⊙ 0.1	45	
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	20	◆
				5.2.5 Patent families/bn PPP\$ GDP	0.2	44	
👤 Human capital and research		44.3	32	📄 Knowledge and technology outputs		32.2	37
2.1 Education	48.2	72		6.1 Knowledge creation	14.5	66	
2.1.1 Expenditure on education, % GDP	4.3	60		6.1.1 Patents by origin/bn PPP\$ GDP	0.9	62	
2.1.2 Government funding/pupil, secondary, % GDP/cap	20.6	48		6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	50	
2.1.3 School life expectancy, years	13.3	80	○	6.1.3 Utility models by origin/bn PPP\$ GDP	0.1	52	
2.1.4 PISA scales in reading, maths and science	430.9	48		6.1.4 Scientific and technical articles/bn PPP\$ GDP	14.2	51	
2.1.5 Pupil-teacher ratio, secondary	10.9	41		6.1.5 Citable documents H-index	23.5	39	
2.2 Tertiary education	48.8	11	◆◆	6.2 Knowledge impact	37.7	36	◆
2.2.1 Tertiary enrolment, % gross	41.4	77		6.2.1 Labor productivity growth, %	1.3	52	
2.2.2 Graduates in science and engineering, %	43.5	1	◆◆	6.2.2 Unicorn valuation, % GDP	0.4	42	
2.2.3 Tertiary inbound mobility, %	8.1	31	◆	6.2.3 Software spending, % GDP	0.3	38	◆
2.3 Research and development (R&D)	35.9	31	◆	6.2.4 High-tech manufacturing, %	46.2	17	◆
2.3.1 Researchers, FTE/mn pop.	⊙ 2,184.7	39	◆	6.3 Knowledge diffusion	44.3	24	◆
2.3.2 Gross expenditure on R&D, % GDP	⊙ 1.0	43		6.3.1 Intellectual property receipts, % total trade	0.1	54	
2.3.3 Global corporate R&D investors, top 3, mn USD	44.2	38	◆	6.3.2 Production and export complexity	75.2	24	◆
2.3.4 QS university ranking, top 3*	59.7	14	◆◆	6.3.3 High-tech exports, % total trade	44.7	1	◆◆
				6.3.4 ICT services exports, % total trade	1.4	74	
				6.3.5 ISO 9001 quality/bn PPP\$ GDP	12.1	22	
⚙️ Infrastructure		46.5	51	🎨 Creative outputs		30.7	47
3.1 Information and communication technologies (ICTs)	79.2	41		7.1 Intangible assets	36.5	53	
3.1.1 ICT access*	91.7	17	◆◆	7.1.1 Intangible asset intensity, top 15, %	62.7	33	
3.1.2 ICT use*	84.0	45	◆	7.1.2 Trademarks by origin/bn PPP\$ GDP	20.7	91	○◇
3.1.3 Government's online service*	73.8	53		7.1.3 Global brand value, top 5,000, % GDP	10.2	16	◆
3.1.4 E-participation*	67.4	47		7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.5	83	○
3.2 General infrastructure	37.5	37	◆	7.2 Creative goods and services	29.6	31	◆
3.2.1 Electricity output, GWh/mn pop.	⊙ 5,640.8	37	◆	7.2.1 Cultural and creative services exports, % total trade	0.3	67	
3.2.2 Logistics performance*	68.2	25	◆	7.2.2 National feature films/mn pop. 15-69	0.3	75	○
3.2.3 Gross capital formation, % GDP	21.4	86	○	7.2.3 Entertainment and media market/th pop. 15-69	10.7	33	◆
3.3 Ecological sustainability	22.9	71		7.2.4 Creative goods exports, % total trade	8.8	1	◆◆
3.3.1 GDP/unit of energy use	9.3	78	○	7.3 Online creativity	20.3	64	
3.3.2 Environmental performance*	27.3	93	○◇	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	7.6	50	
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.7	33		7.3.2 Country-code TLDs/th pop. 15-69	3.8	61	
				7.3.3 GitHub commits/mn pop. 15-69	6.8	64	
				7.3.4 Mobile app creation/bn PPP\$ GDP	63.1	74	
🏢 Market sophistication		53.2	18				
4.1 Credit	72.3	4	◆◆				
4.1.1 Finance for startups and scaleups†	⊙ 93.9	2	◆◆				
4.1.2 Domestic credit to private sector, % GDP	133.9	16	◆◆				
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a					
4.2 Investment	22.7	31					
4.2.1 Market capitalization, % GDP	117.0	11	◆◆				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	38					
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	29	◆				
4.2.4 VC received, value, % GDP	0.0	43					
4.3 Trade, diversification and market scale	64.6	31					
4.3.1 Applied tariff rate, weighted avg., %	3.6	79					
4.3.2 Domestic industry diversification	93.7	36					
4.3.3 Domestic market scale, bn PPP\$	1,096.5	30					

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Mali

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
126	129	Low	SSA	22.6	56.1	2,609	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		4.3	131 ○◇	5.1 Knowledge workers		4.6	131 ○◇
1.1.1	Operational stability for businesses*	5.6	131 ○◇	5.1.1	Knowledge-intensive employment, %	3.6	124
1.1.2	Government effectiveness*	3.0	129 ◇	5.1.2	Firms offering formal training, %	17.7	86 ◇
1.2 Regulatory environment		54.2	89	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	26.0	107	5.1.4	GERD financed by business, %	0.8	93
1.2.2	Rule of law*	13.3	117	5.1.5	Females employed w/advanced degrees, %	0.5	125
1.2.3	Cost of redundancy dismissal	13.6	50 ●	5.2 Innovation linkages		18.8	85
1.3 Business environment		39.0	[90]	5.2.1	University–industry R&D collaboration†	32.3	92
1.3.1	Policies for doing business†	39.0	88	5.2.2	State of cluster development†	30.2	93
1.3.2	Entrepreneurship policies and culture†	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	0.1	29 ●
Human capital and research		13.7	121	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	59 ●
2.1 Education		39.1	102	5.2.5	Patent families/bn PPP\$ GDP	0.0	95 ○◇
2.1.1	Expenditure on education, % GDP	4.4	58 ●	5.3 Knowledge absorption		31.2	74 ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	26.5	15 ●	5.3.1	Intellectual property payments, % total trade	0.0	118 ○◇
2.1.3	School life expectancy, years	7.5	112 ◇	5.3.2	High-tech imports, % total trade	7.2	85
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	1.7	49 ●
2.1.5	Pupil–teacher ratio, secondary	18.5	94	5.3.4	FDI net inflows, % GDP	3.8	34 ●
2.2 Tertiary education		1.2	128 ○	5.3.5	Research talent, % in businesses	31.4	41 ◆
2.2.1	Tertiary enrolment, % gross	4.9	126 ○	Knowledge and technology outputs		10.8	120
2.2.2	Graduates in science and engineering, %	n/a	n/a	6.1 Knowledge creation		4.3	117
2.2.3	Tertiary inbound mobility, %	0.9	93 ◇	6.1.1	Patents by origin/bn PPP\$ GDP	0.2	97
2.3 Research and development (R&D)		0.8	103	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	101 ○◇
2.3.1	Researchers, FTE/mn pop.	30.3	100	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP	0.2	91	6.1.4	Scientific and technical articles/bn PPP\$ GDP	4.5	109
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.1.5	Citable documents H-index	4.9	104
2.3.4	QS university ranking, top 3*	0.0	71 ○◇	6.2 Knowledge impact		16.1	120
Infrastructure		16.8	128	6.2.1	Labor productivity growth, %	0.2	90
3.1 Information and communication technologies (ICTs)		28.1	122	6.2.2	Unicorn valuation, % GDP	0.0	48 ○◇
3.1.1	ICT access*	40.2	118	6.2.3	Software spending, % GDP	0.0	120
3.1.2	ICT use*	16.8	128	6.2.4	High-tech manufacturing, %	n/a	n/a
3.1.3	Government's online service*	29.8	124	6.3 Knowledge diffusion		12.0	98
3.1.4	E-participation*	25.6	111	6.3.1	Intellectual property receipts, % total trade	0.0	114 ○◇
3.2 General infrastructure		13.6	111	6.3.2	Production and export complexity	31.0	112
3.2.1	Electricity output, GWh/mn pop.	n/a	n/a	6.3.3	High-tech exports, % total trade	0.2	106
3.2.2	Logistics performance*	22.7	82	6.3.4	ICT services exports, % total trade	3.0	42 ●◆
3.2.3	Gross capital formation, % GDP	14.6	121	6.3.5	ISO 9001 quality/bn PPP\$ GDP	0.5	123
3.3 Ecological sustainability		8.7	130 ◇	Creative outputs		3.3	128
3.3.1	GDP/unit of energy use	n/a	n/a	7.1 Intangible assets		3.1	123
3.3.2	Environmental performance*	16.3	117 ◇	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.2	113	7.1.2	Trademarks by origin/bn PPP\$ GDP	6.6	117
Market sophistication		12.7	126	7.1.3	Global brand value, top 5,000, % GDP	0.0	74 ○◇
4.1 Credit		13.2	105	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.2	103
4.1.1	Finance for startups and scaleups†	n/a	n/a	7.2 Creative goods and services		4.8	[87]
4.1.2	Domestic credit to private sector, % GDP	26.0	107	7.2.1	Cultural and creative services exports, % total trade	0.5	56
4.1.3	Loans from microfinance institutions, % GDP	1.6	20 ●	7.2.2	National feature films/mn pop. 15–69	n/a	n/a
4.2 Investment		4.4	[82]	7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a
4.2.1	Market capitalization, % GDP	n/a	n/a	7.2.4	Creative goods exports, % total trade	0.0	118
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a	7.3 Online creativity		2.1	125
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	68	7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	122
4.2.4	VC received, value, % GDP	0.0	76	7.3.2	Country-code TLDs/th pop. 15–69	5.9	54 ●◆
4.3 Trade, diversification and market scale		20.7	126	7.3.3	GitHub commits/mn pop. 15–69	0.1	129
4.3.1	Applied tariff rate, weighted avg., %	9.2	114	7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	n/a
4.3.2	Domestic industry diversification	n/a	n/a				
4.3.3	Domestic market scale, bn PPP\$	56.1	103				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
17	27	High	EUR	0.5	29.4	56,338	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
64.7		34	◇	53.1		21	
1.1 Institutional environment	65.4	35	◇	5.1 Knowledge workers	54.3	24	◇
1.1.1 Operational stability for businesses*	69.4	29		5.1.1 Knowledge-intensive employment, %	45.5	21	
1.1.2 Government effectiveness*	61.4	34	◇	5.1.2 Firms offering formal training, %	49.9	20	
1.2 Regulatory environment	82.1	24		5.1.3 GERD performed by business, % GDP	0.4	45	◇
1.2.1 Regulatory quality*	63.2	39	◇	5.1.4 GERD financed by business, %	60.2	14	
1.2.2 Rule of law*	65.0	35	◇	5.1.5 Females employed w/advanced degrees, %	17.2	42	◇
1.2.3 Cost of redundancy dismissal	8.0	1	●	5.2 Innovation linkages	48.1	22	
1.3 Business environment	46.7	[62]		5.2.1 University–industry R&D collaboration†	40.2	72	◇
1.3.1 Policies for doing business†	46.7	66	◇	5.2.2 State of cluster development†	42.5	61	◇
1.3.2 Entrepreneurship policies and culture†	n/a	n/a		5.2.3 GERD financed by abroad, % GDP	0.1	47	
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.3	1	◆◆
				5.2.5 Patent families/bn PPP\$ GDP	2.5	16	
Human capital and research		Score/Value	Rank	Knowledge and technology outputs		Score/Value	Rank
39.6		39	◇	33.2		36	◇
2.1 Education	64.2	16		6.1 Knowledge creation	27.7	35	◇
2.1.1 Expenditure on education, % GDP	5.0	42	⊙	6.1.1 Patents by origin/bn PPP\$ GDP	2.4	31	
2.1.2 Government funding/pupil, secondary, % GDP/cap	31.1	8	◆	6.1.2 PCT patents by origin/bn PPP\$ GDP	1.6	19	
2.1.3 School life expectancy, years	17.2	17		6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a	
2.1.4 PISA scales in reading, maths and science	458.8	42	◇	6.1.4 Scientific and technical articles/bn PPP\$ GDP	17.7	42	◇
2.1.5 Pupil–teacher ratio, secondary	6.8	2	◆◆	6.1.5 Citable documents H-index	7.6	88	◇◇
2.2 Tertiary education	35.8	44		6.2 Knowledge impact	30.1	56	◇
2.2.1 Tertiary enrolment, % gross	71.5	31		6.2.1 Labor productivity growth, %	-0.1	101	◇
2.2.2 Graduates in science and engineering, %	17.2	92	◇◇	6.2.2 Unicorn valuation, % GDP	0.0	48	◇◇
2.2.3 Tertiary inbound mobility, %	14.2	14		6.2.3 Software spending, % GDP	0.3	30	
2.3 Research and development (R&D)	18.7	46	◇	6.2.4 High-tech manufacturing, %	36.2	32	⊙
2.3.1 Researchers, FTE/mn pop.	2,059.7	41	◇	6.3 Knowledge diffusion	41.8	31	
2.3.2 Gross expenditure on R&D, % GDP	0.6	55	◇	6.3.1 Intellectual property receipts, % total trade	4.2	1	◆◆
2.3.3 Global corporate R&D investors, top 3, mn USD	42.2	39	◇	6.3.2 Production and export complexity	n/a	n/a	
2.3.4 QS university ranking, top 3*	0.0	71	◇◇	6.3.3 High-tech exports, % total trade	3.7	43	
				6.3.4 ICT services exports, % total trade	0.5	103	◇
				6.3.5 ISO 9001 quality/bn PPP\$ GDP	8.9	31	
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank
59.7		17		59.2		4	◆◆
3.1 Information and communication technologies (ICTs)	85.5	19		7.1 Intangible assets	72.2	4	◆◆
3.1.1 ICT access*	92.3	15		7.1.1 Intangible asset intensity, top 15, %	64.6	28	
3.1.2 ICT use*	86.8	30	◇	7.1.2 Trademarks by origin/bn PPP\$ GDP	149.6	1	◆◆
3.1.3 Government's online service*	87.3	18		7.1.3 Global brand value, top 5,000, % GDP	5.2	32	
3.1.4 E-participation*	75.6	22		7.1.4 Industrial designs by origin/bn PPP\$ GDP	18.1	5	◆◆
3.2 General infrastructure	30.3	53	◇	7.2 Creative goods and services	39.0	12	
3.2.1 Electricity output, GWh/mn pop.	4,274.7	53	◇	7.2.1 Cultural and creative services exports, % total trade	14.3	1	◆◆
3.2.2 Logistics performance*	54.5	42	◇	7.2.2 National feature films/mn pop. 15–69	7.8	10	
3.2.3 Gross capital formation, % GDP	20.8	92	◇	7.2.3 Entertainment and media market/th pop. 15–69	4.1	45	◇◇
3.3 Ecological sustainability	63.3	1	◆◆	7.2.4 Creative goods exports, % total trade	0.2	84	◇
3.3.1 GDP/unit of energy use	28.6	3	◆◆	7.3 Online creativity	53.3	19	
3.3.2 Environmental performance*	95.4	4	◆◆	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	88.1	6	◆◆
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.2	39		7.3.2 Country-code TLDs/th pop. 15–69	14.0	34	◇
				7.3.3 GitHub commits/mn pop. 15–69	35.7	30	◇
				7.3.4 Mobile app creation/bn PPP\$ GDP	75.4	23	
Market sophistication		Score/Value	Rank				
42.7		43	◇				
4.1 Credit	30.2	[65]					
4.1.1 Finance for startups and scaleups†	n/a	n/a					
4.1.2 Domestic credit to private sector, % GDP	82.0	41					
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a					
4.2 Investment	38.7	16					
4.2.1 Market capitalization, % GDP	33.6	44	◇				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	1.1	7	◆				
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	32					
4.2.4 VC received, value, % GDP	0.0	13					
4.3 Trade, diversification and market scale	59.3	59					
4.3.1 Applied tariff rate, weighted avg., %	1.5	20					
4.3.2 Domestic industry diversification	87.1	61	⊙				
4.3.3 Domestic market scale, bn PPP\$	29.4	126	◇				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Mauritania

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
129	122	Lower middle	SSA	4.7	30.0	6,925	
		Score/Value	Rank			Score/Value	Rank
🏛️ Institutions		43.5	89	📁 Business sophistication		20.2	108
1.1 Institutional environment		29.1	102	5.1 Knowledge workers		23.3	[88]
1.1.1 Operational stability for businesses*		41.7	87	5.1.1 Knowledge-intensive employment, %		n/a	n/a
1.1.2 Government effectiveness*		16.5	114	5.1.2 Firms offering formal training, %	⊖	52.7	18 ●◆
1.2 Regulatory environment		56.3	85 ●	5.1.3 GERD performed by business, % GDP		n/a	n/a
1.2.1 Regulatory quality*		14.7	127 ◇	5.1.4 GERD financed by business, %	⊖	0.0	98 ○◇
1.2.2 Rule of law*		20.1	108	5.1.5 Females employed w/advanced degrees, %	⊖	0.7	124
1.2.3 Cost of redundancy dismissal		10.5	33 ●	5.2 Innovation linkages		14.0	103
1.3 Business environment		45.2	[69]	5.2.1 University–industry R&D collaboration†	⊖	53.1	48 ●
1.3.1 Policies for doing business†	⊖	45.2	74 ●	5.2.2 State of cluster development†	⊖	12.7	124 ◇
1.3.2 Entrepreneurship policies and culture†		n/a	n/a	5.2.3 GERD financed by abroad, % GDP	⊖	0.0	96 ○◇
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	85
				5.2.5 Patent families/bn PPP\$ GDP		0.0	95 ○◇
👤 Human capital and research		14.2	119	5.3 Knowledge absorption		23.5	112
2.1 Education		16.3	131 ◇	5.3.1 Intellectual property payments, % total trade		0.0	108
2.1.1 Expenditure on education, % GDP		1.7	123 ◇	5.3.2 High-tech imports, % total trade		7.4	79 ●
2.1.2 Government funding/pupil, secondary, % GDP/cap		8.6	93	5.3.3 ICT services imports, % total trade		0.4	113
2.1.3 School life expectancy, years		8.7	111 ◇	5.3.4 FDI net inflows, % GDP		3.6	38 ●
2.1.4 PISA scales in reading, maths and science		n/a	n/a	5.3.5 Research talent, % in businesses		n/a	n/a
2.1.5 Pupil–teacher ratio, secondary	⊖	28.8	118 ◇	📡 Knowledge and technology outputs		11.0	115
2.2 Tertiary education		26.2	77 ●	6.1 Knowledge creation		0.8	131 ◇
2.2.1 Tertiary enrolment, % gross		5.9	123 ◇	6.1.1 Patents by origin/bn PPP\$ GDP		0.1	115
2.2.2 Graduates in science and engineering, %		34.6	10 ●◆	6.1.2 PCT patents by origin/bn PPP\$ GDP		0.0	101 ○◇
2.2.3 Tertiary inbound mobility, %		1.4	82	6.1.3 Utility models by origin/bn PPP\$ GDP		0.0	75 ○◇
2.3 Research and development (R&D)		0.0	119 ○◇	6.1.4 Scientific and technical articles/bn PPP\$ GDP		1.5	127
2.3.1 Researchers, FTE/mn pop.		n/a	n/a	6.1.5 Citable documents H-index		0.6	131 ◇
2.3.2 Gross expenditure on R&D, % GDP	⊖	0.0	113 ○◇	6.2 Knowledge impact		26.3	67 ●
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	40 ○◇	6.2.1 Labor productivity growth, %		0.4	85 ●
2.3.4 QS university ranking, top 3*		0.0	71 ○◇	6.2.2 Unicorn valuation, % GDP		0.0	48 ○◇
				6.2.3 Software spending, % GDP		0.3	33 ●
				6.2.4 High-tech manufacturing, %		n/a	n/a
⚙️ Infrastructure		18.5	124 ◇	6.3 Knowledge diffusion		6.0	113
3.1 Information and communication technologies (ICTs)		19.2	129 ◇	6.3.1 Intellectual property receipts, % total trade		0.0	121
3.1.1 ICT access*		30.4	122 ◇	6.3.2 Production and export complexity		25.9	115 ◇
3.1.2 ICT use*		46.5	107	6.3.3 High-tech exports, % total trade		0.0	126
3.1.3 Government's online service*		0.0	131 ○◇	6.3.4 ICT services exports, % total trade		0.4	107
3.1.4 E-participation*		0.0	131 ○◇	6.3.5 ISO 9001 quality/bn PPP\$ GDP		0.3	127
3.2 General infrastructure		28.1	61 ●	🎨 Creative outputs		1.0	[131]
3.2.1 Electricity output, GWh/mn pop.		n/a	n/a	7.1 Intangible assets		1.3	[130]
3.2.2 Logistics performance*		9.1	106	7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
3.2.3 Gross capital formation, % GDP		40.6	7 ●◆	7.1.2 Trademarks by origin/bn PPP\$ GDP		5.2	121
3.3 Ecological sustainability		8.1	131 ◇	7.1.3 Global brand value, top 5,000, % GDP		n/a	n/a
3.3.1 GDP/unit of energy use		n/a	n/a	7.1.4 Industrial designs by origin/bn PPP\$ GDP		0.0	120 ○◇
3.3.2 Environmental performance*		15.6	123	7.2 Creative goods and services		1.2	[113]
3.3.3 ISO 14001 environment/bn PPP\$ GDP		0.1	121	7.2.1 Cultural and creative services exports, % total trade		0.1	80
				7.2.2 National feature films/mn pop. 15–69		n/a	n/a
				7.2.3 Entertainment and media market/th pop. 15–69		n/a	n/a
				7.2.4 Creative goods exports, % total trade		0.0	132 ○◇
🏢 Market sophistication		8.7	[130]	7.3 Online creativity		0.2	131 ◇
4.1 Credit		6.6	[122]	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69		0.2	119
4.1.1 Finance for startups and scaleups†		n/a	n/a	7.3.2 Country-code TLDs/th pop. 15–69		0.1	121
4.1.2 Domestic credit to private sector, % GDP	⊖	22.2	113	7.3.3 GitHub commits/mn pop. 15–69		0.2	127
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP		n/a	n/a
4.2 Investment		n/a	[n/a]				
4.2.1 Market capitalization, % GDP		n/a	n/a				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		n/a	n/a				
4.2.3 VC recipients, deals/bn PPP\$ GDP		n/a	n/a				
4.2.4 VC received, value, % GDP		n/a	n/a				
4.3 Trade, diversification and market scale		10.8	130 ◇				
4.3.1 Applied tariff rate, weighted avg., %		12.2	129 ◇				
4.3.2 Domestic industry diversification		n/a	n/a				
4.3.3 Domestic market scale, bn PPP\$		30.0	125				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
72	40	Upper middle	SSA	1.3	32.0	25,372	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
70.3		26	◆	22.9		91	
1.1 Institutional environment	71.8	21	◆◆	5.1 Knowledge workers	17.1	109	◇
1.1.1 Operational stability for businesses*	83.3	9	◆◆	5.1.1 Knowledge-intensive employment, %	23.2	63	⊙
1.1.2 Government effectiveness*	60.2	36	◆	5.1.2 Firms offering formal training, %	n/a	n/a	
1.2 Regulatory environment	83.5	19	◆◆	5.1.3 GERD performed by business, % GDP	0.0	79	⊙
1.2.1 Regulatory quality*	72.4	27	◆◆	5.1.4 GERD financed by business, %	4.1	83	◇
1.2.2 Rule of law*	65.3	34	◆	5.1.5 Females employed w/advanced degrees, %	9.2	79	⊙
1.2.3 Cost of redundancy dismissal	8.9	23	◆◆	5.2 Innovation linkages	20.1	71	
1.3 Business environment	55.7	[46]		5.2.1 University-industry R&D collaboration†	33.8	88	
1.3.1 Policies for doing business†	55.7	50		5.2.2 State of cluster development†	46.0	54	
1.3.2 Entrepreneurship policies and culture†	n/a	n/a		5.2.3 GERD financed by abroad, % GDP	0.0	84	○
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	48	
				5.2.5 Patent families/bn PPP\$ GDP	0.5	33	◆
				5.3 Knowledge absorption	31.5	73	
				5.3.1 Intellectual property payments, % total trade	0.3	88	
				5.3.2 High-tech imports, % total trade	6.9	87	
				5.3.3 ICT services imports, % total trade	3.2	14	◆◆
				5.3.4 FDI net inflows, % GDP	2.4	64	
				5.3.5 Research talent, % in businesses	4.4	70	⊙
Human capital and research		Score/Value	Rank	Knowledge and technology outputs		Score/Value	Rank
31.3		64		15.0		90	
2.1 Education	60.6	34		6.1 Knowledge creation	6.7	[101]	
2.1.1 Expenditure on education, % GDP	4.7	48		6.1.1 Patents by origin/bn PPP\$ GDP	0.2	98	
2.1.2 Government funding/pupil, secondary, % GDP/cap	31.8	7	◆◆	6.1.2 PCT patents by origin/bn PPP\$ GDP	n/a	n/a	
2.1.3 School life expectancy, years	14.9	55		6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a	
2.1.4 PISA scales in reading, maths and science	n/a	n/a		6.1.4 Scientific and technical articles/bn PPP\$ GDP	6.4	98	
2.1.5 Pupil-teacher ratio, secondary	10.7	37		6.1.5 Citable documents H-index	4.2	113	○
2.2 Tertiary education	30.4	66		6.2 Knowledge impact	16.6	119	○◇
2.2.1 Tertiary enrolment, % gross	45.3	70		6.2.1 Labor productivity growth, %	0.7	74	
2.2.2 Graduates in science and engineering, %	24.8	46		6.2.2 Unicorn valuation, % GDP	0.0	48	○◇
2.2.3 Tertiary inbound mobility, %	6.7	36		6.2.3 Software spending, % GDP	0.1	83	
2.3 Research and development (R&D)	3.0	86		6.2.4 High-tech manufacturing, %	3.5	107	○◇
2.3.1 Researchers, FTE/mn pop.	568.0	67		6.3 Knowledge diffusion	21.6	69	
2.3.2 Gross expenditure on R&D, % GDP	0.4	69		6.3.1 Intellectual property receipts, % total trade	0.0	83	
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	○◇	6.3.2 Production and export complexity	51.0	65	
2.3.4 QS university ranking, top 3*	0.0	71	○◇	6.3.3 High-tech exports, % total trade	0.6	84	
				6.3.4 ICT services exports, % total trade	3.3	38	
				6.3.5 ISO 9001 quality/bn PPP\$ GDP	7.2	38	
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank
37.6		74		27.8		57	
3.1 Information and communication technologies (ICTs)	64.8	77		7.1 Intangible assets	38.5	48	
3.1.1 ICT access*	84.8	51		7.1.1 Intangible asset intensity, top 15, %	46.1	56	
3.1.2 ICT use*	74.9	62		7.1.2 Trademarks by origin/bn PPP\$ GDP	90.2	17	●
3.1.3 Government's online service*	58.9	77		7.1.3 Global brand value, top 5,000, % GDP	0.0	74	○◇
3.1.4 E-participation*	40.7	88		7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.9	74	
3.2 General infrastructure	14.8	107	◇	7.2 Creative goods and services	12.7	[62]	
3.2.1 Electricity output, GWh/mn pop.	2,274.9	78	⊙	7.2.1 Cultural and creative services exports, % total trade	0.9	31	
3.2.2 Logistics performance*	18.2	89	○◇	7.2.2 National feature films/mn pop. 15-69	n/a	n/a	
3.2.3 Gross capital formation, % GDP	20.9	88		7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a	
3.3 Ecological sustainability	33.2	42		7.2.4 Creative goods exports, % total trade	0.5	62	
3.3.1 GDP/unit of energy use	18.3	11	◆◆	7.3 Online creativity	21.5	62	
3.3.2 Environmental performance*	43.9	58		7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	14.4	35	◆
3.3.3 ISO 14001 environment/bn PPP\$ GDP	1.1	61		7.3.2 Country-code TLDs/th pop. 15-69	3.2	64	
				7.3.3 GitHub commits/mn pop. 15-69	5.9	69	
				7.3.4 Mobile app creation/bn PPP\$ GDP	62.3	75	
Market sophistication		Score/Value	Rank				
51.6		24	◆◆				
4.1 Credit	34.1	[55]					
4.1.1 Finance for startups and scaleups†	n/a	n/a					
4.1.2 Domestic credit to private sector, % GDP	91.9	33					
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a					
4.2 Investment	63.6	8	◆◆				
4.2.1 Market capitalization, % GDP	60.2	29					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	2.2	1	◆◆				
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	21	◆				
4.2.4 VC received, value, % GDP	0.0	5	◆◆				
4.3 Trade, diversification and market scale	57.0	72					
4.3.1 Applied tariff rate, weighted avg., %	0.9	10	●				
4.3.2 Domestic industry diversification	76.5	84	◇				
4.3.3 Domestic market scale, bn PPP\$	32.0	123	○				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Mexico

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
51	77	Upper middle	LCN	127.5	2,919.9	22,440

	Score/Value	Rank		Score/Value	Rank
 Institutions	34.8	111 ○◇	 Business sophistication	25.4	79
1.1 Institutional environment	30.0	100 ◇	5.1 Knowledge workers	21.2	94 ◇
1.1.1 Operational stability for businesses*	31.9	116 ○◇	5.1.1 Knowledge-intensive employment, %	20.0	75
1.1.2 Government effectiveness*	28.1	89	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	49.2	102	5.1.3 GERD performed by business, % GDP	⊙	0.1 66
1.2.1 Regulatory quality*	36.1	85	5.1.4 GERD financed by business, %	17.8	69
1.2.2 Rule of law*	16.3	109 ◇	5.1.5 Females employed w/advanced degrees, %	10.4	74
1.2.3 Cost of redundancy dismissal	22.0	98	5.2 Innovation linkages	19.0	80
1.3 Business environment	25.0	112 ○	5.2.1 University-industry R&D collaboration†	37.9	80
1.3.1 Policies for doing business†	19.7	120 ○◇	5.2.2 State of cluster development†	52.9	42
1.3.2 Entrepreneurship policies and culture†	30.3	57	5.2.3 GERD financed by abroad, % GDP	0.0	81
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	100
			5.2.5 Patent families/bn PPP\$ GDP	0.0	67
 Human capital and research	31.7	63	5.3 Knowledge absorption	35.8	56
2.1 Education	42.8	89	5.3.1 Intellectual property payments, % total trade	0.1	104 ○◇
2.1.1 Expenditure on education, % GDP	⊙	4.3 62	5.3.2 High-tech imports, % total trade	17.9	11 ●◆
2.1.2 Government funding/pupil, secondary, % GDP/cap	12.8	83 ○	5.3.3 ICT services imports, % total trade	0.1	131 ○◇
2.1.3 School life expectancy, years	14.7	60	5.3.4 FDI net inflows, % GDP	2.6	60
2.1.4 PISA scales in reading, maths and science	416.2	57	5.3.5 Research talent, % in businesses	⊙	47.2 29 ◆
2.1.5 Pupil-teacher ratio, secondary	16.0	82	 Knowledge and technology outputs	24.7	57
2.2 Tertiary education	26.2	78	6.1 Knowledge creation	11.2	78
2.2.1 Tertiary enrolment, % gross	44.8	71	6.1.1 Patents by origin/bn PPP\$ GDP	0.4	83
2.2.2 Graduates in science and engineering, %	25.8	41	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	67
2.2.3 Tertiary inbound mobility, %	0.9	92 ○◇	6.1.3 Utility models by origin/bn PPP\$ GDP	0.2	40
2.3 Research and development (R&D)	26.1	38 ◆	6.1.4 Scientific and technical articles/bn PPP\$ GDP	5.9	102
2.3.1 Researchers, FTE/mn pop.	⊙	355.8 77	6.1.5 Citable documents H-index	29.7	33 ◆
2.3.2 Gross expenditure on R&D, % GDP	⊙	0.3 75	6.2 Knowledge impact	31.3	51
2.3.3 Global corporate R&D investors, top 3, mn USD	50.4	32 ◆	6.2.1 Labor productivity growth, %	-1.8	123 ○◇
2.3.4 QS university ranking, top 3*	45.1	26 ●◆	6.2.2 Unicorn valuation, % GDP	1.3	31 ●◆
			6.2.3 Software spending, % GDP	0.2	76
			6.2.4 High-tech manufacturing, %	46.3	16 ●◆
 Infrastructure	40.4	65	6.3 Knowledge diffusion	31.5	51
3.1 Information and communication technologies (ICTs)	73.2	57	6.3.1 Intellectual property receipts, % total trade	0.0	102 ◇
3.1.1 ICT access*	69.7	90	6.3.2 Production and export complexity	78.0	20 ●◆
3.1.2 ICT use*	70.5	69	6.3.3 High-tech exports, % total trade	14.2	9 ●◆
3.1.3 Government's online service*	80.6	31	6.3.4 ICT services exports, % total trade	0.0	131 ○◇
3.1.4 E-participation*	72.1	32	6.3.5 ISO 9001 quality/bn PPP\$ GDP	3.1	72
3.2 General infrastructure	21.3	84	 Creative outputs	31.7	45
3.2.1 Electricity output, GWh/mn pop.	2,566.2	73	7.1 Intangible assets	38.2	50
3.2.2 Logistics performance*	36.4	65	7.1.1 Intangible asset intensity, top 15, %	72.4	15 ●
3.2.3 Gross capital formation, % GDP	20.8	91	7.1.2 Trademarks by origin/bn PPP\$ GDP	53.2	44
3.3 Ecological sustainability	26.6	58	7.1.3 Global brand value, top 5,000, % GDP	4.9	34
3.3.1 GDP/unit of energy use	12.2	47	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.5	84
3.3.2 Environmental performance*	45.1	57	7.2 Creative goods and services	31.7	25 ●◆
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.8	75	7.2.1 Cultural and creative services exports, % total trade	0.0	110 ○◇
			7.2.2 National feature films/mn pop. 15-69	2.9	39
 Market sophistication	37.2	57	7.2.3 Entertainment and media market/th pop. 15-69	8.2	36
4.1 Credit	20.8	90	7.2.4 Creative goods exports, % total trade	10.1	1 ●◆
4.1.1 Finance for startups and scaleups†	39.2	59	7.3 Online creativity	18.9	72
4.1.2 Domestic credit to private sector, % GDP	38.1	85	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.0	70
4.1.3 Loans from microfinance institutions, % GDP	0.9	29	7.3.2 Country-code TLDs/th pop. 15-69	4.4	58
4.2 Investment	8.8	58	7.3.3 GitHub commits/mn pop. 15-69	3.9	81
4.2.1 Market capitalization, % GDP	33.6	45	7.3.4 Mobile app creation/bn PPP\$ GDP	64.1	69
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	79 ○			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	79			
4.2.4 VC received, value, % GDP	0.0	40			
4.3 Trade, diversification and market scale	81.9	12 ●◆			
4.3.1 Applied tariff rate, weighted avg., %	⊙	1.2 13 ●			
4.3.2 Domestic industry diversification	90.8	45			
4.3.3 Domestic market scale, bn PPP\$	2,919.9	13 ●◆			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
60	79	Lower middle	SEAO	3.4	47.1	13,611	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		41.1	75	5.1 Knowledge workers		43.1	43
1.1.1	Operational stability for businesses*	58.3	49	5.1.1	Knowledge-intensive employment, %	26.8	53
1.1.2	Government effectiveness*	23.8	99	5.1.2	Firms offering formal training, %	66.2	3
1.2 Regulatory environment		66.8	52	5.1.3	GERD performed by business, % GDP	0.0	85
1.2.1	Regulatory quality*	36.7	84	5.1.4	GERD financed by business, %	8.1	77
1.2.2	Rule of law*	33.1	75	5.1.5	Females employed w/advanced degrees, %	23.9	23
1.2.3	Cost of redundancy dismissal	8.7	18	5.2 Innovation linkages		9.1	121
1.3 Business environment		30.2	[101]	5.2.1	University-industry R&D collaboration [†]	21.7	114
1.3.1	Policies for doing business [†]	30.2	107	5.2.2	State of cluster development [†]	17.5	116
1.3.2	Entrepreneurship policies and culture [†]	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	0.0	83
Human capital and research		31.2	65	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	74
2.1 Education		67.3	[13]	5.2.5	Patent families/bn PPP\$ GDP	0.0	95
2.1.1	Expenditure on education, % GDP	6.5	12	5.3 Knowledge absorption		31.7	72
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.1	Intellectual property payments, % total trade	0.3	83
2.1.3	School life expectancy, years	15.0	54	5.3.2	High-tech imports, % total trade	5.9	105
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	1.4	64
2.1.5	Pupil-teacher ratio, secondary	13.3	63	5.3.4	FDI net inflows, % GDP	14.8	7
2.2 Tertiary education		25.0	80	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	69.4	40	Knowledge and technology outputs		15.8	88
2.2.2	Graduates in science and engineering, %	18.7	84	6.1 Knowledge creation		31.2	31
2.2.3	Tertiary inbound mobility, %	1.0	88	6.1.1	Patents by origin/bn PPP\$ GDP	2.5	29
2.3 Research and development (R&D)		1.4	97	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	69
2.3.1	Researchers, FTE/mn pop.	331.0	79	6.1.3	Utility models by origin/bn PPP\$ GDP	4.0	1
2.3.2	Gross expenditure on R&D, % GDP	0.1	98	6.1.4	Scientific and technical articles/bn PPP\$ GDP	11.0	70
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40	6.1.5	Citable documents H-index	4.6	107
2.3.4	QS university ranking, top 3*	0.0	71	6.2 Knowledge impact		5.3	130
Infrastructure		36.0	81	6.2.1	Labor productivity growth, %	n/a	n/a
3.1 Information and communication technologies (ICTs)		69.7	68	6.2.2	Unicorn valuation, % GDP	0.0	48
3.1.1	ICT access*	84.7	52	6.2.3	Software spending, % GDP	0.1	82
3.1.2	ICT use*	76.0	59	6.2.4	High-tech manufacturing, %	3.8	106
3.1.3	Government's online service*	58.7	78	6.3 Knowledge diffusion		10.8	105
3.1.4	E-participation*	59.3	57	6.3.1	Intellectual property receipts, % total trade	0.0	85
3.2 General infrastructure		26.3	65	6.3.2	Production and export complexity	32.6	106
3.2.1	Electricity output, GWh/mn pop.	2,010.4	82	6.3.3	High-tech exports, % total trade	0.3	100
3.2.2	Logistics performance*	18.2	89	6.3.4	ICT services exports, % total trade	0.3	110
3.2.3	Gross capital formation, % GDP	42.8	4	6.3.5	ISO 9001 quality/bn PPP\$ GDP	4.7	57
3.3 Ecological sustainability		11.9	119	Creative outputs		33.7	40
3.3.1	GDP/unit of energy use	6.1	106	7.1 Intangible assets		58.3	10
3.3.2	Environmental performance*	18.1	113	7.1.1	Intangible asset intensity, top 15, %	-42.5	77
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.8	71	7.1.2	Trademarks by origin/bn PPP\$ GDP	445.2	1
Market sophistication		23.7	101	7.1.3	Global brand value, top 5,000, % GDP	0.0	74
4.1 Credit		10.9	109	7.1.4	Industrial designs by origin/bn PPP\$ GDP	32.4	1
4.1.1	Finance for startups and scaleups [†]	n/a	n/a	7.2 Creative goods and services		1.5	[109]
4.1.2	Domestic credit to private sector, % GDP	45.8	78	7.2.1	Cultural and creative services exports, % total trade	0.1	76
4.1.3	Loans from microfinance institutions, % GDP	0.5	38	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
4.2 Investment		n/a	[n/a]	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	n/a	n/a	7.2.4	Creative goods exports, % total trade	0.0	129
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a	7.3 Online creativity		16.4	89
4.2.3	VC recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.7	103
4.2.4	VC received, value, % GDP	n/a	n/a	7.3.2	Country-code TLDs/th pop. 15-69	2.9	65
4.3 Trade, diversification and market scale		36.5	111	7.3.3	GitHub commits/mn pop. 15-69	5.2	71
4.3.1	Applied tariff rate, weighted avg., %	5.3	93	7.3.4	Mobile app creation/bn PPP\$ GDP	57.0	90
4.3.2	Domestic industry diversification	42.8	107				
4.3.3	Domestic market scale, bn PPP\$	47.1	111				

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Montenegro

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
83	62	Upper middle	EUR	0.6	16.2	26,032

	Score/Value	Rank		Score/Value	Rank
 Institutions	45.4	82	 Business sophistication	28.1	66
1.1 Institutional environment	44.8	67	5.1 Knowledge workers	35.4	60
1.1.1 Operational stability for businesses*	52.8	65	5.1.1 Knowledge-intensive employment, %	36.7	38 ◆
1.1.2 Government effectiveness*	36.9	69	5.1.2 Firms offering formal training, %	15.8	91 ○◇
1.2 Regulatory environment	69.6	44	5.1.3 GERD performed by business, % GDP	0.2	55
1.2.1 Regulatory quality*	53.3	51	5.1.4 GERD financed by business, %	37.8	49
1.2.2 Rule of law*	38.0	64	5.1.5 Females employed w/advanced degrees, %	18.2	38
1.2.3 Cost of redundancy dismissal	11.2	36 ●	5.2 Innovation linkages	15.4	96
1.3 Business environment	21.8	[116]	5.2.1 University–industry R&D collaboration†	36.5	81
1.3.1 Policies for doing business†	21.8	118 ○◇	5.2.2 State of cluster development†	19.7	113 ◇
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.0	53
Human capital and research	32.4	62	5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	30 ●◆
2.1 Education	59.4	[39]	5.2.5 Patent families/bn PPP\$ GDP	0.0	95 ○◇
2.1.1 Expenditure on education, % GDP	n/a	n/a	5.3 Knowledge absorption	33.5	64
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.1 Intellectual property payments, % total trade	0.2	92 ◇
2.1.3 School life expectancy, years	15.2	46	5.3.2 High-tech imports, % total trade	6.5	96
2.1.4 PISA scales in reading, maths and science	421.9	55	5.3.3 ICT services imports, % total trade	2.9	19 ●◆
2.1.5 Pupil–teacher ratio, secondary	12.9	60	5.3.4 FDI net inflows, % GDP	10.2	10 ●◆
2.2 Tertiary education	34.2	52	5.3.5 Research talent, % in businesses	12.6	58
2.2.1 Tertiary enrolment, % gross	55.6	59	Knowledge and technology outputs	18.8	80
2.2.2 Graduates in science and engineering, %	20.5	69	6.1 Knowledge creation	15.4	64
2.2.3 Tertiary inbound mobility, %	n/a	n/a	6.1.1 Patents by origin/bn PPP\$ GDP	0.4	84
2.3 Research and development (R&D)	3.5	84	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	38
2.3.1 Researchers, FTE/mn pop.	753.8	60	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP	0.4	70	6.1.4 Scientific and technical articles/bn PPP\$ GDP	23.0	31 ●◆
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.1.5 Citable documents H-index	2.5	122 ○
2.3.4 QS university ranking, top 3*	0.0	71 ○◇	6.2 Knowledge impact	23.7	85
Infrastructure	44.2	56	6.2.1 Labor productivity growth, %	1.4	48
3.1 Information and communication technologies (ICTs)	67.0	73	6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
3.1.1 ICT access*	89.2	26 ●	6.2.3 Software spending, % GDP	0.3	48
3.1.2 ICT use*	82.9	51	6.2.4 High-tech manufacturing, %	10.3	90
3.1.3 Government's online service*	50.6	90	6.3 Knowledge diffusion	17.4	87
3.1.4 E-participation*	45.3	81	6.3.1 Intellectual property receipts, % total trade	0.0	84
3.2 General infrastructure	27.1	63	6.3.2 Production and export complexity	n/a	n/a
3.2.1 Electricity output, GWh/mn pop.	5,442.8	43 ◆	6.3.3 High-tech exports, % total trade	0.4	92
3.2.2 Logistics performance*	31.8	71	6.3.4 ICT services exports, % total trade	4.0	27 ●
3.2.3 Gross capital formation, % GDP	25.3	51	6.3.5 ISO 9001 quality/bn PPP\$ GDP	10.9	26 ●
3.3 Ecological sustainability	38.5	35 ●	Creative outputs	17.2	85
3.3.1 GDP/unit of energy use	9.9	68	7.1 Intangible assets	5.3	118 ◇
3.3.2 Environmental performance*	47.5	49	7.1.1 Intangible asset intensity, top 15, %	-181.4	79 ○◇
3.3.3 ISO 14001 environment/bn PPP\$ GDP	5.8	16 ●	7.1.2 Trademarks by origin/bn PPP\$ GDP	29.6	79
Market sophistication	37.8	54	7.1.3 Global brand value, top 5,000, % GDP	0.0	74 ○◇
4.1 Credit	18.6	96	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.1	114
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.2 Creative goods and services	9.8	[67]
4.1.2 Domestic credit to private sector, % GDP	60.0	60	7.2.1 Cultural and creative services exports, % total trade	0.9	36
4.1.3 Loans from microfinance institutions, % GDP	1.3	21	7.2.2 National feature films/mn pop. 15–69	n/a	n/a
4.2 Investment	n/a	[n/a]	7.2.3 Entertainment and media market/th pop. 15–69	n/a	n/a
4.2.1 Market capitalization, % GDP	n/a	n/a	7.2.4 Creative goods exports, % total trade	0.1	93
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a	7.3 Online creativity	48.5	27 ●◆
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.7	92
4.2.4 VC received, value, % GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15–69	100.0	1 ●◆
4.3 Trade, diversification and market scale	56.9	73	7.3.3 GitHub commits/mn pop. 15–69	27.1	37 ◆
4.3.1 Applied tariff rate, weighted avg., %	2.6	67	7.3.4 Mobile app creation/bn PPP\$ GDP	65.0	65
4.3.2 Domestic industry diversification	87.3	60			
4.3.3 Domestic market scale, bn PPP\$	16.2	130 ○			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
55	90	Lower middle	NAWA	37.5	359.7	9,808	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		39.7	78	5.1 Knowledge workers		20.2	[98]
1.1.1	Operational stability for businesses*	44.4	82	5.1.1	Knowledge-intensive employment, %	8.1	111 ○
1.1.2	Government effectiveness*	34.9	74	5.1.2	Firms offering formal training, %	35.7	45
1.2 Regulatory environment		55.2	87	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	38.9	80 ◆	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	32.3	78	5.1.5	Females employed w/advanced degrees, %	3.0	102
1.2.3	Cost of redundancy dismissal	20.7	90	5.2 Innovation linkages		16.3	93
1.3 Business environment		41.1	82	5.2.1	University–industry R&D collaboration†	28.8	99
1.3.1	Policies for doing business†	63.1	34 ●◆	5.2.2	State of cluster development†	32.7	88
1.3.2	Entrepreneurship policies and culture†	19.1	70	5.2.3	GERD financed by abroad, % GDP	n/a	n/a
Human capital and research		25.6	86	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	103
2.1 Education		43.4	[86]	5.2.5	Patent families/bn PPP\$ GDP	0.0	71
2.1.1	Expenditure on education, % GDP	n/a	n/a	5.3 Knowledge absorption		24.8	105
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.1	Intellectual property payments, % total trade	0.3	81
2.1.3	School life expectancy, years	14.2	69 ◆	5.3.2	High-tech imports, % total trade	8.1	68
2.1.4	PISA scales in reading, maths and science	367.9	75 ○	5.3.3	ICT services imports, % total trade	1.2	75
2.1.5	Pupil–teacher ratio, secondary	20.6	99	5.3.4	FDI net inflows, % GDP	1.3	93
2.2 Tertiary education		29.7	68	5.3.5	Research talent, % in businesses	7.0	64
2.2.1	Tertiary enrolment, % gross	43.4	74	Knowledge and technology outputs		23.0	65
2.2.2	Graduates in science and engineering, %	28.9	24 ●	6.1 Knowledge creation		13.1	69
2.2.3	Tertiary inbound mobility, %	1.9	79	6.1.1	Patents by origin/bn PPP\$ GDP	0.8	69
2.3 Research and development (R&D)		3.7	82	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	58 ◆
2.3.1	Researchers, FTE/mn pop.	1,073.5	51 ◆	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	6.1.4	Scientific and technical articles/bn PPP\$ GDP	13.0	60
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.1.5	Citable documents H-index	11.6	69
2.3.4	QS university ranking, top 3*	0.0	71 ○◇	6.2 Knowledge impact		33.2	46
Infrastructure		30.0	94	6.2.1	Labor productivity growth, %	1.3	53
3.1 Information and communication technologies (ICTs)		56.0	88	6.2.2	Unicorn valuation, % GDP	0.0	48 ○◇
3.1.1	ICT access*	86.7	42 ●◆	6.2.3	Software spending, % GDP	0.2	61
3.1.2	ICT use*	70.0	72 ◆	6.2.4	High-tech manufacturing, %	42.8	23 ●◆
3.1.3	Government's online service*	41.7	105	6.3 Knowledge diffusion		22.7	63
3.1.4	E-participation*	25.6	111 ○	6.3.1	Intellectual property receipts, % total trade	0.0	86
3.2 General infrastructure		17.1	101	6.3.2	Production and export complexity	45.6	79
3.2.1	Electricity output, GWh/mn pop.	1,129.2	94	6.3.3	High-tech exports, % total trade	2.1	57
3.2.2	Logistics performance*	n/a	n/a	6.3.4	ICT services exports, % total trade	3.7	30 ●
3.2.3	Gross capital formation, % GDP	29.3	26 ●	6.3.5	ISO 9001 quality/bn PPP\$ GDP	3.6	68
3.3 Ecological sustainability		17.1	98	Creative outputs		29.8	55 ◆
3.3.1	GDP/unit of energy use	12.3	42	7.1 Intangible assets		49.2	28 ●◆
3.3.2	Environmental performance*	16.1	118 ○	7.1.1	Intangible asset intensity, top 15, %	61.6	35
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.8	73	7.1.2	Trademarks by origin/bn PPP\$ GDP	61.3	38 ●
Market sophistication		30.7	80	7.1.3	Global brand value, top 5,000, % GDP	1.3	50
4.1 Credit		25.1	78	7.1.4	Industrial designs by origin/bn PPP\$ GDP	9.6	10 ●◆
4.1.1	Finance for startups and scaleups†	33.4	63	7.2 Creative goods and services		2.9	98
4.1.2	Domestic credit to private sector, % GDP	91.0	34 ●◆	7.2.1	Cultural and creative services exports, % total trade	0.4	59
4.1.3	Loans from microfinance institutions, % GDP	0.7	35	7.2.2	National feature films/mn pop. 15–69	0.3	76 ○
4.2 Investment		7.6	60	7.2.3	Entertainment and media market/th pop. 15–69	0.1	59 ○◇
4.2.1	Market capitalization, % GDP	50.9	35	7.2.4	Creative goods exports, % total trade	0.1	91
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	65	7.3 Online creativity		17.8	80
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	64	7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.8	90
4.2.4	VC received, value, % GDP	0.0	86 ○	7.3.2	Country-code TLDs/th pop. 15–69	1.3	84
4.3 Trade, diversification and market scale		59.5	58	7.3.3	GitHub commits/mn pop. 15–69	2.9	91
4.3.1	Applied tariff rate, weighted avg., %	3.6	80	7.3.4	Mobile app creation/bn PPP\$ GDP	65.1	64
4.3.2	Domestic industry diversification	94.2	33 ●				
4.3.3	Domestic market scale, bn PPP\$	359.7	54				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Mozambique

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
124	128	Low	SSA	33.0	48.0	1,457	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
22.9		129	◇	14.7		129	
1.1 Institutional environment	21.7	121		5.1 Knowledge workers	4.8	130	◇
1.1.1 Operational stability for businesses*	27.8	120		5.1.1 Knowledge-intensive employment, %	⊖ 3.9	122	
1.1.2 Government effectiveness*	15.6	116		5.1.2 Firms offering formal training, %	⊖ 20.7	79	
1.2 Regulatory environment	28.6	127	◇	5.1.3 GERD performed by business, % GDP	⊖ 0.0	91	
1.2.1 Regulatory quality*	21.9	115		5.1.4 GERD financed by business, %	⊖ 0.5	95	
1.2.2 Rule of law*	9.4	120		5.1.5 Females employed w/advanced degrees, %	⊖ 0.7	121	
1.2.3 Cost of redundancy dismissal	37.5	126	◇	5.2 Innovation linkages	13.1	107	
1.3 Business environment	18.3	122	◇	5.2.1 University–industry R&D collaboration†	⊖ 23.5	107	
1.3.1 Policies for doing business†	⊖ 36.6	96		5.2.2 State of cluster development†	⊖ 13.3	123	◇
1.3.2 Entrepreneurship policies and culture†	⊖ 0.0	85	◇	5.2.3 GERD financed by abroad, % GDP	⊖ 0.1	32	●
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	56	●
				5.2.5 Patent families/bn PPP\$ GDP	0.0	95	◇
				5.3 Knowledge absorption	26.3	99	
				5.3.1 Intellectual property payments, % total trade	0.0	118	◇
				5.3.2 High-tech imports, % total trade	5.6	107	
				5.3.3 ICT services imports, % total trade	1.6	54	●
				5.3.4 FDI net inflows, % GDP	26.1	5	◆
				5.3.5 Research talent, % in businesses	⊖ 0.3	84	
Human capital and research		Score/Value	Rank	Knowledge and technology outputs		Score/Value	Rank
14.8		116		9.5		127	
2.1 Education	41.5	97		6.1 Knowledge creation	7.6	94	
2.1.1 Expenditure on education, % GDP	6.9	8	◆	6.1.1 Patents by origin/bn PPP\$ GDP	0.7	70	◆
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊖ 39.6	2		6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	101	◇
2.1.3 School life expectancy, years	⊖ 10.0	105		6.1.3 Utility models by origin/bn PPP\$ GDP	0.1	59	
2.1.4 PISA scales in reading, maths and science	n/a	n/a		6.1.4 Scientific and technical articles/bn PPP\$ GDP	9.8	76	
2.1.5 Pupil–teacher ratio, secondary	45.2	125	◇	6.1.5 Citable documents H-index	5.6	96	
2.2 Tertiary education	1.5	127		6.2 Knowledge impact	13.1	123	
2.2.1 Tertiary enrolment, % gross	⊖ 7.3	119		6.2.1 Labor productivity growth, %	-0.8	114	
2.2.2 Graduates in science and engineering, %	⊖ 9.6	110	◇	6.2.2 Unicorn valuation, % GDP	0.0	48	◇
2.2.3 Tertiary inbound mobility, %	⊖ 0.4	104	◇	6.2.3 Software spending, % GDP	0.0	117	
2.3 Research and development (R&D)	1.4	95		6.2.4 High-tech manufacturing, %	n/a	n/a	
2.3.1 Researchers, FTE/mn pop.	⊖ 43.0	96		6.3 Knowledge diffusion	7.9	119	
2.3.2 Gross expenditure on R&D, % GDP	⊖ 0.3	74		6.3.1 Intellectual property receipts, % total trade	0.0	114	◇
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	◇	6.3.2 Production and export complexity	32.1	110	
2.3.4 QS university ranking, top 3*	0.0	71	◇	6.3.3 High-tech exports, % total trade	0.1	120	
				6.3.4 ICT services exports, % total trade	0.2	119	
				6.3.5 ISO 9001 quality/bn PPP\$ GDP	1.5	95	◆
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank
27.2		103	◆	7.2		115	
3.1 Information and communication technologies (ICTs)	20.1	128		7.1 Intangible assets	13.6	101	
3.1.1 ICT access*	16.3	126		7.1.1 Intangible asset intensity, top 15, %	n/a	n/a	
3.1.2 ICT use*	17.9	126		7.1.2 Trademarks by origin/bn PPP\$ GDP	34.7	67	●
3.1.3 Government's online service*	28.9	125		7.1.3 Global brand value, top 5,000, % GDP	0.0	74	◇
3.1.4 E-participation*	17.4	125	◇	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.9	71	●
3.2 General infrastructure	51.5	15	◆	7.2 Creative goods and services	0.5	[124]	
3.2.1 Electricity output, GWh/mn pop.	⊖ 608.9	106	◆	7.2.1 Cultural and creative services exports, % total trade	n/a	n/a	
3.2.2 Logistics performance*	n/a	n/a		7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
3.2.3 Gross capital formation, % GDP	73.1	1	◆	7.2.3 Entertainment and media market/th pop. 15–69	n/a	n/a	
3.3 Ecological sustainability	9.9	127		7.2.4 Creative goods exports, % total trade	0.0	112	
3.3.1 GDP/unit of energy use	3.6	123	◇	7.3 Online creativity	1.3	127	
3.3.2 Environmental performance*	21.7	104		7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.0	129	
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.5	81	◆	7.3.2 Country-code TLDs/th pop. 15–69	0.2	112	
				7.3.3 GitHub commits/mn pop. 15–69	0.2	125	
				7.3.4 Mobile app creation/bn PPP\$ GDP	4.6	123	◇
Market sophistication		Score/Value	Rank				
14.4		122					
4.1 Credit	2.5	129					
4.1.1 Finance for startups and scaleups†	⊖ 0.0	85	◇				
4.1.2 Domestic credit to private sector, % GDP	24.2	111					
4.1.3 Loans from microfinance institutions, % GDP	0.0	57					
4.2 Investment	3.7	[88]					
4.2.1 Market capitalization, % GDP	n/a	n/a					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a					
4.2.3 VC recipients, deals/bn PPP\$ GDP	⊖ 0.0	72					
4.2.4 VC received, value, % GDP	⊖ 0.0	81					
4.3 Trade, diversification and market scale	37.1	110					
4.3.1 Applied tariff rate, weighted avg., %	4.1	86	◆				
4.3.2 Domestic industry diversification	n/a	n/a					
4.3.3 Domestic market scale, bn PPP\$	48.0	108					

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
111	80	Upper middle	SSA	2.6	28.0	10,791	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
		56.3	50 ●			21.6	99 ◇
1.1 Institutional environment		47.0	60	5.1 Knowledge workers		18.0	106 ◇
1.1.1 Operational stability for businesses*		55.6	56	5.1.1 Knowledge-intensive employment, %	⊖	18.1	79
1.1.2 Government effectiveness*		38.4	64	5.1.2 Firms offering formal training, %	⊖	25.4	65
1.2 Regulatory environment		71.4	41 ●◆	5.1.3 GERD performed by business, % GDP	⊖	0.0	75
1.2.1 Regulatory quality*		42.0	73	5.1.4 GERD financed by business, %	⊖	11.1	73
1.2.2 Rule of law*		50.3	48 ●◆	5.1.5 Females employed w/advanced degrees, %	⊖	7.4	88 ◇
1.2.3 Cost of redundancy dismissal		9.7	28 ●◆	5.2 Innovation linkages		21.9	65
1.3 Business environment		50.4	[53]	5.2.1 University–industry R&D collaboration†		47.8	54
1.3.1 Policies for doing business†		50.4	60	5.2.2 State of cluster development†		38.0	77
1.3.2 Entrepreneurship policies and culture†		n/a	n/a	5.2.3 GERD financed by abroad, % GDP	⊖	0.1	46
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	39 ●
				5.2.5 Patent families/bn PPP\$ GDP		0.1	54
Human capital and research		Score/Value	Rank	Knowledge absorption		Score/Value	Rank
		28.2	76			25.1	103 ◇
2.1 Education		74.7	[2]	5.3.1 Intellectual property payments, % total trade		0.0	110 ◇
2.1.1 Expenditure on education, % GDP		9.5	1 ●◆	5.3.2 High-tech imports, % total trade	⊖	7.3	81
2.1.2 Government funding/pupil, secondary, % GDP/cap		n/a	n/a	5.3.3 ICT services imports, % total trade		1.8	42 ●
2.1.3 School life expectancy, years		n/a	n/a	5.3.4 FDI net inflows, % GDP		0.8	102 ◇
2.1.4 PISA scales in reading, maths and science		n/a	n/a	5.3.5 Research talent, % in businesses	⊖	6.9	65
2.1.5 Pupil–teacher ratio, secondary	⊖	25.9	112 ◇				
2.2 Tertiary education		8.0	115 ◇	Knowledge and technology outputs		Score/Value	Rank
2.2.1 Tertiary enrolment, % gross		27.3	89 ◇			10.1	123 ○◇
2.2.2 Graduates in science and engineering, %		8.9	112 ○◇	6.1 Knowledge creation		8.2	91
2.2.3 Tertiary inbound mobility, %		3.2	62	6.1.1 Patents by origin/bn PPP\$ GDP	⊖	0.4	88
2.3 Research and development (R&D)		1.9	91	6.1.2 PCT patents by origin/bn PPP\$ GDP		0.1	52
2.3.1 Researchers, FTE/mn pop.	⊖	149.5	86	6.1.3 Utility models by origin/bn PPP\$ GDP	⊖	0.2	41
2.3.2 Gross expenditure on R&D, % GDP	⊖	0.3	71	6.1.4 Scientific and technical articles/bn PPP\$ GDP		10.9	71
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	40 ○◇	6.1.5 Citable documents H-index		4.7	106
2.3.4 QS university ranking, top 3*		0.0	71 ○◇	6.2 Knowledge impact		9.4	128 ○◇
				6.2.1 Labor productivity growth, %		-2.1	127 ○◇
				6.2.2 Unicorn valuation, % GDP		0.0	48 ○◇
				6.2.3 Software spending, % GDP		0.1	92
				6.2.4 High-tech manufacturing, %	⊖	4.7	102
Infrastructure		Score/Value	Rank	Knowledge diffusion		Score/Value	Rank
		28.7	100 ◇			12.8	95 ◇
3.1 Information and communication technologies (ICTs)		41.6	108 ◇	6.3.1 Intellectual property receipts, % total trade		0.0	77
3.1.1 ICT access*		54.4	102 ◇	6.3.2 Production and export complexity		41.4	91
3.1.2 ICT use*		51.3	102 ◇	6.3.3 High-tech exports, % total trade	⊖	0.7	80
3.1.3 Government's online service*		37.2	113 ◇	6.3.4 ICT services exports, % total trade		0.4	105
3.1.4 E-participation*		23.3	115 ○◇	6.3.5 ISO 9001 quality/bn PPP\$ GDP		1.9	89
3.2 General infrastructure		15.2	106				
3.2.1 Electricity output, GWh/mn pop.	⊖	771.3	103 ◇	Creative outputs		Score/Value	Rank
3.2.2 Logistics performance*		36.4	65			11.5	104 ◇
3.2.3 Gross capital formation, % GDP		15.1	118 ○◇	7.1 Intangible assets		11.2	105 ◇
3.3 Ecological sustainability		29.4	56	7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
3.3.1 GDP/unit of energy use		11.8	49	7.1.2 Trademarks by origin/bn PPP\$ GDP	⊖	14.4	101 ◇
3.3.2 Environmental performance*		54.2	37 ●◆	7.1.3 Global brand value, top 5,000, % GDP		0.0	74 ○◇
3.3.3 ISO 14001 environment/bn PPP\$ GDP		0.8	72	7.1.4 Industrial designs by origin/bn PPP\$ GDP	⊖	1.4	55
Market sophistication		Score/Value	Rank	7.2 Creative goods and services		1.9	[105]
		29.0	[84]				
4.1 Credit		26.6	[74]	7.2.1 Cultural and creative services exports, % total trade		0.1	91
4.1.1 Finance for startups and scaleups†		n/a	n/a	7.2.2 National feature films/mn pop. 15–69		n/a	n/a
4.1.2 Domestic credit to private sector, % GDP		72.8	49 ●	7.2.3 Entertainment and media market/th pop. 15–69		n/a	n/a
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a	7.2.4 Creative goods exports, % total trade	⊖	0.2	78
4.2 Investment		7.0	[66]	7.3 Online creativity		21.5	61
4.2.1 Market capitalization, % GDP		18.8	60	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69		10.0	42 ●
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		n/a	n/a	7.3.2 Country-code TLDs/th pop. 15–69		0.9	94
4.2.3 VC recipients, deals/bn PPP\$ GDP		n/a	n/a	7.3.3 GitHub commits/mn pop. 15–69		2.0	100
4.2.4 VC received, value, % GDP		n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP		73.2	39 ●
4.3 Trade, diversification and market scale		53.3	80				
4.3.1 Applied tariff rate, weighted avg., %		1.3	14 ●				
4.3.2 Domestic industry diversification	⊖	67.5	97				
4.3.3 Domestic market scale, bn PPP\$		28.0	127 ○				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Nepal

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
103	106	Lower middle	CSA	30.5	141.2	4,677	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		33.0	114	5.1 Knowledge workers		23.2	[89]
1.1.1	Operational stability for businesses*	24.7	114	5.1.1	Knowledge-intensive employment, %	20.9	[96]
1.1.2	Government effectiveness*	36.8	104	5.1.2	Firms offering formal training, %	13.2	98
1.2 Regulatory environment		44.0	113	5.1.3	GERD performed by business, % GDP	31.9	53
1.2.1	Regulatory quality*	26.1	105	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	26.1	92	5.1.5	Females employed w/advanced degrees, %	n/a	n/a
1.2.3	Cost of redundancy dismissal	27.2	109	5.2 Innovation linkages		14.1	102
1.3 Business environment		30.2	[100]	5.2.1	University-industry R&D collaboration†	26.2	104
1.3.1	Policies for doing business†	30.2	106	5.2.2	State of cluster development†	25.7	104
1.3.2	Entrepreneurship policies and culture†	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	n/a	n/a
Human capital and research		13.0	[123]	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	83
2.1 Education		30.2	120	5.2.5	Patent families/bn PPP\$ GDP	0.0	95 ○◇
2.1.1	Expenditure on education, % GDP	4.0	69	5.3 Knowledge absorption		34.5	[59]
2.1.2	Government funding/pupil, secondary, % GDP/cap ○	9.4	92	5.3.1	Intellectual property payments, % total trade	n/a	n/a
2.1.3	School life expectancy, years	12.9	84	5.3.2	High-tech imports, % total trade	13.6	18 ●
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	0.2	129 ○◇
2.1.5	Pupil-teacher ratio, secondary	30.4	121 ○◇	5.3.4	FDI net inflows, % GDP	0.5	113
2.2 Tertiary education		8.9	[113]	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	17.4	103	Knowledge and technology outputs		11.8	[110]
2.2.2	Graduates in science and engineering, %	n/a	n/a	6.1 Knowledge creation		11.4	[76]
2.2.3	Tertiary inbound mobility, %	n/a	n/a	6.1.1	Patents by origin/bn PPP\$ GDP	0.2	101
2.3 Research and development (R&D)		0.0	[119]	6.1.2	PCT patents by origin/bn PPP\$ GDP	n/a	n/a
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	6.1.4	Scientific and technical articles/bn PPP\$ GDP	11.4	69 ●
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.1.5	Citable documents H-index	8.3	86
2.3.4	QS university ranking, top 3*	0.0	71 ○◇	6.2 Knowledge impact		18.1	113
Infrastructure		23.6	110	6.2.1	Labor productivity growth, %	1.8	38 ●
3.1 Information and communication technologies (ICTs)		35.2	117	6.2.2	Unicorn valuation, % GDP	0.0	48 ○◇
3.1.1	ICT access*	43.8	116	6.2.3	Software spending, % GDP	0.0	121 ○◇
3.1.2	ICT use*	34.7	113 ◇	6.2.4	High-tech manufacturing, %	9.2	94
3.1.3	Government's online service*	40.2	109	6.3 Knowledge diffusion		5.9	[124]
3.1.4	E-participation*	22.1	120	6.3.1	Intellectual property receipts, % total trade	n/a	n/a
3.2 General infrastructure		25.4	72	6.3.2	Production and export complexity	n/a	n/a
3.2.1	Electricity output, GWh/mn pop.	213.5	117	6.3.3	High-tech exports, % total trade	0.1	124 ○
3.2.2	Logistics performance*	n/a	n/a	6.3.4	ICT services exports, % total trade	1.3	75
3.2.3	Gross capital formation, % GDP	42.3	5 ●◆	6.3.5	ISO 9001 quality/bn PPP\$ GDP	2.5	82
3.3 Ecological sustainability		10.3	126 ○◇	Creative outputs		12.4	101
3.3.1	GDP/unit of energy use	6.6	103	7.1 Intangible assets		10.1	107
3.3.2	Environmental performance*	15.9	120	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.3	100	7.1.2	Trademarks by origin/bn PPP\$ GDP	40.7	56 ●
Market sophistication		35.3	63 ●	7.1.3	Global brand value, top 5,000, % GDP	0.0	74 ○◇
4.1 Credit		66.4	7 ●◆	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.2	109
4.1.1	Finance for startups and scaleups†	n/a	n/a	7.2 Creative goods and services		10.0	[66]
4.1.2	Domestic credit to private sector, % GDP	88.4	36 ●◆	7.2.1	Cultural and creative services exports, % total trade	n/a	n/a
4.1.3	Loans from microfinance institutions, % GDP	8.5	1 ●◆	7.2.2	National feature films/mn pop. 15-69	2.6	42 ●◆
4.2 Investment		1.0	[108]	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	n/a	n/a	7.2.4	Creative goods exports, % total trade	0.3	71
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a	7.3 Online creativity		19.1	70
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	91	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.6	109
4.2.4	VC received, value, % GDP	0.0	94	7.3.2	Country-code TLDs/th pop. 15-69	1.4	82
4.3 Trade, diversification and market scale		38.5	107	7.3.3	GitHub commits/mn pop. 15-69	3.7	83
4.3.1	Applied tariff rate, weighted avg., %	11.6	125 ○◇	7.3.4	Mobile app creation/bn PPP\$ GDP	70.8	51 ●
4.3.2	Domestic industry diversification	87.6	58 ●				
4.3.3	Domestic market scale, bn PPP\$	141.2	79				

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

Netherlands (Kingdom of the)

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
5	10	High	EUR	17.6	1,226.7	69,715	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
82.3		6	●	62.3		8	
1.1 Institutional environment	79.2	12		5.1 Knowledge workers	65.8	13	
1.1.1 Operational stability for businesses*	72.9	20		5.1.1 Knowledge-intensive employment, %	53.6	4	●
1.1.2 Government effectiveness*	85.5	6	●	5.1.2 Firms offering formal training, %	54.1	14	
1.2 Regulatory environment	86.8	15		5.1.3 GERD performed by business, % GDP	1.5	16	
1.2.1 Regulatory quality*	87.6	7		5.1.4 GERD financed by business, %	56.9	18	
1.2.2 Rule of law*	90.7	10		5.1.5 Females employed w/advanced degrees, %	23.2	24	
1.2.3 Cost of redundancy dismissal	15.9	65	○	5.2 Innovation linkages	65.5	7	
1.3 Business environment	80.8	5	◆	5.2.1 University–industry R&D collaboration†	87.9	4	●
1.3.1 Policies for doing business†	77.7	13		5.2.2 State of cluster development†	83.9	6	
1.3.2 Entrepreneurship policies and culture†	83.9	4	◆	5.2.3 GERD financed by abroad, % GDP	0.2	14	
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	22	
				5.2.5 Patent families/bn PPP\$ GDP	4.4	9	
Human capital and research		Score/Value	Rank	Knowledge and technology outputs		Score/Value	Rank
55.7		13		58.8		8	
2.1 Education	62.9	19		6.1 Knowledge creation	66.7	4	●
2.1.1 Expenditure on education, % GDP	5.2	34	○	6.1.1 Patents by origin/bn PPP\$ GDP	7.9	10	
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.1	41	○	6.1.2 PCT patents by origin/bn PPP\$ GDP	3.3	9	
2.1.3 School life expectancy, years	18.9	8		6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a	
2.1.4 PISA scales in reading, maths and science	502.5	15		6.1.4 Scientific and technical articles/bn PPP\$ GDP	31.7	17	
2.1.5 Pupil–teacher ratio, secondary	13.9	70	○◇	6.1.5 Citable documents H-index	70.2	6	●
2.2 Tertiary education	41.3	32		6.2 Knowledge impact	50.9	14	
2.2.1 Tertiary enrolment, % gross	92.0	11		6.2.1 Labor productivity growth, %	-0.1	104	○
2.2.2 Graduates in science and engineering, %	18.8	82	○◇	6.2.2 Unicorn valuation, % GDP	2.2	16	
2.2.3 Tertiary inbound mobility, %	13.3	16		6.2.3 Software spending, % GDP	0.7	11	
2.3 Research and development (R&D)	63.0	11		6.2.4 High-tech manufacturing, %	47.4	15	
2.3.1 Researchers, FTE/mn pop.	6,069.3	10		6.3 Knowledge diffusion	58.9	7	
2.3.2 Gross expenditure on R&D, % GDP	2.3	15		6.3.1 Intellectual property receipts, % total trade	6.5	1	◆
2.3.3 Global corporate R&D investors, top 3, mn USD	82.0	8		6.3.2 Production and export complexity	73.2	28	
2.3.4 QS university ranking, top 3*	66.7	13		6.3.3 High-tech exports, % total trade	11.8	14	
				6.3.4 ICT services exports, % total trade	4.2	25	
				6.3.5 ISO 9001 quality/bn PPP\$ GDP	8.4	32	
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank
60.2		14		56.3		9	
3.1 Information and communication technologies (ICTs)	92.1	8		7.1 Intangible assets	50.7	24	
3.1.1 ICT access*	91.3	19		7.1.1 Intangible asset intensity, top 15, %	80.5	6	
3.1.2 ICT use*	91.4	18		7.1.2 Trademarks by origin/bn PPP\$ GDP	49.7	46	○
3.1.3 Government's online service*	89.2	11		7.1.3 Global brand value, top 5,000, % GDP	9.1	21	
3.1.4 E-participation*	96.5	5	◆	7.1.4 Industrial designs by origin/bn PPP\$ GDP	3.6	27	
3.2 General infrastructure	47.3	24		7.2 Creative goods and services	36.6	19	
3.2.1 Electricity output, GWh/mn pop.	6,930.9	28		7.2.1 Cultural and creative services exports, % total trade	1.8	14	
3.2.2 Logistics performance*	90.9	3	◆	7.2.2 National feature films/mn pop. 15–69	3.1	38	○
3.2.3 Gross capital formation, % GDP	21.4	87	○	7.2.3 Entertainment and media market/th pop. 15–69	49.8	18	
3.3 Ecological sustainability	41.3	29		7.2.4 Creative goods exports, % total trade	3.5	16	
3.3.1 GDP/unit of energy use	13.3	35		7.3 Online creativity	87.2	1	◆
3.3.2 Environmental performance*	74.1	11		7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	92.4	5	◆
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.2	41		7.3.2 Country-code TLDs/th pop. 15–69	100.0	1	◆
				7.3.3 GitHub commits/mn pop. 15–69	82.8	4	●
				7.3.4 Mobile app creation/bn PPP\$ GDP	73.7	34	
Market sophistication		Score/Value	Rank				
55.6		15					
4.1 Credit	63.1	13					
4.1.1 Finance for startups and scaleups†	88.4	3	◆				
4.1.2 Domestic credit to private sector, % GDP	101.3	28					
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a					
4.2 Investment	33.5	19					
4.2.1 Market capitalization, % GDP	109.9	12	○				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.4	16					
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	23					
4.2.4 VC received, value, % GDP	0.0	20					
4.3 Trade, diversification and market scale	70.1	20					
4.3.1 Applied tariff rate, weighted avg., %	1.5	20	○				
4.3.2 Domestic industry diversification	93.7	37					
4.3.3 Domestic market scale, bn PPP\$	1,226.7	27					

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

New Zealand

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
31	24	High	SEAO	5.2	261.0	50,851

	Score/Value	Rank		Score/Value	Rank
 Institutions	78.5	12	 Business sophistication	45.7	29
1.1 Institutional environment	83.9	9 ●◆	5.1 Knowledge workers	49.6	[32]
1.1.1 Operational stability for businesses*	93.8	2 ●◆	5.1.1 Knowledge-intensive employment, %	n/a	n/a
1.1.2 Government effectiveness*	74.0	20	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	95.5	3 ●◆	5.1.3 GERD performed by business, % GDP	⊙	0.9 27
1.2.1 Regulatory quality*	89.0	6 ●◆	5.1.4 GERD financed by business, %	⊙	49.9 30
1.2.2 Rule of law*	93.0	5 ●◆	5.1.5 Females employed w/advanced degrees, %	⊙	21.5 27
1.2.3 Cost of redundancy dismissal	8.0	1 ●◆	5.2 Innovation linkages	36.9	31
1.3 Business environment	56.2	[44]	5.2.1 University-industry R&D collaboration†	56.2	42
1.3.1 Policies for doing business†	56.2	47	5.2.2 State of cluster development†	50.1	45
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	⊙	0.1 31
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	21
			5.2.5 Patent families/bn PPP\$ GDP	1.3	25
 Human capital and research	51.1	21	5.3 Knowledge absorption	50.5	18
2.1 Education	61.4	27	5.3.1 Intellectual property payments, % total trade	1.7	19
2.1.1 Expenditure on education, % GDP	⊙	5.2 32	5.3.2 High-tech imports, % total trade	11.0	26
2.1.2 Government funding/pupil, secondary, % GDP/cap	14.8	75 ○◇	5.3.3 ICT services imports, % total trade	3.6	10 ●◆
2.1.3 School life expectancy, years	20.3	2 ●◆	5.3.4 FDI net inflows, % GDP	1.7	81 ○
2.1.4 PISA scales in reading, maths and science	502.9	13	5.3.5 Research talent, % in businesses	⊙	35.7 36
2.1.5 Pupil-teacher ratio, secondary	14.6	74 ○◇	 Knowledge and technology outputs	31.8	39
2.2 Tertiary education	46.8	15	6.1 Knowledge creation	40.1	24
2.2.1 Tertiary enrolment, % gross	79.9	25	6.1.1 Patents by origin/bn PPP\$ GDP	1.4	48
2.2.2 Graduates in science and engineering, %	23.6	52	6.1.2 PCT patents by origin/bn PPP\$ GDP	1.3	21
2.2.3 Tertiary inbound mobility, %	17.5	11	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	45.2	22	6.1.4 Scientific and technical articles/bn PPP\$ GDP	36.6	11 ●
2.3.1 Researchers, FTE/mn pop.	⊙	5,585.9 12	6.1.5 Citable documents H-index	35.8	27
2.3.2 Gross expenditure on R&D, % GDP	⊙	1.4 31	6.2 Knowledge impact	24.1	78 ○◇
2.3.3 Global corporate R&D investors, top 3, mn USD	49.9	33	6.2.1 Labor productivity growth, %	1.1	61
2.3.4 QS university ranking, top 3*	47.8	24	6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
			6.2.3 Software spending, % GDP	0.2	55
			6.2.4 High-tech manufacturing, %	16.1	74 ○◇
 Infrastructure	56.1	29	6.3 Knowledge diffusion	31.1	52
3.1 Information and communication technologies (ICTs)	91.3	10 ●	6.3.1 Intellectual property receipts, % total trade	1.7	15
3.1.1 ICT access*	87.6	37	6.3.2 Production and export complexity	56.0	53
3.1.2 ICT use*	87.0	29	6.3.3 High-tech exports, % total trade	1.8	64 ○
3.1.3 Government's online service*	95.3	6 ●◆	6.3.4 ICT services exports, % total trade	1.9	61
3.1.4 E-participation*	95.3	6 ●◆	6.3.5 ISO 9001 quality/bn PPP\$ GDP	4.4	58
3.2 General infrastructure	44.1	26	 Creative outputs	43.3	28
3.2.1 Electricity output, GWh/mn pop.	8,519.3	17	7.1 Intangible assets	46.7	34
3.2.2 Logistics performance*	68.2	25	7.1.1 Intangible asset intensity, top 15, %	58.4	39
3.2.3 Gross capital formation, % GDP	24.5	61	7.1.2 Trademarks by origin/bn PPP\$ GDP	101.1	12 ◆
3.3 Ecological sustainability	32.9	43	7.1.3 Global brand value, top 5,000, % GDP	3.5	40
3.3.1 GDP/unit of energy use	9.9	69 ○	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.3	59
3.3.2 Environmental performance*	64.1	26	7.2 Creative goods and services	24.9	40
3.3.3 ISO 14001 environment/bn PPP\$ GDP	1.6	54	7.2.1 Cultural and creative services exports, % total trade	0.7	43
			7.2.2 National feature films/mn pop. 15-69	4.2	32
			7.2.3 Entertainment and media market/th pop. 15-69	54.6	13
			7.2.4 Creative goods exports, % total trade	0.4	65 ○
 Market sophistication	46.7	31	7.3 Online creativity	54.8	18
4.1 Credit	61.2	[17]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	34.5	20
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	61.1	15
4.1.2 Domestic credit to private sector, % GDP	160.5	9 ●◆	7.3.3 GitHub commits/mn pop. 15-69	53.1	19
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	70.7	52
4.2 Investment	20.2	35			
4.2.1 Market capitalization, % GDP	51.2	34			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.2	26			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	16			
4.2.4 VC received, value, % GDP	0.0	52 ○			
4.3 Trade, diversification and market scale	58.6	65 ○			
4.3.1 Applied tariff rate, weighted avg., %	0.8	9 ●			
4.3.2 Domestic industry diversification	75.8	85 ○			
4.3.3 Domestic market scale, bn PPP\$	261.0	61			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Nicaragua

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
118	110	Lower middle	LCN	6.9	47.3	7,154	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		23.3	117	5.1 Knowledge workers		37.5	[53]
1.1.1	Operational stability for businesses*	33.3	114	5.1.1	Knowledge-intensive employment, %	13.8	94
1.1.2	Government effectiveness*	13.2	120	5.1.2	Firms offering formal training, %	57.3	11 ●◆
1.2 Regulatory environment		48.2	105	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	20.4	117	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	0.0	132 ○◇	5.1.5	Females employed w/advanced degrees, %	6.1	90
1.2.3	Cost of redundancy dismissal	14.9	60 ●	5.2 Innovation linkages		3.4	129 ◇
1.3 Business environment		4.2	[131]	5.2.1	University–industry R&D collaboration†	2.9	128 ○◇
1.3.1	Policies for doing business†	4.2	128 ○◇	5.2.2	State of cluster development†	4.5	127 ◇
1.3.2	Entrepreneurship policies and culture†	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	n/a	n/a
Human capital and research		14.0	[120]	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	67 ●
2.1 Education		31.3	[117]	5.2.5	Patent families/bn PPP\$ GDP	0.0	95 ○◇
2.1.1	Expenditure on education, % GDP	4.1	67	5.3 Knowledge absorption		24.3	109
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.1	Intellectual property payments, % total trade	0.0	112 ◇
2.1.3	School life expectancy, years	n/a	n/a	5.3.2	High-tech imports, % total trade	8.0	69 ●
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	0.4	122
2.1.5	Pupil–teacher ratio, secondary	n/a	n/a	5.3.4	FDI net inflows, % GDP	6.2	14 ●◆
2.2 Tertiary education		10.0	[112]	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	19.1	102	Knowledge and technology outputs		10.2	122
2.2.2	Graduates in science and engineering, %	n/a	n/a	6.1 Knowledge creation		1.7	126 ◇
2.2.3	Tertiary inbound mobility, %	n/a	n/a	6.1.1	Patents by origin/bn PPP\$ GDP	0.0	124
2.3 Research and development (R&D)		0.6	108	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	101 ○◇
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP	0.1	103	6.1.4	Scientific and technical articles/bn PPP\$ GDP	1.9	125
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.1.5	Citable documents H-index	3.5	119
2.3.4	QS university ranking, top 3*	0.0	71 ○◇	6.2 Knowledge impact		15.0	122
Infrastructure		23.2	113	6.2.1	Labor productivity growth, %	-0.6	110
3.1 Information and communication technologies (ICTs)		38.8	109	6.2.2	Unicorn valuation, % GDP	0.0	48 ○◇
3.1.1	ICT access*	44.2	114	6.2.3	Software spending, % GDP	0.1	103
3.1.2	ICT use*	44.9	108	6.2.4	High-tech manufacturing, %	14.4	79
3.1.3	Government's online service*	42.6	104	6.3 Knowledge diffusion		13.9	93
3.1.4	E-participation*	23.3	115	6.3.1	Intellectual property receipts, % total trade	0.0	114 ○◇
3.2 General infrastructure		13.6	110	6.3.2	Production and export complexity	35.7	100
3.2.1	Electricity output, GWh/mn pop.	572.1	108	6.3.3	High-tech exports, % total trade	0.4	93
3.2.2	Logistics performance*	18.2	89	6.3.4	ICT services exports, % total trade	3.1	41 ●
3.2.3	Gross capital formation, % GDP	24.1	67 ●	6.3.5	ISO 9001 quality/bn PPP\$ GDP	0.7	114
3.3 Ecological sustainability		17.1	97	Creative outputs		8.7	111
3.3.1	GDP/unit of energy use	8.5	85	7.1 Intangible assets		8.9	109
3.3.2	Environmental performance*	31.9	82	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.2	117	7.1.2	Trademarks by origin/bn PPP\$ GDP	41.0	55
Market sophistication		37.0	58 ●	7.1.3	Global brand value, top 5,000, % GDP	0.0	74 ○◇
4.1 Credit		21.3	89	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.0	120
4.1.1	Finance for startups and scaleups†	n/a	n/a	7.2 Creative goods and services		9.4	[69]
4.1.2	Domestic credit to private sector, % GDP	30.1	96	7.2.1	Cultural and creative services exports, % total trade	n/a	n/a
4.1.3	Loans from microfinance institutions, % GDP	2.8	13 ●	7.2.2	National feature films/mn pop. 15–69	n/a	n/a
4.2 Investment		n/a	[n/a]	7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a
4.2.1	Market capitalization, % GDP	n/a	n/a	7.2.4	Creative goods exports, % total trade	0.8	52 ●
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a	7.3 Online creativity		7.7	119 ◇
4.2.3	VC recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.0	72
4.2.4	VC received, value, % GDP	n/a	n/a	7.3.2	Country-code TLDs/th pop. 15–69	0.3	109
4.3 Trade, diversification and market scale		52.8	82	7.3.3	GitHub commits/mn pop. 15–69	1.6	106
4.3.1	Applied tariff rate, weighted avg., %	1.8	57 ●◆	7.3.4	Mobile app creation/bn PPP\$ GDP	26.1	120 ◇
4.3.2	Domestic industry diversification	69.3	96				
4.3.3	Domestic market scale, bn PPP\$	47.3	109				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Niger

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
131	124	Low	SSA	26.2	37.6	1,443

	Score/Value	Rank		Score/Value	Rank
 Institutions	40.9	94	 Business sophistication	17.8	[116]
1.1 Institutional environment	25.2	112	5.1 Knowledge workers	17.4	[108]
1.1.1 Operational stability for businesses*	30.6	117	5.1.1 Knowledge-intensive employment, %	15.3	87 ◆
1.1.2 Government effectiveness*	19.8	104	5.1.2 Firms offering formal training, %	27.5	60 ●
1.2 Regulatory environment	56.7	82 ●	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	22.8	114	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	27.9	87	5.1.5 Females employed w/advanced degrees, %	0.7	123
1.2.3 Cost of redundancy dismissal	14.0	54 ●	5.2 Innovation linkages	1.8	[130]
1.3 Business environment	n/a	[n/a]	5.2.1 University-industry R&D collaboration†	n/a	n/a
1.3.1 Policies for doing business†	n/a	n/a	5.2.2 State of cluster development†	n/a	n/a
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	n/a	n/a
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	90
			5.2.5 Patent families/bn PPP\$ GDP	0.0	95 ○◇
 Human capital and research	9.0	130 ◇	5.3 Knowledge absorption	34.4	60 ◆◆
2.1 Education	19.1	129 ◇	5.3.1 Intellectual property payments, % total trade	0.0	118 ○◇
2.1.1 Expenditure on education, % GDP	3.5	93	5.3.2 High-tech imports, % total trade	7.2	84 ●
2.1.2 Government funding/pupil, secondary, % GDP/cap	11.8	87 ◇	5.3.3 ICT services imports, % total trade	2.6	26 ◆◆
2.1.3 School life expectancy, years	6.4	113 ○◇	5.3.4 FDI net inflows, % GDP	4.1	30 ●
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	29.7	120	 Knowledge and technology outputs	9.0	129
2.2 Tertiary education	8.0	114	6.1 Knowledge creation	2.6	123
2.2.1 Tertiary enrolment, % gross	4.4	127 ○◇	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	109
2.2.2 Graduates in science and engineering, %	12.3	104 ◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	101 ○◇
2.2.3 Tertiary inbound mobility, %	5.4	46 ◆◆	6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	75 ○◇
2.3 Research and development (R&D)	0.0	118	6.1.4 Scientific and technical articles/bn PPP\$ GDP	4.0	113 ◇
2.3.1 Researchers, FTE/mn pop.	26.5	102	6.1.5 Citable documents H-index	3.4	120
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	6.2 Knowledge impact	20.5	101
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.2.1 Labor productivity growth, %	1.9	36 ●
2.3.4 QS university ranking, top 3*	0.0	71 ○◇	6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
			6.2.3 Software spending, % GDP	0.0	119
			6.2.4 High-tech manufacturing, %	15.8	75
 Infrastructure	17.7	125	6.3 Knowledge diffusion	3.9	127 ◇
3.1 Information and communication technologies (ICTs)	17.1	131 ◇	6.3.1 Intellectual property receipts, % total trade	0.0	109
3.1.1 ICT access*	0.0	132 ○◇	6.3.2 Production and export complexity	n/a	n/a
3.1.2 ICT use*	12.7	130	6.3.3 High-tech exports, % total trade	0.5	89 ◆
3.1.3 Government's online service*	32.6	119	6.3.4 ICT services exports, % total trade	0.7	94
3.1.4 E-participation*	23.3	115	6.3.5 ISO 9001 quality/bn PPP\$ GDP	0.2	130 ◇
3.2 General infrastructure	19.1	95	 Creative outputs	0.2	[132]
3.2.1 Electricity output, GWh/mn pop.	26.4	126 ○◇	7.1 Intangible assets	0.0	[132]
3.2.2 Logistics performance*	n/a	n/a	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.2.3 Gross capital formation, % GDP	35.3	12 ●	7.1.2 Trademarks by origin/bn PPP\$ GDP	1.4	128 ○◇
3.3 Ecological sustainability	17.0	99 ◆	7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a
3.3.1 GDP/unit of energy use	8.5	84 ◆	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.0	120 ○◇
3.3.2 Environmental performance*	31.9	82 ◆◆	7.2 Creative goods and services	0.5	[123]
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.1	124	7.2.1 Cultural and creative services exports, % total trade	0.0	92
			7.2.2 National feature films/mn pop. 15-69	n/a	n/a
			7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
			7.2.4 Creative goods exports, % total trade	0.0	125
 Market sophistication	15.8	120	7.3 Online creativity	0.3	128 ◇
4.1 Credit	3.2	127	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.9	100 ◆
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	0.0	130
4.1.2 Domestic credit to private sector, % GDP	11.7	127 ◇	7.3.3 GitHub commits/mn pop. 15-69	0.0	132 ○◇
4.1.3 Loans from microfinance institutions, % GDP	0.3	43	7.3.4 Mobile app creation/bn PPP\$ GDP	n/a	n/a
4.2 Investment	6.3	[69]			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	44 ●			
4.2.4 VC received, value, % GDP	0.0	95			
4.3 Trade, diversification and market scale	38.1	108			
4.3.1 Applied tariff rate, weighted avg., %	8.1	105			
4.3.2 Domestic industry diversification	65.6	99			
4.3.3 Domestic market scale, bn PPP\$	37.6	120			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Nigeria

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
98	116	Lower middle	SSA	218.5	1,275.3	5,884	
		Score/Value	Rank			Score/Value	Rank
 Institutions		32.9	115	 Business sophistication		24.5	82
1.1 Institutional environment		13.0	129 ○◇	5.1 Knowledge workers		37.0	[55]
1.1.1 Operational stability for businesses*		16.7	128 ○◇	5.1.1 Knowledge-intensive employment, %		⊙ 38.1	35 ●◆
1.1.2 Government effectiveness*		9.3	125 ○◇	5.1.2 Firms offering formal training, %		⊙ 30.7	55 ●
1.2 Regulatory environment		58.1	79	5.1.3 GERD performed by business, % GDP		n/a	n/a
1.2.1 Regulatory quality*		17.9	124	5.1.4 GERD financed by business, %		n/a	n/a
1.2.2 Rule of law*		14.7	112	5.1.5 Females employed w/advanced degrees, %		⊙ 5.8	91
1.2.3 Cost of redundancy dismissal		8.0	1 ●◆	5.2 Innovation linkages		11.5	111
1.3 Business environment		27.6	[106]	5.2.1 University–industry R&D collaboration†		12.9	122 ◇
1.3.1 Policies for doing business†		27.6	110	5.2.2 State of cluster development†		29.2	96
1.3.2 Entrepreneurship policies and culture†		n/a	n/a	5.2.3 GERD financed by abroad, % GDP		n/a	n/a
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	86
				5.2.5 Patent families/bn PPP\$ GDP		0.0	94
 Human capital and research		27.8	[80]	5.3 Knowledge absorption		24.9	104
2.1 Education		78.1	[1]	5.3.1 Intellectual property payments, % total trade		0.4	77
2.1.1 Expenditure on education, % GDP		n/a	n/a	5.3.2 High-tech imports, % total trade		6.5	97
2.1.2 Government funding/pupil, secondary, % GDP/cap		n/a	n/a	5.3.3 ICT services imports, % total trade		0.6	100
2.1.3 School life expectancy, years		n/a	n/a	5.3.4 FDI net inflows, % GDP		0.6	111
2.1.4 PISA scales in reading, maths and science		n/a	n/a	5.3.5 Research talent, % in businesses		n/a	n/a
2.1.5 Pupil–teacher ratio, secondary		⊙ 14.7	75	 Knowledge and technology outputs		9.9	124
2.2 Tertiary education		5.3	[120]	6.1 Knowledge creation		7.4	97
2.2.1 Tertiary enrolment, % gross		⊙ 12.1	110	6.1.1 Patents by origin/bn PPP\$ GDP		⊙ 0.4	86
2.2.2 Graduates in science and engineering, %		n/a	n/a	6.1.2 PCT patents by origin/bn PPP\$ GDP		0.0	98
2.2.3 Tertiary inbound mobility, %		n/a	n/a	6.1.3 Utility models by origin/bn PPP\$ GDP		n/a	n/a
2.3 Research and development (R&D)		0.0	[119]	6.1.4 Scientific and technical articles/bn PPP\$ GDP		4.8	107
2.3.1 Researchers, FTE/mn pop.		n/a	n/a	6.1.5 Citable documents H-index		13.8	60 ●
2.3.2 Gross expenditure on R&D, % GDP		n/a	n/a	6.2 Knowledge impact		17.1	115
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	40 ○◇	6.2.1 Labor productivity growth, %		-1.1	118
2.3.4 QS university ranking, top 3*		0.0	71 ○◇	6.2.2 Unicorn valuation, % GDP		0.3	43 ●
				6.2.3 Software spending, % GDP		0.1	88
				6.2.4 High-tech manufacturing, %		n/a	n/a
 Infrastructure		18.7	123 ◇	6.3 Knowledge diffusion		5.3	125 ○◇
3.1 Information and communication technologies (ICTs)		35.7	115	6.3.1 Intellectual property receipts, % total trade		0.0	114 ○◇
3.1.1 ICT access*		37.0	119 ◇	6.3.2 Production and export complexity		16.2	118 ○◇
3.1.2 ICT use*		29.4	117 ◇	6.3.3 High-tech exports, % total trade		0.4	96
3.1.3 Government's online service*		47.5	95	6.3.4 ICT services exports, % total trade		0.2	116
3.1.4 E-participation*		29.1	105	6.3.5 ISO 9001 quality/bn PPP\$ GDP		0.4	124 ○
3.2 General infrastructure		11.1	120	 Creative outputs		17.3	84
3.2.1 Electricity output, GWh/mn pop.		⊙ 157.3	118	7.1 Intangible assets		26.0	78
3.2.2 Logistics performance*		22.7	82	7.1.1 Intangible asset intensity, top 15, %		47.5	52
3.2.3 Gross capital formation, % GDP		17.9	113 ◇	7.1.2 Trademarks by origin/bn PPP\$ GDP		⊙ 10.5	111
3.3 Ecological sustainability		9.4	129 ○◇	7.1.3 Global brand value, top 5,000, % GDP		0.4	65 ●
3.3.1 GDP/unit of energy use		6.3	105	7.1.4 Industrial designs by origin/bn PPP\$ GDP		⊙ 1.0	70 ●
3.3.2 Environmental performance*		15.9	120	7.2 Creative goods and services		1.2	[115]
3.3.3 ISO 14001 environment/bn PPP\$ GDP		0.1	127 ○	7.2.1 Cultural and 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 and media market/th pop. 15–69		1.6	53
				7.2.4 Creative goods exports, % total trade		0.1	103
 Market sophistication		12.4	127 ○◇	7.3 Online creativity		15.9	91
4.1 Credit		4.5	125 ○◇	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69		0.5	111
4.1.1 Finance for startups and scaleups†		n/a	n/a	7.3.2 Country-code TLDs/th pop. 15–69		0.4	100
4.1.2 Domestic credit to private sector, % GDP		12.1	126 ○◇	7.3.3 GitHub commits/mn pop. 15–69		3.9	79
4.1.3 Loans from microfinance institutions, % GDP		0.5	36	7.3.4 Mobile app creation/bn PPP\$ GDP		58.9	86
4.2 Investment		9.0	57 ●				
4.2.1 Market capitalization, % GDP		10.1	72				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		0.0	56				
4.2.3 VC recipients, deals/bn PPP\$ GDP		0.1	38 ●				
4.2.4 VC received, value, % GDP		0.0	46 ●				
4.3 Trade, diversification and market scale		23.7	122 ◇				
4.3.1 Applied tariff rate, weighted avg., %		12.4	131 ○◇				
4.3.2 Domestic industry diversification		n/a	n/a				
4.3.3 Domestic market scale, bn PPP\$		1,275.3	26 ●				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

North Macedonia

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
58	49	Upper middle	EUR	2.1	40.9	19,783

	Score/Value	Rank		Score/Value	Rank
 Institutions	47.2	75	 Business sophistication	29.2	60
1.1 Institutional environment	46.4	64	5.1 Knowledge workers	36.3	57
1.1.1 Operational stability for businesses*	58.3	49	5.1.1 Knowledge-intensive employment, %	33.2	44
1.1.2 Government effectiveness*	34.4	76	5.1.2 Firms offering formal training, %	39.0	36
1.2 Regulatory environment	66.2	54	5.1.3 GERD performed by business, % GDP	0.1	62
1.2.1 Regulatory quality*	52.9	52	5.1.4 GERD financed by business, %	22.3	64
1.2.2 Rule of law*	37.5	65	5.1.5 Females employed w/advanced degrees, %	17.0	43
1.2.3 Cost of redundancy dismissal	14.4	57	5.2 Innovation linkages	13.4	106
1.3 Business environment	29.0	103	5.2.1 University-industry R&D collaboration†	23.2	110
1.3.1 Policies for doing business†	24.7	116	5.2.2 State of cluster development†	27.1	100
1.3.2 Entrepreneurship policies and culture†	33.3	55	5.2.3 GERD financed by abroad, % GDP	0.0	61
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	n/a	n/a
			5.2.5 Patent families/bn PPP\$ GDP	0.0	95
 Human capital and research	28.1	78	5.3 Knowledge absorption	37.9	51
2.1 Education	56.2	[53]	5.3.1 Intellectual property payments, % total trade	1.9	15
2.1.1 Expenditure on education, % GDP	n/a	n/a	5.3.2 High-tech imports, % total trade	6.6	93
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	1.3	66
2.1.3 School life expectancy, years	13.2	81	5.3.4 FDI net inflows, % GDP	3.2	44
2.1.4 PISA scales in reading, maths and science	400.1	67	5.3.5 Research talent, % in businesses	27.9	45
2.1.5 Pupil-teacher ratio, secondary	8.1	11	 Knowledge and technology outputs	26.6	53
2.2 Tertiary education	24.4	81	6.1 Knowledge creation	12.6	71
2.2.1 Tertiary enrolment, % gross	43.0	75	6.1.1 Patents by origin/bn PPP\$ GDP	1.3	52
2.2.2 Graduates in science and engineering, %	20.6	67	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	60
2.2.3 Tertiary inbound mobility, %	5.0	48	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	3.6	83	6.1.4 Scientific and technical articles/bn PPP\$ GDP	11.8	67
2.3.1 Researchers, FTE/mn pop.	752.8	61	6.1.5 Citable documents H-index	6.7	91
2.3.2 Gross expenditure on R&D, % GDP	0.4	67	6.2 Knowledge impact	32.4	47
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2.1 Labor productivity growth, %	1.3	57
2.3.4 QS university ranking, top 3*	0.0	71	6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.1	87
			6.2.4 High-tech manufacturing, %	49.8	11
 Infrastructure	53.3	40	6.3 Knowledge diffusion	34.9	42
3.1 Information and communication technologies (ICTs)	69.6	69	6.3.1 Intellectual property receipts, % total trade	0.1	48
3.1.1 ICT access*	72.7	85	6.3.2 Production and export complexity	54.1	57
3.1.2 ICT use*	70.1	71	6.3.3 High-tech exports, % total trade	2.7	50
3.1.3 Government's online service*	67.1	65	6.3.4 ICT services exports, % total trade	3.8	29
3.1.4 E-participation*	68.6	43	6.3.5 ISO 9001 quality/bn PPP\$ GDP	19.9	13
3.2 General infrastructure	29.5	57	 Creative outputs	23.5	69
3.2.1 Electricity output, GWh/mn pop.	2,663.4	70	7.1 Intangible assets	27.0	76
3.2.2 Logistics performance*	45.5	56	7.1.1 Intangible asset intensity, top 15, %	-26.7	75
3.2.3 Gross capital formation, % GDP	n/a	n/a	7.1.2 Trademarks by origin/bn PPP\$ GDP	57.4	40
3.3 Ecological sustainability	60.7	3	7.1.3 Global brand value, top 5,000, % GDP	0.0	74
3.3.1 GDP/unit of energy use	11.6	52	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.8	44
3.3.2 Environmental performance*	60.0	32	7.2 Creative goods and services	17.1	55
3.3.3 ISO 14001 environment/bn PPP\$ GDP	12.0	3	7.2.1 Cultural and creative services exports, % total trade	1.1	26
			7.2.2 National feature films/mn pop. 15-69	4.5	25
			7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
			7.2.4 Creative goods exports, % total trade	0.1	98
 Market sophistication	47.1	30	7.3 Online creativity	23.0	58
4.1 Credit	34.1	54	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	7.7	49
4.1.1 Finance for startups and scaleups†	48.4	49	7.3.2 Country-code TLDs/th pop. 15-69	5.7	55
4.1.2 Domestic credit to private sector, % GDP	55.7	65	7.3.3 GitHub commits/mn pop. 15-69	9.1	55
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	69.5	56
4.2 Investment	n/a	[n/a]			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a			
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a			
4.2.4 VC received, value, % GDP	n/a	n/a			
4.3 Trade, diversification and market scale	60.1	54			
4.3.1 Applied tariff rate, weighted avg., %	1.7	55			
4.3.2 Domestic industry diversification	90.8	44			
4.3.3 Domestic market scale, bn PPP\$	40.9	117			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
28	15	High	EUR	5.4	425.6	78,128






	Score/Value	Rank		Score/Value	Rank
 Institutions	85.1	4	 Business sophistication	52.5	22
1.1 Institutional environment	86.8	3	5.1 Knowledge workers	61.5	19
1.1.1 Operational stability for businesses*	86.1	5	5.1.1 Knowledge-intensive employment, %	52.3	5
1.1.2 Government effectiveness*	87.5	5	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	94.7	4	5.1.3 GERD performed by business, % GDP	1.0	21
1.2.1 Regulatory quality*	84.5	10	5.1.4 GERD financed by business, %	44.5	36
1.2.2 Rule of law*	96.8	2	5.1.5 Females employed w/advanced degrees, %	27.6	10
1.2.3 Cost of redundancy dismissal	8.7	20	5.2 Innovation linkages	52.9	17
1.3 Business environment	73.7	18	5.2.1 University-industry R&D collaboration [†]	72.6	22
1.3.1 Policies for doing business [†]	75.3	18	5.2.2 State of cluster development [†]	75.9	17
1.3.2 Entrepreneurship policies and culture [†]	72.2	14	5.2.3 GERD financed by abroad, % GDP	0.2	24
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	14
			5.2.5 Patent families/bn PPP\$ GDP	1.8	21
 Human capital and research	53.2	19	5.3 Knowledge absorption	43.2	35
2.1 Education	73.4	3	5.3.1 Intellectual property payments, % total trade	0.5	72
2.1.1 Expenditure on education, % GDP	7.9	4	5.3.2 High-tech imports, % total trade	6.8	89
2.1.2 Government funding/pupil, secondary, % GDP/cap	26.6	14	5.3.3 ICT services imports, % total trade	3.1	15
2.1.3 School life expectancy, years	18.2	12	5.3.4 FDI net inflows, % GDP	1.9	74
2.1.4 PISA scales in reading, maths and science	496.9	22	5.3.5 Research talent, % in businesses	51.0	24
2.1.5 Pupil-teacher ratio, secondary	8.7	20	 Knowledge and technology outputs	37.5	28
2.2 Tertiary education	33.9	54	6.1 Knowledge creation	49.7	15
2.2.1 Tertiary enrolment, % gross	84.4	18	6.1.1 Patents by origin/bn PPP\$ GDP	4.1	21
2.2.2 Graduates in science and engineering, %	21.2	64	6.1.2 PCT patents by origin/bn PPP\$ GDP	1.9	16
2.2.3 Tertiary inbound mobility, %	4.4	54	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	52.4	19	6.1.4 Scientific and technical articles/bn PPP\$ GDP	36.3	12
2.3.1 Researchers, FTE/mn pop.	7,140.3	6	6.1.5 Citable documents H-index	42.6	21
2.3.2 Gross expenditure on R&D, % GDP	1.9	20	6.2 Knowledge impact	34.6	42
2.3.3 Global corporate R&D investors, top 3, mn USD	56.2	27	6.2.1 Labor productivity growth, %	0.2	92
2.3.4 QS university ranking, top 3*	44.7	28	6.2.2 Unicorn valuation, % GDP	0.9	35
			6.2.3 Software spending, % GDP	0.6	18
 Infrastructure	63.2	7	6.2.4 High-tech manufacturing, %	17.7	69
3.1 Information and communication technologies (ICTs)	82.7	29	6.3 Knowledge diffusion	28.0	56
3.1.1 ICT access*	88.4	32	6.3.1 Intellectual property receipts, % total trade	0.3	39
3.1.2 ICT use*	95.9	8	6.3.2 Production and export complexity	67.1	37
3.1.3 Government's online service*	78.0	39	6.3.3 High-tech exports, % total trade	2.8	49
3.1.4 E-participation*	68.6	43	6.3.4 ICT services exports, % total trade	1.6	67
3.2 General infrastructure	64.3	4	6.3.5 ISO 9001 quality/bn PPP\$ GDP	7.1	39
3.2.1 Electricity output, GWh/mn pop.	29,134.6	1	 Creative outputs	44.7	23
3.2.2 Logistics performance*	72.7	18	7.1 Intangible assets	38.7	47
3.2.3 Gross capital formation, % GDP	24.2	64	7.1.1 Intangible asset intensity, top 15, %	64.1	31
3.3 Ecological sustainability	42.7	27	7.1.2 Trademarks by origin/bn PPP\$ GDP	30.8	76
3.3.1 GDP/unit of energy use	11.4	55	7.1.3 Global brand value, top 5,000, % GDP	7.5	28
3.3.2 Environmental performance*	68.5	20	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.2	62
3.3.3 ISO 14001 environment/bn PPP\$ GDP	4.2	23	7.2 Creative goods and services	31.5	26
			7.2.1 Cultural and creative services exports, % total trade	0.6	48
 Market sophistication	47.5	29	7.2.2 National feature films/mn pop. 15-69	5.0	22
4.1 Credit	64.6	12	7.2.3 Entertainment and media market/th pop. 15-69	75.7	4
4.1.1 Finance for startups and scaleups [†]	65.8	25	7.2.4 Creative goods exports, % total trade	0.5	63
4.1.2 Domestic credit to private sector, % GDP	166.0	6	7.3 Online creativity	69.9	7
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	57.9	13
4.2 Investment	19.1	37	7.3.2 Country-code TLDs/th pop. 15-69	65.5	12
4.2.1 Market capitalization, % GDP	68.8	24	7.3.3 GitHub commits/mn pop. 15-69	82.0	5
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.2	28	7.3.4 Mobile app creation/bn PPP\$ GDP	74.1	32
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	34			
4.2.4 VC received, value, % GDP	0.0	39			
4.3 Trade, diversification and market scale	58.9	62			
4.3.1 Applied tariff rate, weighted avg., %	2.8	69			
4.3.2 Domestic industry diversification	85.8	62			
4.3.3 Domestic market scale, bn PPP\$	425.6	50			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Oman

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
78	65	High	NAWA	4.6	190.5	41,150

	Score/Value	Rank		Score/Value	Rank
 Institutions	51.9	62	 Business sophistication	22.3	95
1.1 Institutional environment	47.0	61	5.1 Knowledge workers	16.1	111
1.1.1 Operational stability for businesses*	60.4	46	5.1.1 Knowledge-intensive employment, %	15.9	85
1.1.2 Government effectiveness*	33.5	78	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	51.1	96	5.1.3 GERD performed by business, % GDP	0.1	65
1.2.1 Regulatory quality*	50.7	54	5.1.4 GERD financed by business, %	31.8	56
1.2.2 Rule of law*	51.6	47	5.1.5 Females employed w/advanced degrees, %	0.9	119
1.2.3 Cost of redundancy dismissal	n/a	n/a	5.2 Innovation linkages	27.9	46
1.3 Business environment	57.6	39	5.2.1 University-industry R&D collaboration†	54.4	43
1.3.1 Policies for doing business†	74.8	19	5.2.2 State of cluster development†	71.4	21
1.3.2 Entrepreneurship policies and culture†	40.5	48	5.2.3 GERD financed by abroad, % GDP	0.0	86
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	37
			5.2.5 Patent families/bn PPP\$ GDP	0.0	87
 Human capital and research	34.2	52	5.3 Knowledge absorption	23.0	115
2.1 Education	56.3	52	5.3.1 Intellectual property payments, % total trade	n/a	n/a
2.1.1 Expenditure on education, % GDP	4.4	59	5.3.2 High-tech imports, % total trade	5.0	116
2.1.2 Government funding/pupil, secondary, % GDP/cap	28.5	9	5.3.3 ICT services imports, % total trade	0.7	97
2.1.3 School life expectancy, years	14.6	63	5.3.4 FDI net inflows, % GDP	4.4	27
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	0.3	83
2.1.5 Pupil-teacher ratio, secondary	12.2	54	 Knowledge and technology outputs	20.9	75
2.2 Tertiary education	41.9	27	6.1 Knowledge creation	14.7	65
2.2.1 Tertiary enrolment, % gross	47.4	69	6.1.1 Patents by origin/bn PPP\$ GDP	3.2	23
2.2.2 Graduates in science and engineering, %	39.5	2	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	77
2.2.3 Tertiary inbound mobility, %	3.1	63	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	4.4	79	6.1.4 Scientific and technical articles/bn PPP\$ GDP	8.6	82
2.3.1 Researchers, FTE/mn pop.	284.4	80	6.1.5 Citable documents H-index	8.7	85
2.3.2 Gross expenditure on R&D, % GDP	0.3	77	6.2 Knowledge impact	23.8	83
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2.1 Labor productivity growth, %	2.9	19
2.3.4 QS university ranking, top 3*	9.9	65	6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.0	105
 Infrastructure	42.5	61	6.2.4 High-tech manufacturing, %	17.0	72
3.1 Information and communication technologies (ICTs)	76.3	46	6.3 Knowledge diffusion	24.1	59
3.1.1 ICT access*	91.7	16	6.3.1 Intellectual property receipts, % total trade	n/a	n/a
3.1.2 ICT use*	76.6	58	6.3.2 Production and export complexity	46.9	78
3.1.3 Government's online service*	71.5	58	6.3.3 High-tech exports, % total trade	2.2	56
3.1.4 E-participation*	65.1	50	6.3.4 ICT services exports, % total trade	1.2	80
3.2 General infrastructure	37.0	38	6.3.5 ISO 9001 quality/bn PPP\$ GDP	3.8	64
3.2.1 Electricity output, GWh/mn pop.	7,474.1	24	 Creative outputs	19.2	79
3.2.2 Logistics performance*	54.5	42	7.1 Intangible assets	27.2	75
3.2.3 Gross capital formation, % GDP	23.2	71	7.1.1 Intangible asset intensity, top 15, %	34.0	66
3.3 Ecological sustainability	14.2	107	7.1.2 Trademarks by origin/bn PPP\$ GDP	49.8	45
3.3.1 GDP/unit of energy use	5.3	116	7.1.3 Global brand value, top 5,000, % GDP	0.7	60
3.3.2 Environmental performance*	20.0	107	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.1	113
3.3.3 ISO 14001 environment/bn PPP\$ GDP	1.7	53	7.2 Creative goods and services	2.9	[99]
			7.2.1 Cultural and creative services exports, % total trade	n/a	n/a
 Market sophistication	33.3	74	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	36.0	49	7.2.3 Entertainment and media market/th pop. 15-69	3.0	50
4.1.1 Finance for startups and scaleups†	43.9	55	7.2.4 Creative goods exports, % total trade	0.2	74
4.1.2 Domestic credit to private sector, % GDP	76.6	44	7.3 Online creativity	19.5	68
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	2.3	78
4.2 Investment	3.6	89	7.3.2 Country-code TLDs/th pop. 15-69	0.4	103
4.2.1 Market capitalization, % GDP	20.6	58	7.3.3 GitHub commits/mn pop. 15-69	1.3	112
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	46	7.3.4 Mobile app creation/bn PPP\$ GDP	74.2	31
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	92			
4.2.4 VC received, value, % GDP	0.0	91			
4.3 Trade, diversification and market scale	60.3	53			
4.3.1 Applied tariff rate, weighted avg., %	1.7	54			
4.3.2 Domestic industry diversification	87.8	57			
4.3.3 Domestic market scale, bn PPP\$	190.5	71			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.






Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$		
68	113	Lower middle	CSA	235.8	1,512.5	6,662		
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank	
33.7		113	26.6		72			
1.1 Institutional environment	28.1	105	5.1 Knowledge workers	19.0	[101]			
1.1.1 Operational stability for businesses*	30.6	117	5.1.1 Knowledge-intensive employment, %	⊙	11.4	102		
1.1.2 Government effectiveness*	25.6	93	5.1.2 Firms offering formal training, %	⊙	32.0	50		
1.2 Regulatory environment	42.0	116	5.1.3 GERD performed by business, % GDP	n/a	n/a			
1.2.1 Regulatory quality*	23.1	113	5.1.4 GERD financed by business, %	n/a	n/a			
1.2.2 Rule of law*	21.1	104	5.1.5 Females employed w/advanced degrees, %	⊙	2.0	109		
1.2.3 Cost of redundancy dismissal	27.2	109	5.2 Innovation linkages	25.0	54	◆		
1.3 Business environment	31.1	98	5.2.1 University–industry R&D collaboration†	59.2	35	◆◆		
1.3.1 Policies for doing business†	53.5	55	5.2.2 State of cluster development†	55.2	39	◆◆		
1.3.2 Entrepreneurship policies and culture†	⊙	8.6	5.2.3 GERD financed by abroad, % GDP	⊙	0.0	87		
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	⊙	0.0	50	◆	
			5.2.5 Patent families/bn PPP\$ GDP	⊙	0.0	89		
Human capital and research		Score/Value	Rank	Knowledge absorption		Score/Value	Rank	
14.8		117	35.8		57	◆		
2.1 Education	29.6	121	5.3.1 Intellectual property payments, % total trade	0.5	74			
2.1.1 Expenditure on education, % GDP	2.1	117	⊙	16.2	14	◆◆		
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊙	17.1	65	5.3.2 High-tech imports, % total trade	1.1	81		
2.1.3 School life expectancy, years	⊙	8.7	110	⊙	0.7	108		
2.1.4 PISA scales in reading, maths and science	n/a	n/a		5.3.3 ICT services imports, % total trade	0.7	108		
2.1.5 Pupil–teacher ratio, secondary	⊙	17.0	86	5.3.4 FDI net inflows, % GDP	n/a	n/a		
2.2 Tertiary education	5.4	[119]	5.3.5 Research talent, % in businesses	n/a	n/a			
2.2.1 Tertiary enrolment, % gross	⊙	12.2	109	Knowledge and technology outputs		21.9	69	
2.2.2 Graduates in science and engineering, %	n/a	n/a		6.1 Knowledge creation	19.2	[57]		
2.2.3 Tertiary inbound mobility, %	n/a	n/a		6.1.1 Patents by origin/bn PPP\$ GDP	0.3	89		
2.3 Research and development (R&D)	9.5	62		6.1.2 PCT patents by origin/bn PPP\$ GDP	n/a	n/a		
2.3.1 Researchers, FTE/mn pop.	422.8	73		6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a		
2.3.2 Gross expenditure on R&D, % GDP	0.2	95		6.1.4 Scientific and technical articles/bn PPP\$ GDP	16.5	45	●	
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	⊙	6.1.5 Citable documents H-index	19.5	43	●◆	
2.3.4 QS university ranking, top 3*	30.8	42	◆◆	6.2 Knowledge impact	27.3	63		
				6.2.1 Labor productivity growth, %	⊙	0.9	70	
				6.2.2 Unicorn valuation, % GDP	⊙	0.0	48	⊙
				6.2.3 Software spending, % GDP	⊙	0.3	31	●
				6.2.4 High-tech manufacturing, %	⊙	21.1	60	
				6.3 Knowledge diffusion	19.3	79		
				6.3.1 Intellectual property receipts, % total trade	⊙	0.0	87	
				6.3.2 Production and export complexity	⊙	42.4	87	
				6.3.3 High-tech exports, % total trade	⊙	0.7	82	
				6.3.4 ICT services exports, % total trade	⊙	4.4	23	●
				6.3.5 ISO 9001 quality/bn PPP\$ GDP	⊙	2.4	83	
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank	
19.7		120	◆	23.5		70		
3.1 Information and communication technologies (ICTs)	41.8	107	7.1 Intangible assets	36.6	52			
3.1.1 ICT access*	45.4	113	7.1.1 Intangible asset intensity, top 15, %	53.8	44			
3.1.2 ICT use*	35.1	112	⊙	7.1.2 Trademarks by origin/bn PPP\$ GDP	32.4	72		
3.1.3 Government's online service*	52.0	88		7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a		
3.1.4 E-participation*	34.9	96		7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.3	92		
3.2 General infrastructure	4.2	132	⊙	7.2 Creative goods and services	0.8	117		
3.2.1 Electricity output, GWh/mn pop.	⊙	601.3	107	7.2.1 Cultural and creative services exports, % total trade	⊙	0.1	81	
3.2.2 Logistics performance*	n/a	n/a		7.2.2 National feature films/mn pop. 15–69	⊙	0.0	81	⊙
3.2.3 Gross capital formation, % GDP	15.1	119	⊙	7.2.3 Entertainment and media market/th pop. 15–69	⊙	0.0	61	⊙
3.3 Ecological sustainability	13.2	113		7.2.4 Creative goods exports, % total trade	⊙	0.1	110	
3.3.1 GDP/unit of energy use	10.8	58		7.3 Online creativity	20.0	65		
3.3.2 Environmental performance*	9.7	128	⊙	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	⊙	0.6	107	
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.7	77		7.3.2 Country-code TLDs/th pop. 15–69	⊙	0.2	111	
				7.3.3 GitHub commits/mn pop. 15–69	⊙	1.4	108	
				7.3.4 Mobile app creation/bn PPP\$ GDP	⊙	77.6	13	◆◆
Market sophistication		Score/Value	Rank					
24.7		97						
4.1 Credit	13.7	103						
4.1.1 Finance for startups and scaleups†	⊙	28.9	72					
4.1.2 Domestic credit to private sector, % GDP	15.0	119	⊙					
4.1.3 Loans from microfinance institutions, % GDP	0.7	34						
4.2 Investment	4.6	81						
4.2.1 Market capitalization, % GDP	n/a	n/a						
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	85						
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	73						
4.2.4 VC received, value, % GDP	0.0	61						
4.3 Trade, diversification and market scale	55.9	75						
4.3.1 Applied tariff rate, weighted avg., %	8.7	110						
4.3.2 Domestic industry diversification	⊙	91.4	43					
4.3.3 Domestic market scale, bn PPP\$	1,512.5	22	●					

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Panama

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
75	93	High	LCN	4.4	159.9	36,370

	Score/Value	Rank		Score/Value	Rank
 Institutions	47.0	77	 Business sophistication	16.2	124
1.1 Institutional environment	47.7	58	5.1 Knowledge workers	12.8	114
1.1.1 Operational stability for businesses*	54.2	62	5.1.1 Knowledge-intensive employment, %	10.9	103
1.1.2 Government effectiveness*	41.1	61	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	59.9	73	5.1.3 GERD performed by business, % GDP	0.0	92
1.2.1 Regulatory quality*	47.1	61	5.1.4 GERD financed by business, %	1.1	91
1.2.2 Rule of law*	32.5	77	5.1.5 Females employed w/advanced degrees, %	11.3	68
1.2.3 Cost of redundancy dismissal	18.1	78	5.2 Innovation linkages	13.6	105
1.3 Business environment	33.4	93	5.2.1 University-industry R&D collaboration†	23.5	108
1.3.1 Policies for doing business†	37.9	93	5.2.2 State of cluster development†	29.5	95
1.3.2 Entrepreneurship policies and culture†	28.9	59	5.2.3 GERD financed by abroad, % GDP	0.1	44
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	102
			5.2.5 Patent families/bn PPP\$ GDP	0.1	58
 Human capital and research	19.1	103	5.3 Knowledge absorption	22.3	118
2.1 Education	40.2	99	5.3.1 Intellectual property payments, % total trade	0.5	70
2.1.1 Expenditure on education, % GDP	3.5	91	5.3.2 High-tech imports, % total trade	3.8	127
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	0.4	121
2.1.3 School life expectancy, years	12.9	83	5.3.4 FDI net inflows, % GDP	1.6	85
2.1.4 PISA scales in reading, maths and science	364.8	76	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	13.6	67	 Knowledge and technology outputs	17.1	87
2.2 Tertiary education	16.4	98	6.1 Knowledge creation	4.9	114
2.2.1 Tertiary enrolment, % gross	44.4	72	6.1.1 Patents by origin/bn PPP\$ GDP	0.3	92
2.2.2 Graduates in science and engineering, %	13.7	102	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	74
2.2.3 Tertiary inbound mobility, %	3.1	64	6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	68
2.3 Research and development (R&D)	0.8	104	6.1.4 Scientific and technical articles/bn PPP\$ GDP	3.4	114
2.3.1 Researchers, FTE/mn pop.	39.1	97	6.1.5 Citable documents H-index	12.0	67
2.3.2 Gross expenditure on R&D, % GDP	0.2	93	6.2 Knowledge impact	18.1	114
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2.1 Labor productivity growth, %	0.4	84
2.3.4 QS university ranking, top 3*	0.0	71	6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.2	77
 Infrastructure	45.0	55	6.2.4 High-tech manufacturing, %	7.6	96
3.1 Information and communication technologies (ICTs)	63.3	79	6.3 Knowledge diffusion	28.4	55
3.1.1 ICT access*	77.9	79	6.3.1 Intellectual property receipts, % total trade	0.0	76
3.1.2 ICT use*	61.4	90	6.3.2 Production and export complexity	65.7	40
3.1.3 Government's online service*	64.0	71	6.3.3 High-tech exports, % total trade	9.4	19
3.1.4 E-participation*	50.0	75	6.3.4 ICT services exports, % total trade	1.2	79
3.2 General infrastructure	31.7	51	6.3.5 ISO 9001 quality/bn PPP\$ GDP	1.9	88
3.2.1 Electricity output, GWh/mn pop.	2,533.0	74	 Creative outputs	23.9	67
3.2.2 Logistics performance*	45.5	56	7.1 Intangible assets	20.0	85
3.2.3 Gross capital formation, % GDP	34.3	14	7.1.1 Intangible asset intensity, top 15, %	2.5	69
3.3 Ecological sustainability	40.1	31	7.1.2 Trademarks by origin/bn PPP\$ GDP	34.5	69
3.3.1 GDP/unit of energy use	24.5	5	7.1.3 Global brand value, top 5,000, % GDP	0.4	67
3.3.2 Environmental performance*	53.6	40	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.0	118
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.2	111	7.2 Creative goods and services	28.3	[32]
			7.2.1 Cultural and creative services exports, % total trade	0.2	69
 Market sophistication	23.5	102	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	31.4	61	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.1 Finance for startups and scaleups†	23.2	77	7.2.4 Creative goods exports, % total trade	4.5	14
4.1.2 Domestic credit to private sector, % GDP	105.9	26	7.3 Online creativity	27.2	46
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	37.4	19
4.2 Investment	4.3	83	7.3.2 Country-code TLDs/th pop. 15-69	1.4	77
4.2.1 Market capitalization, % GDP	25.2	52	7.3.3 GitHub commits/mn pop. 15-69	3.4	86
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	86	7.3.4 Mobile app creation/bn PPP\$ GDP	66.6	62
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	87			
4.2.4 VC received, value, % GDP	0.0	68			
4.3 Trade, diversification and market scale	34.9	113			
4.3.1 Applied tariff rate, weighted avg., %	5.8	95			
4.3.2 Domestic industry diversification	38.8	108			
4.3.3 Domestic market scale, bn PPP\$	159.9	76			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Paraguay

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
92	101	Upper middle	LCN	6.8	108.3	14,528

	Score/Value	Rank		Score/Value	Rank
 Institutions	33.9	112	 Business sophistication	23.3	87
1.1 Institutional environment	32.0	97	5.1 Knowledge workers	29.7	71 ●
1.1.1 Operational stability for businesses*	44.4	82	5.1.1 Knowledge-intensive employment, %	20.6	74
1.1.2 Government effectiveness*	19.5	107 ◇	5.1.2 Firms offering formal training, %	46.4	23 ●
1.2 Regulatory environment	43.8	114 ◇	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	36.7	83	5.1.4 GERD financed by business, %	0.2	96 ○◇
1.2.2 Rule of law*	23.4	96	5.1.5 Females employed w/advanced degrees, %	9.5	78
1.2.3 Cost of redundancy dismissal	29.4	117 ◇	5.2 Innovation linkages	9.2	120 ◇
1.3 Business environment	25.8	108	5.2.1 University–industry R&D collaboration†	11.6	125 ○◇
1.3.1 Policies for doing business†	37.4	94	5.2.2 State of cluster development†	22.2	108 ◇
1.3.2 Entrepreneurship policies and culture†	14.1	74 ◇	5.2.3 GERD financed by abroad, % GDP	0.0	65
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	n/a	n/a
			5.2.5 Patent families/bn PPP\$ GDP	0.0	88
 Human capital and research	10.1	[129]	5.3 Knowledge absorption	31.0	76
2.1 Education	19.2	[127]	5.3.1 Intellectual property payments, % total trade	0.1	97 ◇
2.1.1 Expenditure on education, % GDP	3.5	94	5.3.2 High-tech imports, % total trade	19.4	8 ●◆
2.1.2 Government funding/pupil, secondary, % GDP/cap	12.6	85	5.3.3 ICT services imports, % total trade	0.0	132 ○◇
2.1.3 School life expectancy, years	n/a	n/a	5.3.4 FDI net inflows, % GDP	0.6	110 ◇
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil–teacher ratio, secondary	n/a	n/a			
2.2 Tertiary education	n/a	[n/a]	 Knowledge and technology outputs	12.3	109 ◇
2.2.1 Tertiary enrolment, % gross	n/a	n/a	6.1 Knowledge creation	3.0	121
2.2.2 Graduates in science and engineering, %	n/a	n/a	6.1.1 Patents by origin/bn PPP\$ GDP	0.2	105
2.2.3 Tertiary inbound mobility, %	n/a	n/a	6.1.2 PCT patents by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	1.0	100	6.1.3 Utility models by origin/bn PPP\$ GDP	0.1	60
2.3.1 Researchers, FTE/mn pop.	129.8	87 ◇	6.1.4 Scientific and technical articles/bn PPP\$ GDP	2.3	121 ◇
2.3.2 Gross expenditure on R&D, % GDP	0.2	96	6.1.5 Citable documents H-index	3.8	118
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.2 Knowledge impact	16.0	121 ◇
2.3.4 QS university ranking, top 3*	0.0	71 ○◇	6.2.1 Labor productivity growth, %	-0.1	103
			6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
			6.2.3 Software spending, % GDP	0.0	110 ◇
			6.2.4 High-tech manufacturing, %	15.0	77
 Infrastructure	35.4	83	6.3 Knowledge diffusion	17.8	83
3.1 Information and communication technologies (ICTs)	57.9	86	6.3.1 Intellectual property receipts, % total trade	n/a	n/a
3.1.1 ICT access*	65.4	93 ◇	6.3.2 Production and export complexity	45.0	83
3.1.2 ICT use*	59.6	93	6.3.3 High-tech exports, % total trade	0.8	77
3.1.3 Government's online service*	56.4	84	6.3.4 ICT services exports, % total trade	0.1	127 ○
3.1.4 E-participation*	50.0	75	6.3.5 ISO 9001 quality/bn PPP\$ GDP	4.2	61 ●
3.2 General infrastructure	25.2	73 ●	 Creative outputs	19.7	76
3.2.1 Electricity output, GWh/mn pop.	5,524.9	39 ●◆	7.1 Intangible assets	32.0	64 ●
3.2.2 Logistics performance*	27.3	76	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.2.3 Gross capital formation, % GDP	24.2	62 ●	7.1.2 Trademarks by origin/bn PPP\$ GDP	131.9	6 ●◆
3.3 Ecological sustainability	23.2	69 ●	7.1.3 Global brand value, top 5,000, % GDP	0.0	74 ○◇
3.3.1 GDP/unit of energy use	12.2	43 ●	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.3	96
3.3.2 Environmental performance*	37.3	69 ●	7.2 Creative goods and services	0.6	[119]
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.4	92	7.2.1 Cultural and creative services exports, % total trade	0.0	107 ○◇
			7.2.2 National feature films/mn pop. 15–69	n/a	n/a
			7.2.3 Entertainment and media market/th pop. 15–69	n/a	n/a
			7.2.4 Creative goods exports, % total trade	0.1	95
 Market sophistication	31.6	79	7.3 Online creativity	14.3	102
4.1 Credit	12.5	108 ◇	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.9	86
4.1.1 Finance for startups and scaleups†	7.5	84 ○◇	7.3.2 Country-code TLDs/th pop. 15–69	1.7	75 ●
4.1.2 Domestic credit to private sector, % GDP	50.0	73 ●	7.3.3 GitHub commits/mn pop. 15–69	2.4	96
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	51.3	100
4.2 Investment	n/a	[n/a]			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a			
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a			
4.2.4 VC received, value, % GDP	n/a	n/a			
4.3 Trade, diversification and market scale	50.6	84			
4.3.1 Applied tariff rate, weighted avg., %	4.0	84			
4.3.2 Domestic industry diversification	75.7	86			
4.3.3 Domestic market scale, bn PPP\$	108.3	86			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Peru

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
84	60	Upper middle	LCN	34.0	521.8	15,273	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		34.9	93	5.1 Knowledge workers		48.4	[33]
1.1.1	Operational stability for businesses*	40.3	94	5.1.1	Knowledge-intensive employment, %	14.9	89 ◊
1.1.2	Government effectiveness*	29.5	88	5.1.2	Firms offering formal training, %	65.9	5 ●◆
1.2 Regulatory environment		63.8	64	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	44.2	68	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	24.6	94	5.1.5	Females employed w/advanced degrees, %	11.5	67
1.2.3	Cost of redundancy dismissal	11.4	37 ●	5.2 Innovation linkages		11.6	110 ◊
1.3 Business environment		38.9	91	5.2.1	University-industry R&D collaboration†	19.8	119 ◊◊
1.3.1	Policies for doing business†	32.4	101	5.2.2	State of cluster development†	25.4	106
1.3.2	Entrepreneurship policies and culture†	45.3	41	5.2.3	GERD financed by abroad, % GDP	n/a	n/a
Human capital and research		34.7	50	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	125 ◊
2.1 Education		43.5	85	5.2.5	Patent families/bn PPP\$ GDP	0.0	79
2.1.1	Expenditure on education, % GDP	4.0	72	5.3 Knowledge absorption		32.9	69
2.1.2	Government funding/pupil, secondary, % GDP/cap	15.5	73	5.3.1	Intellectual property payments, % total trade	0.7	53
2.1.3	School life expectancy, years	15.0	53	5.3.2	High-tech imports, % total trade	9.2	46
2.1.4	PISA scales in reading, maths and science	401.5	66	5.3.3	ICT services imports, % total trade	1.2	71
2.1.5	Pupil-teacher ratio, secondary	13.9	69	5.3.4	FDI net inflows, % GDP	1.9	75
2.2 Tertiary education		52.6	7 ●◆	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	70.7	34 ●	Knowledge and technology outputs		13.6	101
2.2.2	Graduates in science and engineering, %	29.6	21 ●◆	6.1 Knowledge creation		8.1	93
2.2.3	Tertiary inbound mobility, %	n/a	n/a	6.1.1	Patents by origin/bn PPP\$ GDP	0.2	102
2.3 Research and development (R&D)		8.0	67	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	70
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	6.1.3	Utility models by origin/bn PPP\$ GDP	0.4	35
2.3.2	Gross expenditure on R&D, % GDP	0.2	92	6.1.4	Scientific and technical articles/bn PPP\$ GDP	4.8	106
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40 ◊◊	6.1.5	Citable documents H-index	15.0	56
2.3.4	QS university ranking, top 3*	21.1	50	6.2 Knowledge impact		21.6	94
Infrastructure		41.4	63	6.2.1	Labor productivity growth, %	0.6	75
3.1 Information and communication technologies (ICTs)		69.9	66	6.2.2	Unicorn valuation, % GDP	0.0	48 ◊◊
3.1.1	ICT access*	64.4	94 ◊	6.2.3	Software spending, % GDP	0.2	63
3.1.2	ICT use*	60.7	92	6.2.4	High-tech manufacturing, %	12.4	84
3.1.3	Government's online service*	79.0	37 ●	6.3 Knowledge diffusion		11.1	101 ◊
3.1.4	E-participation*	75.6	22 ●	6.3.1	Intellectual property receipts, % total trade	0.1	68
3.2 General infrastructure		23.8	78	6.3.2	Production and export complexity	35.1	102 ◊◊
3.2.1	Electricity output, GWh/mn pop.	1,742.6	88	6.3.3	High-tech exports, % total trade	0.4	95
3.2.2	Logistics performance*	40.9	60	6.3.4	ICT services exports, % total trade	0.2	120 ◊
3.2.3	Gross capital formation, % GDP	25.2	52	6.3.5	ISO 9001 quality/bn PPP\$ GDP	3.8	66
3.3 Ecological sustainability		30.5	51	Creative outputs		20.9	74
3.3.1	GDP/unit of energy use	16.3	19 ●◆	7.1 Intangible assets		31.3	67
3.3.2	Environmental performance*	35.4	74	7.1.1	Intangible asset intensity, top 15, %	44.9	58
3.3.3	ISO 14001 environment/bn PPP\$ GDP	1.9	49	7.1.2	Trademarks by origin/bn PPP\$ GDP	62.3	35 ●
Market sophistication		37.9	52	7.1.3	Global brand value, top 5,000, % GDP	0.7	58
4.1 Credit		44.8	36 ●◆	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.2	106 ◊
4.1.1	Finance for startups and scaleups†	44.3	54	7.2 Creative goods and services		3.1	95
4.1.2	Domestic credit to private sector, % GDP	55.2	66	7.2.1	Cultural and creative services exports, % total trade	n/a	n/a
4.1.3	Loans from microfinance institutions, % GDP	6.0	5 ●◆	7.2.2	National feature films/mn pop. 15-69	0.1	80 ◊◊
4.2 Investment		4.9	78	7.2.3	Entertainment and media market/th pop. 15-69	6.2	39
4.2.1	Market capitalization, % GDP	42.8	39	7.2.4	Creative goods exports, % total trade	0.2	73
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	88 ◊	7.3 Online creativity		17.8	78
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	93 ◊	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	5.7	54
4.2.4	VC received, value, % GDP	0.0	77	7.3.2	Country-code TLDs/th pop. 15-69	1.8	74
4.3 Trade, diversification and market scale		64.0	34 ●	7.3.3	GitHub commits/mn pop. 15-69	4.7	72
4.3.1	Applied tariff rate, weighted avg., %	0.7	6 ●◆	7.3.4	Mobile app creation/bn PPP\$ GDP	59.0	85
4.3.2	Domestic industry diversification	85.1	64				
4.3.3	Domestic market scale, bn PPP\$	521.8	45				

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Philippines

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
52	69	Lower middle	SEAO	115.6	1,154.9	10,344	
		Score/Value	Rank			Score/Value	Rank
Institutions		46.3	79	Business sophistication		37.9	38
1.1 Institutional environment	39.8	77	5.1 Knowledge workers	38.1	51	◆	
1.1.1 Operational stability for businesses*	41.0	93	5.1.1 Knowledge-intensive employment, %	⊙	17.5	83	
1.1.2 Government effectiveness*	38.7	62	◆	5.1.2 Firms offering formal training, %	⊙	59.8	8
1.2 Regulatory environment	47.0	108	○	5.1.3 GERD performed by business, % GDP	⊙	0.1	68
1.2.1 Regulatory quality*	44.1	69	◆	5.1.4 GERD financed by business, %	⊙	38.0	48
1.2.2 Rule of law*	20.9	106	○	5.1.5 Females employed w/advanced degrees, %	⊙	12.3	62
1.2.3 Cost of redundancy dismissal	27.4	114	○	5.2 Innovation linkages	19.2	79	
1.3 Business environment	52.0	51	5.2.1 University–industry R&D collaboration†	46.8	57		
1.3.1 Policies for doing business†	41.9	81	5.2.2 State of cluster development†	41.2	67		
1.3.2 Entrepreneurship policies and culture†	⊙	62.0	22	5.2.3 GERD financed by abroad, % GDP	⊙	0.0	89
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	61	
				5.2.5 Patent families/bn PPP\$ GDP	0.0	84	
Human capital and research		25.3	88	Knowledge absorption		56.4	8
2.1 Education	33.2	115	○	5.3.1 Intellectual property payments, % total trade	0.6	60	
2.1.1 Expenditure on education, % GDP	3.9	79		5.3.2 High-tech imports, % total trade	31.3	1	
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a		5.3.3 ICT services imports, % total trade	2.0	38	
2.1.3 School life expectancy, years	13.1	82		5.3.4 FDI net inflows, % GDP	2.4	62	
2.1.4 PISA scales in reading, maths and science	349.7	78	○	5.3.5 Research talent, % in businesses	⊙	51.8	23
2.1.5 Pupil–teacher ratio, secondary	24.6	109	○	Knowledge and technology outputs	29.9	46	
2.2 Tertiary education	35.7	45	◆	6.1 Knowledge creation	14.3	67	
2.2.1 Tertiary enrolment, % gross	35.5	82		6.1.1 Patents by origin/bn PPP\$ GDP	0.5	81	
2.2.2 Graduates in science and engineering, %	26.3	37		6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	82	
2.2.3 Tertiary inbound mobility, %	n/a	n/a		6.1.3 Utility models by origin/bn PPP\$ GDP	1.7	9	
2.3 Research and development (R&D)	6.9	70		6.1.4 Scientific and technical articles/bn PPP\$ GDP	2.0	124	
2.3.1 Researchers, FTE/mn pop.	⊙	173.6	84	○	6.1.5 Citable documents H-index	15.3	55
2.3.2 Gross expenditure on R&D, % GDP	⊙	0.3	73		6.2 Knowledge impact	31.6	50
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	○	◆	6.2.1 Labor productivity growth, %	0.5	80
2.3.4 QS university ranking, top 3*	20.4	51	◆	6.2.2 Unicorn valuation, % GDP	0.2	44	
				6.2.3 Software spending, % GDP	0.2	57	
				6.2.4 High-tech manufacturing, %	40.3	26	
				6.3 Knowledge diffusion	43.9	25	
				6.3.1 Intellectual property receipts, % total trade	0.0	82	
				6.3.2 Production and export complexity	70.1	30	
				6.3.3 High-tech exports, % total trade	35.6	2	
				6.3.4 ICT services exports, % total trade	5.9	18	
				6.3.5 ISO 9001 quality/bn PPP\$ GDP	3.7	67	
Infrastructure		33.6	86	Creative outputs		26.4	60
3.1 Information and communication technologies (ICTs)	53.6	94		7.1 Intangible assets	33.3	60	
3.1.1 ICT access*	53.5	103		7.1.1 Intangible asset intensity, top 15, %	57.0	41	
3.1.2 ICT use*	54.1	100		7.1.2 Trademarks by origin/bn PPP\$ GDP	34.5	68	
3.1.3 Government's online service*	59.1	76		7.1.3 Global brand value, top 5,000, % GDP	3.9	38	
3.1.4 E-participation*	47.7	79		7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.7	78	
3.2 General infrastructure	26.9	64		7.2 Creative goods and services	20.3	49	
3.2.1 Electricity output, GWh/mn pop.	⊙	928.6	99	7.2.1 Cultural and creative services exports, % total trade	0.1	85	
3.2.2 Logistics performance*	54.5	42	◆	7.2.2 National feature films/mn pop. 15–69	1.1	59	
3.2.3 Gross capital formation, % GDP	25.0	55		7.2.3 Entertainment and media market/th pop. 15–69	4.2	44	
				7.2.4 Creative goods exports, % total trade	5.8	10	
3.3 Ecological sustainability	20.4	80		7.3 Online creativity	18.7	74	
3.3.1 GDP/unit of energy use	14.8	26	◆	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.2	93	
3.3.2 Environmental performance*	16.9	116	○	7.3.2 Country-code TLDs/th pop. 15–69	0.4	101	
3.3.3 ISO 14001 environment/bn PPP\$ GDP	1.0	64	◆	7.3.3 GitHub commits/mn pop. 15–69	3.1	88	
				7.3.4 Mobile app creation/bn PPP\$ GDP	70.2	55	
Market sophistication		37.7	55				
4.1 Credit	33.3	58					
4.1.1 Finance for startups and scaleups†	⊙	81.2	7				
4.1.2 Domestic credit to private sector, % GDP	52.0	71					
4.1.3 Loans from microfinance institutions, % GDP	0.0	53	○				
4.2 Investment	12.1	51					
4.2.1 Market capitalization, % GDP	74.3	23					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	61					
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	74					
4.2.4 VC received, value, % GDP	0.0	47					
4.3 Trade, diversification and market scale	67.8	23	◆				
4.3.1 Applied tariff rate, weighted avg., %	1.7	52	◆				
4.3.2 Domestic industry diversification	89.3	51					
4.3.3 Domestic market scale, bn PPP\$	1,154.9	29	●				

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Poland

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
36	50	High	EUR	39.9	1,599.0	42,466

	Score/Value	Rank		Score/Value	Rank
 Institutions	47.1	76	 Business sophistication	36.7	41
1.1 Institutional environment	53.0	50	5.1 Knowledge workers	47.6	35
1.1.1 Operational stability for businesses*	61.1	43	5.1.1 Knowledge-intensive employment, %	41.5	28
1.1.2 Government effectiveness*	44.8	52	5.1.2 Firms offering formal training, %	21.7	75
1.2 Regulatory environment	68.5	47	5.1.3 GERD performed by business, % GDP	0.9	26
1.2.1 Regulatory quality*	63.9	37	5.1.4 GERD financed by business, %	50.6	26
1.2.2 Rule of law*	52.7	45	5.1.5 Females employed w/advanced degrees, %	22.6	26
1.2.3 Cost of redundancy dismissal	18.8	80	5.2 Innovation linkages	18.8	84
1.3 Business environment	19.9	119	5.2.1 University-industry R&D collaboration†	29.3	97
1.3.1 Policies for doing business†	18.9	121	5.2.2 State of cluster development†	37.9	78
1.3.2 Entrepreneurship policies and culture†	21.0	68	5.2.3 GERD financed by abroad, % GDP	0.1	37
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	78
			5.2.5 Patent families/bn PPP\$ GDP	0.3	40
 Human capital and research	37.7	40	5.3 Knowledge absorption	43.6	34
2.1 Education	60.2	36	5.3.1 Intellectual property payments, % total trade	1.1	32
2.1.1 Expenditure on education, % GDP	4.7	47	5.3.2 High-tech imports, % total trade	9.4	45
2.1.2 Government funding/pupil, secondary, % GDP/cap	21.2	46	5.3.3 ICT services imports, % total trade	1.7	47
2.1.3 School life expectancy, years	16.1	36	5.3.4 FDI net inflows, % GDP	3.9	33
2.1.4 PISA scales in reading, maths and science	512.8	9	5.3.5 Research talent, % in businesses	53.1	21
2.1.5 Pupil-teacher ratio, secondary	10.4	34	 Knowledge and technology outputs	31.6	40
2.2 Tertiary education	29.1	70	6.1 Knowledge creation	25.3	39
2.2.1 Tertiary enrolment, % gross	70.5	36	6.1.1 Patents by origin/bn PPP\$ GDP	2.7	26
2.2.2 Graduates in science and engineering, %	19.4	78	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	39
2.2.3 Tertiary inbound mobility, %	4.5	53	6.1.3 Utility models by origin/bn PPP\$ GDP	0.5	33
2.3 Research and development (R&D)	23.7	40	6.1.4 Scientific and technical articles/bn PPP\$ GDP	20.8	34
2.3.1 Researchers, FTE/mn pop.	3,584.8	29	6.1.5 Citable documents H-index	37.0	26
2.3.2 Gross expenditure on R&D, % GDP	1.4	29	6.2 Knowledge impact	34.5	43
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2.1 Labor productivity growth, %	3.3	11
2.3.4 QS university ranking, top 3*	32.2	40	6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.3	40
 Infrastructure	48.5	47	6.2.4 High-tech manufacturing, %	27.5	46
3.1 Information and communication technologies (ICTs)	76.9	45	6.3 Knowledge diffusion	35.0	40
3.1.1 ICT access*	86.0	47	6.3.1 Intellectual property receipts, % total trade	0.3	35
3.1.2 ICT use*	80.4	57	6.3.2 Production and export complexity	73.8	26
3.1.3 Government's online service*	77.1	43	6.3.3 High-tech exports, % total trade	6.0	32
3.1.4 E-participation*	64.0	51	6.3.4 ICT services exports, % total trade	2.9	44
3.2 General infrastructure	36.3	39	6.3.5 ISO 9001 quality/bn PPP\$ GDP	7.4	35
3.2.1 Electricity output, GWh/mn pop.	4,681.6	49	 Creative outputs	37.6	35
3.2.2 Logistics performance*	68.2	25	7.1 Intangible assets	45.8	35
3.2.3 Gross capital formation, % GDP	22.2	80	7.1.1 Intangible asset intensity, top 15, %	72.1	16
3.3 Ecological sustainability	32.2	45	7.1.2 Trademarks by origin/bn PPP\$ GDP	36.5	63
3.3.1 GDP/unit of energy use	11.7	51	7.1.3 Global brand value, top 5,000, % GDP	4.4	36
3.3.2 Environmental performance*	53.7	39	7.1.4 Industrial designs by origin/bn PPP\$ GDP	5.7	19
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.0	47	7.2 Creative goods and services	24.1	44
			7.2.1 Cultural and creative services exports, % total trade	1.0	29
 Market sophistication	34.5	67	7.2.2 National feature films/mn pop. 15-69	1.9	48
4.1 Credit	24.7	79	7.2.3 Entertainment and media market/th pop. 15-69	11.7	31
4.1.1 Finance for startups and scaleups†	54.3	40	7.2.4 Creative goods exports, % total trade	4.5	13
4.1.2 Domestic credit to private sector, % GDP	49.8	74	7.3 Online creativity	34.8	34
4.1.3 Loans from microfinance institutions, % GDP	0.2	48	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	7.9	47
4.2 Investment	5.0	76	7.3.2 Country-code TLDs/th pop. 15-69	25.6	27
4.2.1 Market capitalization, % GDP	27.4	49	7.3.3 GitHub commits/mn pop. 15-69	32.3	33
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	69	7.3.4 Mobile app creation/bn PPP\$ GDP	73.2	38
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	77			
4.2.4 VC received, value, % GDP	0.0	74			
4.3 Trade, diversification and market scale	73.8	17			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	96.7	22			
4.3.3 Domestic market scale, bn PPP\$	1,599.0	21			





NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
29	31	High	EUR	10.3	432.1	42,067

	Score/Value	Rank		Score/Value	Rank
 Institutions	64.3	35	 Business sophistication	39.8	34
1.1 Institutional environment	69.6	25	5.1 Knowledge workers	49.8	30
1.1.1 Operational stability for businesses*	75.0	17 ●	5.1.1 Knowledge-intensive employment, %	41.9	26
1.1.2 Government effectiveness*	64.1	32	5.1.2 Firms offering formal training, %	29.0	59 ○
1.2 Regulatory environment	74.6	35	5.1.3 GERD performed by business, % GDP	1.0	22
1.2.1 Regulatory quality*	61.2	41	5.1.4 GERD financed by business, %	52.2	24
1.2.2 Rule of law*	72.9	23	5.1.5 Females employed w/advanced degrees, %	21.2	29
1.2.3 Cost of redundancy dismissal	17.0	69 ○	5.2 Innovation linkages	29.7	40
1.3 Business environment	48.6	59 ○	5.2.1 University-industry R&D collaboration†	61.0	34
1.3.1 Policies for doing business†	45.4	72 ○	5.2.2 State of cluster development†	46.7	52
1.3.2 Entrepreneurship policies and culture†	51.8	32	5.2.3 GERD financed by abroad, % GDP	0.1	35
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	45
			5.2.5 Patent families/bn PPP\$ GDP	0.6	30
 Human capital and research	49.5	23	5.3 Knowledge absorption	39.8	46
2.1 Education	63.7	17 ●	5.3.1 Intellectual property payments, % total trade	0.9	40
2.1.1 Expenditure on education, % GDP	4.6	50	5.3.2 High-tech imports, % total trade	9.1	51
2.1.2 Government funding/pupil, secondary, % GDP/cap	28.5	11 ●◆	5.3.3 ICT services imports, % total trade	1.7	48
2.1.3 School life expectancy, years	17.0	19	5.3.4 FDI net inflows, % GDP	3.0	46
2.1.4 PISA scales in reading, maths and science	492.0	26	5.3.5 Research talent, % in businesses	44.0	32
2.1.5 Pupil-teacher ratio, secondary	8.5	18 ●	 Knowledge and technology outputs	34.4	32
2.2 Tertiary education	43.4	25	6.1 Knowledge creation	31.9	30
2.2.1 Tertiary enrolment, % gross	70.4	37	6.1.1 Patents by origin/bn PPP\$ GDP	2.6	27
2.2.2 Graduates in science and engineering, %	27.8	30	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.5	32
2.2.3 Tertiary inbound mobility, %	11.6	22	6.1.3 Utility models by origin/bn PPP\$ GDP	0.2	48 ○
2.3 Research and development (R&D)	41.5	26	6.1.4 Scientific and technical articles/bn PPP\$ GDP	40.2	8 ●◆
2.3.1 Researchers, FTE/mn pop.	5,473.3	15 ●	6.1.5 Citable documents H-index	33.9	30
2.3.2 Gross expenditure on R&D, % GDP	1.7	23	6.2 Knowledge impact	37.9	35
2.3.3 Global corporate R&D investors, top 3, mn USD	45.7	37	6.2.1 Labor productivity growth, %	0.8	73 ○
2.3.4 QS university ranking, top 3*	33.4	38	6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
			6.2.3 Software spending, % GDP	0.7	6 ●◆
			6.2.4 High-tech manufacturing, %	29.4	41
 Infrastructure	50.8	45	6.3 Knowledge diffusion	33.5	45
3.1 Information and communication technologies (ICTs)	80.9	37	6.3.1 Intellectual property receipts, % total trade	0.1	47
3.1.1 ICT access*	88.6	30	6.3.2 Production and export complexity	68.4	34
3.1.2 ICT use*	85.4	39	6.3.3 High-tech exports, % total trade	3.3	44
3.1.3 Government's online service*	77.4	40	6.3.4 ICT services exports, % total trade	3.6	32
3.1.4 E-participation*	72.1	32	6.3.5 ISO 9001 quality/bn PPP\$ GDP	11.1	24
3.2 General infrastructure	32.6	47	 Creative outputs	46.0	19 ●
3.2.1 Electricity output, GWh/mn pop.	4,771.7	47	7.1 Intangible assets	55.2	16 ●
3.2.2 Logistics performance*	59.1	37	7.1.1 Intangible asset intensity, top 15, %	67.9	22
3.2.3 Gross capital formation, % GDP	20.6	95 ○	7.1.2 Trademarks by origin/bn PPP\$ GDP	97.8	14 ●◆
3.3 Ecological sustainability	39.0	34	7.1.3 Global brand value, top 5,000, % GDP	4.9	33
3.3.1 GDP/unit of energy use	16.6	18 ●	7.1.4 Industrial designs by origin/bn PPP\$ GDP	4.9	22
3.3.2 Environmental performance*	53.4	41	7.2 Creative goods and services	23.1	45
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.8	32	7.2.1 Cultural and creative services exports, % total trade	0.6	46 ○
			7.2.2 National feature films/mn pop. 15-69	4.4	26
			7.2.3 Entertainment and media market/th pop. 15-69	33.1	22
			7.2.4 Creative goods exports, % total trade	1.5	34
 Market sophistication	43.4	42	7.3 Online creativity	50.5	25
4.1 Credit	52.6	25	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	22.5	29
4.1.1 Finance for startups and scaleups†	67.5	20	7.3.2 Country-code TLDs/th pop. 15-69	66.9	11 ●◆
4.1.2 Domestic credit to private sector, % GDP	101.0	29	7.3.3 GitHub commits/mn pop. 15-69	41.0	25
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	71.4	45
4.2 Investment	11.0	52 ○			
4.2.1 Market capitalization, % GDP	29.1	47 ○			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	32			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	40			
4.2.4 VC received, value, % GDP	0.0	53 ○			
4.3 Trade, diversification and market scale	66.5	26			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	100.0	1 ●			
4.3.3 Domestic market scale, bn PPP\$	432.1	49			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
70	39	High	NAWA	2.7	303.6	113,675

	Score/Value	Rank		Score/Value	Rank
 Institutions	71.6	23 ●	 Business sophistication	26.6	73 ◇
1.1 Institutional environment	67.4	31	5.1 Knowledge workers	15.2	112 ◇
1.1.1 Operational stability for businesses*	67.4	35	5.1.1 Knowledge-intensive employment, %	21.9	69 ◇
1.1.2 Government effectiveness*	67.5	28	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	67.8	50	5.1.3 GERD performed by business, % GDP	0.1	67 ◇
1.2.1 Regulatory quality*	64.5	34	5.1.4 GERD financed by business, %	9.3	75 ◇
1.2.2 Rule of law*	66.9	30	5.1.5 Females employed w/advanced degrees, %	5.3	93 ◇
1.2.3 Cost of redundancy dismissal	23.2	101 ◇	5.2 Innovation linkages	35.6	33
1.3 Business environment	79.7	6 ●◆	5.2.1 University-industry R&D collaboration†	82.8	10 ●
1.3.1 Policies for doing business†	79.4	9 ●	5.2.2 State of cluster development†	76.8	16 ●
1.3.2 Entrepreneurship policies and culture†	80.0	7 ●◆	5.2.3 GERD financed by abroad, % GDP	0.0	90 ○◇
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	29
			5.2.5 Patent families/bn PPP\$ GDP	0.0	72
 Human capital and research	33.8	54 ◇	5.3 Knowledge absorption	29.1	82 ◇
2.1 Education	45.0	82 ◇	5.3.1 Intellectual property payments, % total trade	0.0	118
2.1.1 Expenditure on education, % GDP	3.2	99 ◇	5.3.2 High-tech imports, % total trade	6.0	102
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	2.7	25 ●
2.1.3 School life expectancy, years	12.8	85 ◇	5.3.4 FDI net inflows, % GDP	-1.3	126 ○
2.1.4 PISA scales in reading, maths and science	413.5	60 ◇	5.3.5 Research talent, % in businesses	16.1	55 ◇
2.1.5 Pupil-teacher ratio, secondary	12.5	57	 Knowledge and technology outputs	18.4	82 ◇
2.2 Tertiary education	47.5	14 ●	6.1 Knowledge creation	9.4	83 ◇
2.2.1 Tertiary enrolment, % gross	25.0	93 ◇	6.1.1 Patents by origin/bn PPP\$ GDP	0.2	103 ◇
2.2.2 Graduates in science and engineering, %	18.7	83	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	61
2.2.3 Tertiary inbound mobility, %	37.6	1 ●◆	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	8.9	64 ◇	6.1.4 Scientific and technical articles/bn PPP\$ GDP	10.1	72 ◇
2.3.1 Researchers, FTE/mn pop.	902.6	53 ◇	6.1.5 Citable documents H-index	12.7	65
2.3.2 Gross expenditure on R&D, % GDP	0.7	52	6.2 Knowledge impact	31.1	52
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.2.1 Labor productivity growth, %	0.3	87
2.3.4 QS university ranking, top 3*	14.4	60	6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
			6.2.3 Software spending, % GDP	0.3	37
 Infrastructure	53.4	39	6.2.4 High-tech manufacturing, %	37.7	30
3.1 Information and communication technologies (ICTs)	67.2	72 ◇	6.3 Knowledge diffusion	14.6	92 ◇
3.1.1 ICT access*	93.2	12 ●	6.3.1 Intellectual property receipts, % total trade	0.0	114
3.1.2 ICT use*	82.5	52	6.3.2 Production and export complexity	48.8	70 ◇
3.1.3 Government's online service*	56.8	83 ◇	6.3.3 High-tech exports, % total trade	0.2	103 ◇
3.1.4 E-participation*	36.0	93 ◇	6.3.4 ICT services exports, % total trade	1.1	84
3.2 General infrastructure	75.4	1 ●◆	6.3.5 ISO 9001 quality/bn PPP\$ GDP	3.9	63
3.2.1 Electricity output, GWh/mn pop.	17,098.2	5 ●◆	 Creative outputs	24.7	65 ◇
3.2.2 Logistics performance*	63.6	33	7.1 Intangible assets	38.3	49
3.2.3 Gross capital formation, % GDP	n/a	n/a	7.1.1 Intangible asset intensity, top 15, %	48.0	50
3.3 Ecological sustainability	17.5	94 ◇	7.1.2 Trademarks by origin/bn PPP\$ GDP	5.6	119 ○◇
3.3.1 GDP/unit of energy use	5.7	111 ◇	7.1.3 Global brand value, top 5,000, % GDP	9.4	19 ●
3.3.2 Environmental performance*	23.9	99 ◇	7.1.4 Industrial designs by origin/bn PPP\$ GDP	n/a	n/a
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.4	36	7.2 Creative goods and services	4.3	89 ◇
			7.2.1 Cultural and creative services exports, % total trade	0.2	75
 Market sophistication	40.7	44	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	57.5	20 ●	7.2.3 Entertainment and media market/th pop. 15-69	9.9	34 ◇
4.1.1 Finance for startups and scaleups†	62.3	28	7.2.4 Creative goods exports, % total trade	0.0	131 ○
4.1.2 Domestic credit to private sector, % GDP	138.9	14 ●	7.3 Online creativity	17.8	81 ◇
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	4.2	60 ◇
4.2 Investment	10.3	55	7.3.2 Country-code TLDs/th pop. 15-69	2.8	66 ◇
4.2.1 Market capitalization, % GDP	98.2	16	7.3.3 GitHub commits/mn pop. 15-69	3.4	85 ◇
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	50	7.3.4 Mobile app creation/bn PPP\$ GDP	60.5	80 ◇
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	99 ○◇			
4.2.4 VC received, value, % GDP	0.0	100 ○◇			
4.3 Trade, diversification and market scale	54.5	77			
4.3.1 Applied tariff rate, weighted avg., %	3.5	78 ◇			
4.3.2 Domestic industry diversification	80.1	76			
4.3.3 Domestic market scale, bn PPP\$	303.6	60			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Republic of Korea

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
7	12	High	SEAO	51.8	2,765.8	53,574


	Score/Value	Rank		Score/Value	Rank
 Institutions	66.7	32	 Business sophistication	60.9	9
1.1 Institutional environment	73.9	19	5.1 Knowledge workers	75.1	3
1.1.1 Operational stability for businesses*	72.2	22	5.1.1 Knowledge-intensive employment, %	39.6	31
1.1.2 Government effectiveness*	75.6	16	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	66.6	53	5.1.3 GERD performed by business, % GDP	3.9	2
1.2.1 Regulatory quality*	70.6	28	5.1.4 GERD financed by business, %	76.1	4
1.2.2 Rule of law*	72.7	24	5.1.5 Females employed w/advanced degrees, %	21.4	28
1.2.3 Cost of redundancy dismissal	27.4	111	5.2 Innovation linkages	52.0	19
1.3 Business environment	59.5	34	5.2.1 University-industry R&D collaboration†	72.8	21
1.3.1 Policies for doing business†	52.0	58	5.2.2 State of cluster development†	70.4	22
1.3.2 Entrepreneurship policies and culture†	67.1	17	5.2.3 GERD financed by abroad, % GDP	0.0	69
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	32
			5.2.5 Patent families/bn PPP\$ GDP	12.5	1
 Human capital and research	66.9	1	5.3 Knowledge absorption	55.6	11
2.1 Education	67.3	12	5.3.1 Intellectual property payments, % total trade	1.6	21
2.1.1 Expenditure on education, % GDP	4.7	46	5.3.2 High-tech imports, % total trade	17.2	13
2.1.2 Government funding/pupil, secondary, % GDP/cap	36.3	3	5.3.3 ICT services imports, % total trade	1.2	74
2.1.3 School life expectancy, years	16.6	26	5.3.4 FDI net inflows, % GDP	0.7	106
2.1.4 PISA scales in reading, maths and science	519.7	6	5.3.5 Research talent, % in businesses	82.9	1
2.1.5 Pupil-teacher ratio, secondary	11.8	52			
2.2 Tertiary education	46.0	17	 Knowledge and technology outputs	53.3	11
2.2.1 Tertiary enrolment, % gross	102.5	4	6.1 Knowledge creation	66.1	5
2.2.2 Graduates in science and engineering, %	30.2	18	6.1.1 Patents by origin/bn PPP\$ GDP	74.0	1
2.2.3 Tertiary inbound mobility, %	3.7	58	6.1.2 PCT patents by origin/bn PPP\$ GDP	8.0	1
2.3 Research and development (R&D)	87.3	1	6.1.3 Utility models by origin/bn PPP\$ GDP	1.4	14
2.3.1 Researchers, FTE/mn pop.	9,097.1	2	6.1.4 Scientific and technical articles/bn PPP\$ GDP	24.5	29
2.3.2 Gross expenditure on R&D, % GDP	4.9	2	6.1.5 Citable documents H-index	46.5	17
2.3.3 Global corporate R&D investors, top 3, mn USD	88.8	5	6.2 Knowledge impact	45.0	22
2.3.4 QS university ranking, top 3*	77.4	10	6.2.1 Labor productivity growth, %	1.2	58
			6.2.2 Unicorn valuation, % GDP	1.8	24
			6.2.3 Software spending, % GDP	0.2	65
			6.2.4 High-tech manufacturing, %	56.2	7
 Infrastructure	60.6	11	6.3 Knowledge diffusion	48.8	19
3.1 Information and communication technologies (ICTs)	95.7	1	6.3.1 Intellectual property receipts, % total trade	1.2	20
3.1.1 ICT access*	92.4	14	6.3.2 Production and export complexity	93.4	4
3.1.2 ICT use*	98.1	4	6.3.3 High-tech exports, % total trade	27.9	6
3.1.3 Government's online service*	98.1	3	6.3.4 ICT services exports, % total trade	1.6	68
3.1.4 E-participation*	94.2	9	6.3.5 ISO 9001 quality/bn PPP\$ GDP	7.0	41
3.2 General infrastructure	56.5	10			
3.2.1 Electricity output, GWh/mn pop.	11,597.6	12	 Creative outputs	58.2	5
3.2.2 Logistics performance*	77.3	16	7.1 Intangible assets	79.4	2
3.2.3 Gross capital formation, % GDP	32.1	18	7.1.1 Intangible asset intensity, top 15, %	63.4	32
3.3 Ecological sustainability	29.7	55	7.1.2 Trademarks by origin/bn PPP\$ GDP	119.0	7
3.3.1 GDP/unit of energy use	7.7	90	7.1.3 Global brand value, top 5,000, % GDP	16.8	6
3.3.2 Environmental performance*	47.5	49	7.1.4 Industrial designs by origin/bn PPP\$ GDP	24.3	3
3.3.3 ISO 14001 environment/bn PPP\$ GDP	3.3	28	7.2 Creative goods and services	39.2	11
			7.2.1 Cultural and creative services exports, % total trade	0.7	42
			7.2.2 National feature films/mn pop. 15-69	5.0	23
			7.2.3 Entertainment and media market/th pop. 15-69	50.8	16
			7.2.4 Creative goods exports, % total trade	5.0	12
 Market sophistication	52.0	23	7.3 Online creativity	34.9	33
4.1 Credit	64.7	11	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	9.5	43
4.1.1 Finance for startups and scaleups†	66.7	23	7.3.2 Country-code TLDs/th pop. 15-69	8.0	44
4.1.2 Domestic credit to private sector, % GDP	164.1	7	7.3.3 GitHub commits/mn pop. 15-69	45.5	24
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	76.6	15
4.2 Investment	17.4	42			
4.2.1 Market capitalization, % GDP	101.4	15			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	34			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	63			
4.2.4 VC received, value, % GDP	0.0	41			
4.3 Trade, diversification and market scale	73.9	16			
4.3.1 Applied tariff rate, weighted avg., %	5.5	94			
4.3.2 Domestic industry diversification	97.8	12			
4.3.3 Domestic market scale, bn PPP\$	2,765.8	14			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Republic of Moldova

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
50	81	Upper middle	EUR	3.3	41.9	16,483


	Score/Value	Rank		Score/Value	Rank
 Institutions	39.4	96	 Business sophistication	21.3	101
1.1 Institutional environment	36.4	87	5.1 Knowledge workers	25.1	77
1.1.1 Operational stability for businesses*	47.2	75	5.1.1 Knowledge-intensive employment, %	17.7	82
1.1.2 Government effectiveness*	25.6	94	5.1.2 Firms offering formal training, %	38.1	38
1.2 Regulatory environment	52.6	92	5.1.3 GERD performed by business, % GDP	⊙ 0.0	74
1.2.1 Regulatory quality*	42.5	72	5.1.4 GERD financed by business, %	⊙ 15.5	72
1.2.2 Rule of law*	30.0	82	5.1.5 Females employed w/advanced degrees, %	10.9	70
1.2.3 Cost of redundancy dismissal	23.7	102	5.2 Innovation linkages	10.7	116
1.3 Business environment	29.3 [102]		5.2.1 University-industry R&D collaboration†	⊙ 25.9	105
1.3.1 Policies for doing business†	⊙ 29.3	108	5.2.2 State of cluster development†	⊙ 14.4	121
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	⊙ 0.0	72
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	55
			5.2.5 Patent families/bn PPP\$ GDP	0.1	51
 Human capital and research	30.5	67	5.3 Knowledge absorption	27.9	89
2.1 Education	54.1	57	5.3.1 Intellectual property payments, % total trade	0.7	57
2.1.1 Expenditure on education, % GDP	5.8	20	5.3.2 High-tech imports, % total trade	8.4	61
2.1.2 Government funding/pupil, secondary, % GDP/cap	21.6	43	5.3.3 ICT services imports, % total trade	1.4	62
2.1.3 School life expectancy, years	14.8	57	5.3.4 FDI net inflows, % GDP	2.8	54
2.1.4 PISA scales in reading, maths and science	424.4	51	5.3.5 Research talent, % in businesses	⊙ 6.2	67
2.1.5 Pupil-teacher ratio, secondary	10.9	40			
2.2 Tertiary education	34.4	51	 Knowledge and technology outputs	23.8	60
2.2.1 Tertiary enrolment, % gross	62.7	51	6.1 Knowledge creation	23.1	46
2.2.2 Graduates in science and engineering, %	25.0	45	6.1.1 Patents by origin/bn PPP\$ GDP	1.6	43
2.2.3 Tertiary inbound mobility, %	6.5	39	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	62
2.3 Research and development (R&D)	3.0	87	6.1.3 Utility models by origin/bn PPP\$ GDP	2.9	5
2.3.1 Researchers, FTE/mn pop.	788.1	58	6.1.4 Scientific and technical articles/bn PPP\$ GDP	6.0	101
2.3.2 Gross expenditure on R&D, % GDP	0.2	85	6.1.5 Citable documents H-index	5.6	96
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2 Knowledge impact	23.7	86
2.3.4 QS university ranking, top 3*	0.0	71	6.2.1 Labor productivity growth, %	2.2	28
			6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.1	93
			6.2.4 High-tech manufacturing, %	19.0	64
 Infrastructure	37.3	75	6.3 Knowledge diffusion	24.7	58
3.1 Information and communication technologies (ICTs)	73.4	55	6.3.1 Intellectual property receipts, % total trade	0.0	72
3.1.1 ICT access*	84.2	57	6.3.2 Production and export complexity	51.7	62
3.1.2 ICT use*	70.7	68	6.3.3 High-tech exports, % total trade	0.7	83
3.1.3 Government's online service*	71.0	60	6.3.4 ICT services exports, % total trade	6.6	13
3.1.4 E-participation*	67.4	47	6.3.5 ISO 9001 quality/bn PPP\$ GDP	2.5	80
3.2 General infrastructure	19.5	91			
3.2.1 Electricity output, GWh/mn pop.	2,587.4	71	 Creative outputs	33.2	42
3.2.2 Logistics performance*	18.2	89	7.1 Intangible assets	49.8	27
3.2.3 Gross capital formation, % GDP	28.4	30	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	19.1	83	7.1.2 Trademarks by origin/bn PPP\$ GDP	101.6	11
3.3.1 GDP/unit of energy use	7.3	94	7.1.3 Global brand value, top 5,000, % GDP	0.0	74
3.3.2 Environmental performance*	40.3	62	7.1.4 Industrial designs by origin/bn PPP\$ GDP	16.7	6
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.3	101	7.2 Creative goods and services	9.3	[70]
			7.2.1 Cultural and creative services exports, % total trade	0.9	38
			7.2.2 National feature films/mn pop. 15-69	n/a	n/a
			7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
			7.2.4 Creative goods exports, % total trade	0.1	102
 Market sophistication	32.4	76	7.3 Online creativity	23.8	55
4.1 Credit	32.2	60	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.0	71
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	3.9	60
4.1.2 Domestic credit to private sector, % GDP	27.9	102	7.3.3 GitHub commits/mn pop. 15-69	10.9	54
4.1.3 Loans from microfinance institutions, % GDP	4.7	7	7.3.4 Mobile app creation/bn PPP\$ GDP	77.2	14
4.2 Investment	7.3 [63]				
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a			
4.2.3 VC recipients, deals/bn PPP\$ GDP	⊙ 0.0	62			
4.2.4 VC received, value, % GDP	⊙ 0.0	60			
4.3 Trade, diversification and market scale	57.8	67			
4.3.1 Applied tariff rate, weighted avg., %	1.3	14			
4.3.2 Domestic industry diversification	80.8	71			
4.3.3 Domestic market scale, bn PPP\$	41.9	116			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Romania

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
47	55	High	EUR	19.7	731.5	38,097

	Score/Value	Rank		Score/Value	Rank
 Institutions	47.6	74	 Business sophistication	32.1	51
1.1 Institutional environment	44.4	70	5.1 Knowledge workers	35.6	59
1.1.1 Operational stability for businesses*	55.6	56	5.1.1 Knowledge-intensive employment, %	28.2	50
1.1.2 Government effectiveness*	33.2	79	5.1.2 Firms offering formal training, %	20.5	80
1.2 Regulatory environment	75.4	33	5.1.3 GERD performed by business, % GDP	0.3	48
1.2.1 Regulatory quality*	50.1	55	5.1.4 GERD financed by business, %	55.6	21
1.2.2 Rule of law*	51.7	46	5.1.5 Females employed w/advanced degrees, %	13.3	57
1.2.3 Cost of redundancy dismissal	8.0	1	5.2 Innovation linkages	17.9	86
1.3 Business environment	22.9	115	5.2.1 University-industry R&D collaboration†	38.2	79
1.3.1 Policies for doing business†	32.2	102	5.2.2 State of cluster development†	38.1	76
1.3.2 Entrepreneurship policies and culture†	13.7	76	5.2.3 GERD financed by abroad, % GDP	0.1	49
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	87
			5.2.5 Patent families/bn PPP\$ GDP	0.0	66
 Human capital and research	29.1	75	5.3 Knowledge absorption	42.7	37
2.1 Education	46.8	77	5.3.1 Intellectual property payments, % total trade	0.9	43
2.1.1 Expenditure on education, % GDP	3.6	87	5.3.2 High-tech imports, % total trade	10.1	35
2.1.2 Government funding/pupil, secondary, % GDP/cap	20.0	54	5.3.3 ICT services imports, % total trade	2.9	18
2.1.3 School life expectancy, years	14.3	68	5.3.4 FDI net inflows, % GDP	2.8	53
2.1.4 PISA scales in reading, maths and science	427.8	49	5.3.5 Research talent, % in businesses	33.1	39
2.1.5 Pupil-teacher ratio, secondary	11.7	50			
2.2 Tertiary education	35.8	43	 Knowledge and technology outputs	33.3	35
2.2.1 Tertiary enrolment, % gross	53.2	66	6.1 Knowledge creation	13.5	68
2.2.2 Graduates in science and engineering, %	29.1	23	6.1.1 Patents by origin/bn PPP\$ GDP	1.2	53
2.2.3 Tertiary inbound mobility, %	6.0	42	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	73
2.3 Research and development (R&D)	4.6	77	6.1.3 Utility models by origin/bn PPP\$ GDP	0.1	57
2.3.1 Researchers, FTE/mn pop.	995.4	52	6.1.4 Scientific and technical articles/bn PPP\$ GDP	13.6	55
2.3.2 Gross expenditure on R&D, % GDP	0.5	61	6.1.5 Citable documents H-index	19.8	42
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2 Knowledge impact	39.6	31
2.3.4 QS university ranking, top 3*	0.0	71	6.2.1 Labor productivity growth, %	3.3	10
			6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.3	43
			6.2.4 High-tech manufacturing, %	43.8	21
 Infrastructure	54.5	34	6.3 Knowledge diffusion	46.9	21
3.1 Information and communication technologies (ICTs)	74.0	53	6.3.1 Intellectual property receipts, % total trade	0.1	58
3.1.1 ICT access*	86.0	46	6.3.2 Production and export complexity	79.2	19
3.1.2 ICT use*	83.5	49	6.3.3 High-tech exports, % total trade	6.5	28
3.1.3 Government's online service*	64.8	69	6.3.4 ICT services exports, % total trade	6.7	12
3.1.4 E-participation*	61.6	54	6.3.5 ISO 9001 quality/bn PPP\$ GDP	18.3	15
3.2 General infrastructure	30.6	52	 Creative outputs	26.9	58
3.2.1 Electricity output, GWh/mn pop.	3,082.9	65	7.1 Intangible assets	32.4	62
3.2.2 Logistics performance*	50.0	50	7.1.1 Intangible asset intensity, top 15, %	49.7	49
3.2.3 Gross capital formation, % GDP	27.8	33	7.1.2 Trademarks by origin/bn PPP\$ GDP	38.3	61
3.3 Ecological sustainability	58.9	6	7.1.3 Global brand value, top 5,000, % GDP	1.5	49
3.3.1 GDP/unit of energy use	15.7	21	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.1	65
3.3.2 Environmental performance*	62.9	29	7.2 Creative goods and services	15.5	57
3.3.3 ISO 14001 environment/bn PPP\$ GDP	9.5	8	7.2.1 Cultural and creative services exports, % total trade	1.8	12
			7.2.2 National feature films/mn pop. 15-69	1.3	55
			7.2.3 Entertainment and media market/th pop. 15-69	7.8	38
			7.2.4 Creative goods exports, % total trade	0.8	50
 Market sophistication	32.8	75	7.3 Online creativity	27.3	45
4.1 Credit	28.4	68	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	5.7	53
4.1.1 Finance for startups and scaleups†	39.3	58	7.3.2 Country-code TLDs/th pop. 15-69	13.7	36
4.1.2 Domestic credit to private sector, % GDP	25.8	108	7.3.3 GitHub commits/mn pop. 15-69	19.1	45
4.1.3 Loans from microfinance institutions, % GDP	3.2	11	7.3.4 Mobile app creation/bn PPP\$ GDP	70.5	53
4.2 Investment	2.5	98			
4.2.1 Market capitalization, % GDP	9.7	73			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	76			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	84			
4.2.4 VC received, value, % GDP	0.0	87			
4.3 Trade, diversification and market scale	67.5	25			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	96.5	23			
4.3.3 Domestic market scale, bn PPP\$	731.5	35			

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Russian Federation

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
53	58	Upper middle	EUR	144.7	4,649.7	31,967

	Score/Value	Rank		Score/Value	Rank
 Institutions	34.9	110	 Business sophistication	34.7	44
1.1 Institutional environment	25.3	111	5.1 Knowledge workers	41.8	44
1.1.1 Operational stability for businesses*	18.8	124	5.1.1 Knowledge-intensive employment, %	45.5	22
1.1.2 Government effectiveness*	31.9	83	5.1.2 Firms offering formal training, %	11.8	94
1.2 Regulatory environment	51.4	95	5.1.3 GERD performed by business, % GDP	0.6	35
1.2.1 Regulatory quality*	28.4	101	5.1.4 GERD financed by business, %	29.2	60
1.2.2 Rule of law*	14.2	114	5.1.5 Females employed w/advanced degrees, %	26.1	16
1.2.3 Cost of redundancy dismissal	17.3	73	5.2 Innovation linkages	19.7	76
1.3 Business environment	27.9	105	5.2.1 University-industry R&D collaboration†	45.7	60
1.3.1 Policies for doing business†	39.1	87	5.2.2 State of cluster development†	43.1	60
1.3.2 Entrepreneurship policies and culture†	16.8	71	5.2.3 GERD financed by abroad, % GDP	0.0	63
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	94
			5.2.5 Patent families/bn PPP\$ GDP	0.2	45
 Human capital and research	47.2	26	5.3 Knowledge absorption	42.7	36
2.1 Education	57.0	50	5.3.1 Intellectual property payments, % total trade	1.7	18
2.1.1 Expenditure on education, % GDP	3.5	90	5.3.2 High-tech imports, % total trade	8.6	56
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	1.4	61
2.1.3 School life expectancy, years	15.8	43	5.3.4 FDI net inflows, % GDP	1.6	84
2.1.4 PISA scales in reading, maths and science	481.3	31	5.3.5 Research talent, % in businesses	46.5	30
2.1.5 Pupil-teacher ratio, secondary	13.7	68	 Knowledge and technology outputs	26.4	54
2.2 Tertiary education	45.9	20	6.1 Knowledge creation	29.5	32
2.2.1 Tertiary enrolment, % gross	86.4	16	6.1.1 Patents by origin/bn PPP\$ GDP	4.5	18
2.2.2 Graduates in science and engineering, %	32.6	13	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	48
2.2.3 Tertiary inbound mobility, %	5.0	49	6.1.3 Utility models by origin/bn PPP\$ GDP	2.0	8
2.3 Research and development (R&D)	38.7	27	6.1.4 Scientific and technical articles/bn PPP\$ GDP	8.5	83
2.3.1 Researchers, FTE/mn pop.	2,711.9	33	6.1.5 Citable documents H-index	38.1	25
2.3.2 Gross expenditure on R&D, % GDP	1.1	37	6.2 Knowledge impact	27.7	60
2.3.3 Global corporate R&D investors, top 3, mn USD	58.0	26	6.2.1 Labor productivity growth, %	1.3	56
2.3.4 QS university ranking, top 3*	49.0	21	6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.2	73
 Infrastructure	38.0	72	6.2.4 High-tech manufacturing, %	29.0	43
3.1 Information and communication technologies (ICTs)	74.8	49	6.3 Knowledge diffusion	22.0	65
3.1.1 ICT access*	82.8	63	6.3.1 Intellectual property receipts, % total trade	0.3	37
3.1.2 ICT use*	86.3	32	6.3.2 Production and export complexity	56.7	51
3.1.3 Government's online service*	70.9	61	6.3.3 High-tech exports, % total trade	2.3	55
3.1.4 E-participation*	59.3	57	6.3.4 ICT services exports, % total trade	1.6	69
3.2 General infrastructure	25.8	69	6.3.5 ISO 9001 quality/bn PPP\$ GDP	1.0	109
3.2.1 Electricity output, GWh/mn pop.	8,060.6	19	 Creative outputs	29.9	53
3.2.2 Logistics performance*	22.7	82	7.1 Intangible assets	41.0	40
3.2.3 Gross capital formation, % GDP	20.1	97	7.1.1 Intangible asset intensity, top 15, %	51.5	47
3.3 Ecological sustainability	13.4	111	7.1.2 Trademarks by origin/bn PPP\$ GDP	72.9	23
3.3.1 GDP/unit of energy use	4.7	120	7.1.3 Global brand value, top 5,000, % GDP	3.3	42
3.3.2 Environmental performance*	31.5	84	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.4	56
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.2	110	7.2 Creative goods and services	10.9	64
			7.2.1 Cultural and creative services exports, % total trade	1.0	30
 Market sophistication	37.7	56	7.2.2 National feature films/mn pop. 15-69	1.4	53
4.1 Credit	18.6	97	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.1 Finance for startups and scaleups†	30.6	70	7.2.4 Creative goods exports, % total trade	0.4	67
4.1.2 Domestic credit to private sector, % GDP	59.7	61	7.3 Online creativity	26.4	48
4.1.3 Loans from microfinance institutions, % GDP	0.3	45	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.8	62
4.2 Investment	4.7	80	7.3.2 Country-code TLDs/th pop. 15-69	13.9	35
4.2.1 Market capitalization, % GDP	42.7	40	7.3.3 GitHub commits/mn pop. 15-69	13.7	50
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	82	7.3.4 Mobile app creation/bn PPP\$ GDP	74.4	30
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	100			
4.2.4 VC received, value, % GDP	0.0	80			
4.3 Trade, diversification and market scale	89.8	7			
4.3.1 Applied tariff rate, weighted avg., %	4.1	85			
4.3.2 Domestic industry diversification	95.7	26			
4.3.3 Domestic market scale, bn PPP\$	4,649.7	1			

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Rwanda

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
113	85	Low	SSA	13.8	37.6	2,836	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
		65.4	33			20.0	109
1.1 Institutional environment		53.9	47	5.1 Knowledge workers		12.1	115
1.1.1 Operational stability for businesses*		63.9	39	5.1.1 Knowledge-intensive employment, %	⊙	6.5	116
1.1.2 Government effectiveness*		44.0	55	5.1.2 Firms offering formal training, %		35.9	43
1.2 Regulatory environment		63.2	66	5.1.3 GERD performed by business, % GDP	⊙	0.0	73
1.2.1 Regulatory quality*		43.9	70	5.1.4 GERD financed by business, %	⊙	0.6	94
1.2.2 Rule of law*		45.6	56	5.1.5 Females employed w/advanced degrees, %	⊙	3.3	100
1.2.3 Cost of redundancy dismissal		17.3	70	5.2 Innovation linkages		24.9	55
1.3 Business environment		79.1	[8]	5.2.1 University-industry R&D collaboration†		35.9	82
1.3.1 Policies for doing business†		79.1	11	5.2.2 State of cluster development†		39.5	72
1.3.2 Entrepreneurship policies and culture†		n/a	n/a	5.2.3 GERD financed by abroad, % GDP	⊙	0.2	18
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	34
				5.2.5 Patent families/bn PPP\$ GDP		0.0	95
				5.3 Knowledge absorption		23.0	114
				5.3.1 Intellectual property payments, % total trade		0.0	115
				5.3.2 High-tech imports, % total trade		10.9	28
				5.3.3 ICT services imports, % total trade		0.7	95
				5.3.4 FDI net inflows, % GDP		2.0	71
				5.3.5 Research talent, % in businesses	⊙	5.6	68
Human capital and research		Score/Value	Rank	Knowledge and technology outputs		Score/Value	Rank
		22.6	94			13.6	100
2.1 Education		37.7	106	6.1 Knowledge creation		8.2	92
2.1.1 Expenditure on education, % GDP		4.0	70	6.1.1 Patents by origin/bn PPP\$ GDP		0.5	82
2.1.2 Government funding/pupil, secondary, % GDP/cap		24.8	22	6.1.2 PCT patents by origin/bn PPP\$ GDP		0.0	101
2.1.3 School life expectancy, years	⊙	11.2	97	6.1.3 Utility models by origin/bn PPP\$ GDP		0.1	61
2.1.4 PISA scales in reading, maths and science		n/a	n/a	6.1.4 Scientific and technical articles/bn PPP\$ GDP		14.0	53
2.1.5 Pupil-teacher ratio, secondary		27.4	116	6.1.5 Citable documents H-index		4.2	113
2.2 Tertiary education		26.6	75	6.2 Knowledge impact		27.7	61
2.2.1 Tertiary enrolment, % gross		7.3	120	6.2.1 Labor productivity growth, %		6.0	2
2.2.2 Graduates in science and engineering, %		32.1	15	6.2.2 Unicorn valuation, % GDP		0.0	48
2.2.3 Tertiary inbound mobility, %		4.2	55	6.2.3 Software spending, % GDP		0.0	106
2.3 Research and development (R&D)		3.5	85	6.2.4 High-tech manufacturing, %		7.3	97
2.3.1 Researchers, FTE/mn pop.	⊙	58.8	94	6.3 Knowledge diffusion		5.1	126
2.3.2 Gross expenditure on R&D, % GDP	⊙	0.8	48	6.3.1 Intellectual property receipts, % total trade		0.0	92
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	40	6.3.2 Production and export complexity		n/a	n/a
2.3.4 QS university ranking, top 3*		0.0	71	6.3.3 High-tech exports, % total trade		0.6	87
				6.3.4 ICT services exports, % total trade		1.0	88
				6.3.5 ISO 9001 quality/bn PPP\$ GDP		0.5	118
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank
		27.9	101			6.9	117
3.1 Information and communication technologies (ICTs)		53.7	93	7.1 Intangible assets		7.0	114
3.1.1 ICT access*		44.1	115	7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
3.1.2 ICT use*		30.6	115	7.1.2 Trademarks by origin/bn PPP\$ GDP		20.6	92
3.1.3 Government's online service*		77.2	41	7.1.3 Global brand value, top 5,000, % GDP		0.0	74
3.1.4 E-participation*		62.8	53	7.1.4 Industrial designs by origin/bn PPP\$ GDP		0.3	95
3.2 General infrastructure		18.3	99	7.2 Creative goods and services		1.5	[110]
3.2.1 Electricity output, GWh/mn pop.	⊙	67.2	124	7.2.1 Cultural and creative services exports, % total trade		0.0	99
3.2.2 Logistics performance*		31.8	71	7.2.2 National feature films/mn pop. 15-69		n/a	n/a
3.2.3 Gross capital formation, % GDP		25.8	46	7.2.3 Entertainment and media market/th pop. 15-69		n/a	n/a
3.3 Ecological sustainability		11.6	121	7.2.4 Creative goods exports, % total trade		0.2	75
3.3.1 GDP/unit of energy use		5.5	112	7.3 Online creativity		12.2	109
3.3.2 Environmental performance*		23.6	100	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		0.2	121
3.3.3 ISO 14001 environment/bn PPP\$ GDP		0.2	109	7.3.2 Country-code TLDs/th pop. 15-69		0.2	115
				7.3.3 GitHub commits/mn pop. 15-69		2.7	93
				7.3.4 Mobile app creation/bn PPP\$ GDP		45.7	108
Market sophistication		Score/Value	Rank				
		18.6	115				
4.1 Credit		8.1	118				
4.1.1 Finance for startups and scaleups†		n/a	n/a				
4.1.2 Domestic credit to private sector, % GDP		25.0	110				
4.1.3 Loans from microfinance institutions, % GDP		0.7	33				
4.2 Investment		18.0	39				
4.2.1 Market capitalization, % GDP	⊙	31.0	46				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		n/a	n/a				
4.2.3 VC recipients, deals/bn PPP\$ GDP		0.1	20				
4.2.4 VC received, value, % GDP		0.0	57				
4.3 Trade, diversification and market scale		29.7	116				
4.3.1 Applied tariff rate, weighted avg., %		10.2	119				
4.3.2 Domestic industry diversification		54.4	103				
4.3.3 Domestic market scale, bn PPP\$		37.6	121				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Saudi Arabia

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
67	37	High	NAWA	36.4	2,018.3	55,802

		Score/ Value	Rank			Score/ Value	Rank
	Institutions	59.2	45		Business sophistication	34.4	[45]
1.1	Institutional environment	44.3	71 ◊	5.1	Knowledge workers	n/a	[n/a]
1.1.1	Operational stability for businesses*	38.2	100 ◊	5.1.1	Knowledge-intensive employment, %	n/a	n/a
1.1.2	Government effectiveness*	50.4	46 ◊	5.1.2	Firms offering formal training, %	n/a	n/a
1.2	Regulatory environment	58.7	78 ◊	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	50.8	53 ◊	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	46.5	54 ◊	5.1.5	Females employed w/advanced degrees, %	n/a	n/a
1.2.3	Cost of redundancy dismissal	23.7	103 ◊◊	5.2	Innovation linkages	38.5	29
1.3	Business environment	74.6	15 ●	5.2.1	University-industry R&D collaboration†	53.9	45
1.3.1	Policies for doing business†	75.4	16 ●	5.2.2	State of cluster development†	82.9	8 ●◆
1.3.2	Entrepreneurship policies and culture†	73.7	11 ●◆	5.2.3	GERD financed by abroad, % GDP	n/a	n/a
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	54
				5.2.5	Patent families/bn PPP\$ GDP	0.4	35
	Human capital and research	40.6	35	5.3	Knowledge absorption	30.3	[79]
2.1	Education	56.4	[51]	5.3.1	Intellectual property payments, % total trade	n/a	n/a
2.1.1	Expenditure on education, % GDP	n/a	n/a	5.3.2	High-tech imports, % total trade	7.5	74
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3	ICT services imports, % total trade	0.5	111 ◊◊
2.1.3	School life expectancy, years	16.2	33	5.3.4	FDI net inflows, % GDP	1.2	96
2.1.4	PISA scales in reading, maths and science	386.2	71 ◊◊	5.3.5	Research talent, % in businesses	n/a	n/a
2.1.5	Pupil-teacher ratio, secondary	13.5	65		Knowledge and technology outputs	22.0	68 ◊
2.2	Tertiary education	32.1	61	6.1	Knowledge creation	21.5	51
2.2.1	Tertiary enrolment, % gross	71.4	32	6.1.1	Patents by origin/bn PPP\$ GDP	0.8	64
2.2.2	Graduates in science and engineering, %	22.8	56	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.2	42
2.2.3	Tertiary inbound mobility, %	4.0	56	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3	Research and development (R&D)	33.2	33	6.1.4	Scientific and technical articles/bn PPP\$ GDP	20.0	38
2.3.1	Researchers, FTE/mn pop.	700.6	62 ◊	6.1.5	Citable documents H-index	27.3	37
2.3.2	Gross expenditure on R&D, % GDP	0.5	63 ◊	6.2	Knowledge impact	22.4	92 ◊
2.3.3	Global corporate R&D investors, top 3, mn USD	68.2	16 ●	6.2.1	Labor productivity growth, %	-1.9	126 ◊◊
2.3.4	QS university ranking, top 3*	49.3	20 ●	6.2.2	Unicorn valuation, % GDP	0.0	48 ◊◊
				6.2.3	Software spending, % GDP	0.3	35
				6.2.4	High-tech manufacturing, %	26.3	47
	Infrastructure	48.3	48 ◊	6.3	Knowledge diffusion	22.0	66 ◊
3.1	Information and communication technologies (ICTs)	85.2	20 ●	6.3.1	Intellectual property receipts, % total trade	n/a	n/a
3.1.1	ICT access*	96.4	7 ●◆	6.3.2	Production and export complexity	65.4	42
3.1.2	ICT use*	95.3	10 ●	6.3.3	High-tech exports, % total trade	0.8	76 ◊
3.1.3	Government's online service*	80.3	32	6.3.4	ICT services exports, % total trade	0.6	98
3.1.4	E-participation*	68.6	43	6.3.5	ISO 9001 quality/bn PPP\$ GDP	1.3	99 ◊
3.2	General infrastructure	43.9	28		Creative outputs	24.1	66 ◊
3.2.1	Electricity output, GWh/mn pop.	⊙ 11,349.5	13 ●	7.1	Intangible assets	35.4	54
3.2.2	Logistics performance*	59.1	37	7.1.1	Intangible asset intensity, top 15, %	65.1	27
3.2.3	Gross capital formation, % GDP	20.8	90	7.1.2	Trademarks by origin/bn PPP\$ GDP	13.9	103 ◊◊
3.3	Ecological sustainability	16.0	101 ◊◊	7.1.3	Global brand value, top 5,000, % GDP	9.9	18
3.3.1	GDP/unit of energy use	6.7	102 ◊	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.5	82 ◊
3.3.2	Environmental performance*	32.2	81 ◊	7.2	Creative goods and services	7.9	75 ◊
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.4	94 ◊	7.2.1	Cultural and creative services exports, % total trade	0.0	97 ◊◊
				7.2.2	National feature films/mn pop. 15-69	n/a	n/a
				7.2.3	Entertainment and media market/th pop. 15-69	18.8	28
				7.2.4	Creative goods exports, % total trade	0.4	66
	Market sophistication	47.5	28	7.3	Online creativity	17.5	82 ◊
4.1	Credit	44.7	37	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	3.0	69 ◊
4.1.1	Finance for startups and scaleups†	70.3	18	7.3.2	Country-code TLDs/th pop. 15-69	1.0	91 ◊
4.1.2	Domestic credit to private sector, % GDP	⊙ 54.0	69	7.3.3	GitHub commits/mn pop. 15-69	1.8	101 ◊◊
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4	Mobile app creation/bn PPP\$ GDP	64.2	68
4.2	Investment	33.1	20				
4.2.1	Market capitalization, % GDP	235.2	4 ●◆				
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	51				
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	80 ◊				
4.2.4	VC received, value, % GDP	0.0	22				
4.3	Trade, diversification and market scale	64.8	30				
4.3.1	Applied tariff rate, weighted avg., %	4.2	87 ◊				
4.3.2	Domestic industry diversification	78.5	81				
4.3.3	Domestic market scale, bn PPP\$	2,018.3	17 ●				

NOTES: ● indicates a strength; ◊ a weakness; ◆ an income group strength; ◊ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
93	95	Lower middle	SSA	17.3	72.7	4,113	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		48.4	57	5.1 Knowledge workers		5.7	126
1.1.1	Operational stability for businesses*	58.3	49	5.1.1	Knowledge-intensive employment, %	4.6	119
1.1.2	Government effectiveness*	38.4	65	5.1.2	Firms offering formal training, %	17.4	87
1.2 Regulatory environment		59.0	76	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	34.0	88	5.1.4	GERD financed by business, %	2.1	88
1.2.2	Rule of law*	29.0	85	5.1.5	Females employed w/advanced degrees, %	1.0	117
1.2.3	Cost of redundancy dismissal	14.8	59	5.2 Innovation linkages		16.4	92
1.3 Business environment		48.6	58	5.2.1	University-industry R&D collaboration†	45.1	62
1.3.1	Policies for doing business†	43.2	76	5.2.2	State of cluster development†	25.4	105
1.3.2	Entrepreneurship policies and culture†	54.0	27	5.2.3	GERD financed by abroad, % GDP	0.0	51
Human capital and research		18.1	107	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	97
2.1 Education		38.2	103	5.2.5	Patent families/bn PPP\$ GDP	0.0	70
2.1.1	Expenditure on education, % GDP	5.6	23	5.3 Knowledge absorption		27.3	90
2.1.2	Government funding/pupil, secondary, % GDP/cap	20.2	52	5.3.1	Intellectual property payments, % total trade	0.1	98
2.1.3	School life expectancy, years	9.0	108	5.3.2	High-tech imports, % total trade	5.0	115
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	1.3	68
2.1.5	Pupil-teacher ratio, secondary	24.5	108	5.3.4	FDI net inflows, % GDP	6.7	13
2.2 Tertiary education		12.1	107	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	15.6	104	Knowledge and technology outputs		23.1	63
2.2.2	Graduates in science and engineering, %	n/a	n/a	6.1 Knowledge creation		6.0	107
2.2.3	Tertiary inbound mobility, %	6.3	40	6.1.1	Patents by origin/bn PPP\$ GDP	0.5	77
2.3 Research and development (R&D)		4.0	80	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	101
2.3.1	Researchers, FTE/mn pop.	564.3	68	6.1.3	Utility models by origin/bn PPP\$ GDP	0.0	75
2.3.2	Gross expenditure on R&D, % GDP	0.6	56	6.1.4	Scientific and technical articles/bn PPP\$ GDP	7.6	90
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40	6.1.5	Citable documents H-index	6.2	93
2.3.4	QS university ranking, top 3*	0.0	71	6.2 Knowledge impact		51.0	13
Infrastructure		29.2	98	6.2.1	Labor productivity growth, %	0.9	69
3.1 Information and communication technologies (ICTs)		45.0	106	6.2.2	Unicorn valuation, % GDP	5.7	1
3.1.1	ICT access*	48.1	111	6.2.3	Software spending, % GDP	0.3	54
3.1.2	ICT use*	55.4	98	6.2.4	High-tech manufacturing, %	22.1	59
3.1.3	Government's online service*	44.0	100	6.3 Knowledge diffusion		12.3	97
3.1.4	E-participation*	32.6	100	6.3.1	Intellectual property receipts, % total trade	0.1	64
3.2 General infrastructure		24.0	77	6.3.2	Production and export complexity	38.9	95
3.2.1	Electricity output, GWh/mn pop.	346.4	114	6.3.3	High-tech exports, % total trade	0.3	97
3.2.2	Logistics performance*	n/a	n/a	6.3.4	ICT services exports, % total trade	1.4	72
3.2.3	Gross capital formation, % GDP	40.2	8	6.3.5	ISO 9001 quality/bn PPP\$ GDP	1.2	102
3.3 Ecological sustainability		18.8	86	Creative outputs		8.5	113
3.3.1	GDP/unit of energy use	12.0	48	7.1 Intangible assets		7.0	113
3.3.2	Environmental performance*	25.4	98	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.3	97	7.1.2	Trademarks by origin/bn PPP\$ GDP	11.1	110
Market sophistication		30.7	81	7.1.3	Global brand value, top 5,000, % GDP	1.5	48
4.1 Credit		30.2	66	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.4	89
4.1.1	Finance for startups and scaleups†	42.9	56	7.2 Creative goods and services		10.4	65
4.1.2	Domestic credit to private sector, % GDP	29.4	98	7.2.1	Cultural and creative services exports, % total trade	0.9	32
4.1.3	Loans from microfinance institutions, % GDP	3.3	10	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
4.2 Investment		20.9	34	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	n/a	n/a	7.2.4	Creative goods exports, % total trade	0.2	85
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	45	7.3 Online creativity		9.4	117
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.1	37	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1.1	96
4.2.4	VC received, value, % GDP	0.0	19	7.3.2	Country-code TLDs/th pop. 15-69	0.2	110
4.3 Trade, diversification and market scale		40.9	101	7.3.3	GitHub commits/mn pop. 15-69	0.9	114
4.3.1	Applied tariff rate, weighted avg., %	9.1	112	7.3.4	Mobile app creation/bn PPP\$ GDP	35.4	116
4.3.2	Domestic industry diversification	80.0	77				
4.3.3	Domestic market scale, bn PPP\$	72.7	95				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Serbia

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
64	41	Upper middle	EUR	7.2	164.8	24,084

		Score/Value	Rank			Score/Value	Rank
 Institutions		53.2	57	 Business sophistication		27.8	68
1.1 Institutional environment		45.1	66	5.1 Knowledge workers		29.7	70
1.1.1 Operational stability for businesses*		52.1	69	5.1.1 Knowledge-intensive employment, %	⊙	28.3	49
1.1.2 Government effectiveness*		38.1	66	5.1.2 Firms offering formal training, %		38.3	37
1.2 Regulatory environment		70.1	43	5.1.3 GERD performed by business, % GDP		0.4	42
1.2.1 Regulatory quality*		43.5	71	5.1.4 GERD financed by business, %		2.1	87 ○◇
1.2.2 Rule of law*		37.0	68	5.1.5 Females employed w/advanced degrees, %	⊙	15.2	49
1.2.3 Cost of redundancy dismissal		8.0	1 ●◆	5.2 Innovation linkages		20.4	69
1.3 Business environment		44.3	72	5.2.1 University-industry R&D collaboration†		44.5	65
1.3.1 Policies for doing business†		46.0	68	5.2.2 State of cluster development†		38.2	75
1.3.2 Entrepreneurship policies and culture†		42.5	45	5.2.3 GERD financed by abroad, % GDP		0.1	40
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	92 ○
				5.2.5 Patent families/bn PPP\$ GDP		0.1	61
 Human capital and research		34.7	51	5.3 Knowledge absorption		33.1	67
2.1 Education		54.9	55	5.3.1 Intellectual property payments, % total trade		1.2	28
2.1.1 Expenditure on education, % GDP	⊙	3.6	85	5.3.2 High-tech imports, % total trade		6.8	90
2.1.2 Government funding/pupil, secondary, % GDP/cap		n/a	n/a	5.3.3 ICT services imports, % total trade		1.8	45
2.1.3 School life expectancy, years		14.4	66	5.3.4 FDI net inflows, % GDP		7.4	11 ●◆
2.1.4 PISA scales in reading, maths and science		442.5	44	5.3.5 Research talent, % in businesses		10.5	61 ○
2.1.5 Pupil-teacher ratio, secondary		7.6	5 ●◆				
2.2 Tertiary education		39.1	36	 Knowledge and technology outputs		31.4	41
2.2.1 Tertiary enrolment, % gross		69.2	42	6.1 Knowledge creation		24.5	41
2.2.2 Graduates in science and engineering, %		30.1	20 ◆	6.1.1 Patents by origin/bn PPP\$ GDP		1.1	57
2.2.3 Tertiary inbound mobility, %		4.5	52	6.1.2 PCT patents by origin/bn PPP\$ GDP		0.2	49
2.3 Research and development (R&D)		10.1	60	6.1.3 Utility models by origin/bn PPP\$ GDP		0.7	27
2.3.1 Researchers, FTE/mn pop.		2,206.8	38 ◆	6.1.4 Scientific and technical articles/bn PPP\$ GDP		33.8	14 ●◆
2.3.2 Gross expenditure on R&D, % GDP		1.0	40	6.1.5 Citable documents H-index		16.8	52
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	40 ○◇	6.2 Knowledge impact		26.4	66
2.3.4 QS university ranking, top 3*		0.0	71 ○◇	6.2.1 Labor productivity growth, %		3.1	14 ●
				6.2.2 Unicorn valuation, % GDP		0.0	48 ○◇
				6.2.3 Software spending, % GDP		0.0	112 ○◇
				6.2.4 High-tech manufacturing, %		24.3	54
 Infrastructure		54.4	35 ◆	6.3 Knowledge diffusion		43.4	27 ◆
3.1 Information and communication technologies (ICTs)		83.3	26 ◆	6.3.1 Intellectual property receipts, % total trade		0.3	36 ◆
3.1.1 ICT access*		87.4	39	6.3.2 Production and export complexity		67.0	38
3.1.2 ICT use*		81.8	54	6.3.3 High-tech exports, % total trade		2.5	51
3.1.3 Government's online service*		83.6	26 ◆	6.3.4 ICT services exports, % total trade		6.0	17 ●◆
3.1.4 E-participation*		80.2	15 ●◆	6.3.5 ISO 9001 quality/bn PPP\$ GDP		23.6	5 ●◆
3.2 General infrastructure		28.2	60	 Creative outputs		15.6	92
3.2.1 Electricity output, GWh/mn pop.		5,482.2	42 ◆	7.1 Intangible assets		8.7	110 ○◇
3.2.2 Logistics performance*		31.8	71	7.1.1 Intangible asset intensity, top 15, %		-110.4	79 ○◇
3.2.3 Gross capital formation, % GDP		27.0	38	7.1.2 Trademarks by origin/bn PPP\$ GDP		25.8	82
3.3 Ecological sustainability		51.7	20 ◆	7.1.3 Global brand value, top 5,000, % GDP		0.0	74 ○◇
3.3.1 GDP/unit of energy use		7.6	91	7.1.4 Industrial designs by origin/bn PPP\$ GDP		0.9	72
3.3.2 Environmental performance*		42.4	59	7.2 Creative goods and services		19.1	51
3.3.3 ISO 14001 environment/bn PPP\$ GDP		12.3	2 ●◆	7.2.1 Cultural and creative services exports, % total trade		1.8	13 ●◆
				7.2.2 National feature films/mn pop. 15-69		2.3	44
				7.2.3 Entertainment and media market/th pop. 15-69		n/a	n/a
				7.2.4 Creative goods exports, % total trade		0.5	61
				7.3 Online creativity		25.7	49
				7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		2.1	82
				7.3.2 Country-code TLDs/th pop. 15-69		7.4	46
				7.3.3 GitHub commits/mn pop. 15-69		19.0	46 ◆
				7.3.4 Mobile app creation/bn PPP\$ GDP		74.6	28
 Market sophistication		43.7	41				
4.1 Credit		23.7	82				
4.1.1 Finance for startups and scaleups†		31.6	66 ○				
4.1.2 Domestic credit to private sector, % GDP		45.5	79				
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a				
4.2 Investment		n/a [n/a]					
4.2.1 Market capitalization, % GDP		n/a	n/a				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		n/a	n/a				
4.2.3 VC recipients, deals/bn PPP\$ GDP		n/a	n/a				
4.2.4 VC received, value, % GDP		n/a	n/a				
4.3 Trade, diversification and market scale		63.6	37				
4.3.1 Applied tariff rate, weighted avg., %	⊙	1.4	19				
4.3.2 Domestic industry diversification		96.7	21 ◆				
4.3.3 Domestic market scale, bn PPP\$		164.8	75				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Singapore

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
12	1	High	SEAO	6.0	701.0	131,426


	Score/Value	Rank		Score/Value	Rank
Institutions	98.4	1 ◆◆	Business sophistication	69.4	3 ◆◆
1.1 Institutional environment	100.0	1 ◆◆	5.1 Knowledge workers	72.3	5
1.1.1 Operational stability for businesses*	100.0	1 ◆◆	5.1.1 Knowledge-intensive employment, %	59.9	2 ◆◆
1.1.2 Government effectiveness*	100.0	1 ◆◆	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	98.5	1 ◆◆	5.1.3 GERD performed by business, % GDP	1.4	18
1.2.1 Regulatory quality*	100.0	1 ◆◆	5.1.4 GERD financed by business, %	58.3	16
1.2.2 Rule of law*	94.1	4	5.1.5 Females employed w/advanced degrees, %	29.6	3 ◆◆
1.2.3 Cost of redundancy dismissal	8.0	1 ●	5.2 Innovation linkages	61.6	12
1.3 Business environment	96.7	[1]	5.2.1 University-industry R&D collaboration†	85.5	8
1.3.1 Policies for doing business†	96.7	2 ◆◆	5.2.2 State of cluster development†	80.8	11
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.1	38 ○
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.2	6
			5.2.5 Patent families/bn PPP\$ GDP	2.6	14
Human capital and research	63.2	2 ◆◆	5.3 Knowledge absorption	74.4	1 ◆◆
2.1 Education	58.2	46	5.3.1 Intellectual property payments, % total trade	2.6	9
2.1.1 Expenditure on education, % GDP	2.5	113 ○◇	5.3.2 High-tech imports, % total trade	24.3	5 ◆
2.1.2 Government funding/pupil, secondary, % GDP/cap	20.6	49 ○	5.3.3 ICT services imports, % total trade	4.0	9
2.1.3 School life expectancy, years	16.6	25	5.3.4 FDI net inflows, % GDP	26.0	6 ◆
2.1.4 PISA scales in reading, maths and science	556.5	2 ◆◆	5.3.5 Research talent, % in businesses	54.2	19
2.1.5 Pupil-teacher ratio, secondary	11.5	45	Knowledge and technology outputs	55.3	10
2.2 Tertiary education	69.8	2 ◆◆	6.1 Knowledge creation	44.1	20
2.2.1 Tertiary enrolment, % gross	93.1	9	6.1.1 Patents by origin/bn PPP\$ GDP	3.2	24
2.2.2 Graduates in science and engineering, %	36.3	6 ◆	6.1.2 PCT patents by origin/bn PPP\$ GDP	2.5	11
2.2.3 Tertiary inbound mobility, %	n/a	n/a	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	61.5	14	6.1.4 Scientific and technical articles/bn PPP\$ GDP	21.0	33
2.3.1 Researchers, FTE/mn pop.	7,488.4	5	6.1.5 Citable documents H-index	40.0	22
2.3.2 Gross expenditure on R&D, % GDP	2.2	16	6.2 Knowledge impact	69.2	2 ◆◆
2.3.3 Global corporate R&D investors, top 3, mn USD	60.2	23	6.2.1 Labor productivity growth, %	2.1	31
2.3.4 QS university ranking, top 3*	68.6	12	6.2.2 Unicorn valuation, % GDP	5.1	8 ◆
			6.2.3 Software spending, % GDP	0.2	59 ○◇
			6.2.4 High-tech manufacturing, %	78.5	1 ◆◆
Infrastructure	63.1	8	6.3 Knowledge diffusion	52.6	13
3.1 Information and communication technologies (ICTs)	94.5	5 ◆	6.3.1 Intellectual property receipts, % total trade	1.6	16
3.1.1 ICT access*	100.0	1 ◆◆	6.3.2 Production and export complexity	91.8	5
3.1.2 ICT use*	84.7	40 ◇	6.3.3 High-tech exports, % total trade	28.6	4 ◆
3.1.3 Government's online service*	95.8	5 ◆	6.3.4 ICT services exports, % total trade	2.8	46
3.1.4 E-participation*	97.7	3 ◆◆	6.3.5 ISO 9001 quality/bn PPP\$ GDP	6.9	42
3.2 General infrastructure	57.2	9	Creative outputs	46.0	18
3.2.1 Electricity output, GWh/mn pop.	10,295.2	15	7.1 Intangible assets	39.9	41 ○
3.2.2 Logistics performance*	100.0	1 ◆◆	7.1.1 Intangible asset intensity, top 15, %	42.4	59 ○◇
3.2.3 Gross capital formation, % GDP	23.6	69 ○	7.1.2 Trademarks by origin/bn PPP\$ GDP	23.7	87 ○◇
3.3 Ecological sustainability	37.6	37	7.1.3 Global brand value, top 5,000, % GDP	13.5	11
3.3.1 GDP/unit of energy use	16.3	20	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.1	66 ○◇
3.3.2 Environmental performance*	54.2	37	7.2 Creative goods and services	47.2	6 ◆
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.2	40	7.2.1 Cultural and creative services exports, % total trade	4.9	1 ◆◆
			7.2.2 National feature films/mn pop. 15-69	0.8	62 ○◇
			7.2.3 Entertainment and media market/th pop. 15-69	42.1	20
			7.2.4 Creative goods exports, % total trade	3.6	15
Market sophistication	67.4	6	7.3 Online creativity	56.9	16
4.1 Credit	49.4	[29]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	29.8	23
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	12.3	39 ○
4.1.2 Domestic credit to private sector, % GDP	130.6	17	7.3.3 GitHub commits/mn pop. 15-69	100.0	1 ◆◆
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	85.5	4 ◆
4.2 Investment	89.8	1 ◆◆			
4.2.1 Market capitalization, % GDP	185.7	6 ◆			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	1.9	3 ◆◆			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.9	1 ◆◆			
4.2.4 VC received, value, % GDP	0.0	1 ◆◆			
4.3 Trade, diversification and market scale	63.0	45			
4.3.1 Applied tariff rate, weighted avg., %	0.0	3 ◆◆			
4.3.2 Domestic industry diversification	74.2	88 ○◇			
4.3.3 Domestic market scale, bn PPP\$	701.0	37			

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

Slovakia

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
45	51	High	EUR	5.6	211.1	38,620

	Score/Value	Rank		Score/Value	Rank
 Institutions	49.9	65	 Business sophistication	33.4	47
1.1 Institutional environment	61.1	41	5.1 Knowledge workers	47.5	37
1.1.1 Operational stability for businesses*	70.8	27	5.1.1 Knowledge-intensive employment, %	38.3	34
1.1.2 Government effectiveness*	51.4	45	5.1.2 Firms offering formal training, %	43.3	28
1.2 Regulatory environment	70.6	42	5.1.3 GERD performed by business, % GDP	0.5	38
1.2.1 Regulatory quality*	64.8	33	5.1.4 GERD financed by business, %	43.7	38
1.2.2 Rule of law*	60.4	38	5.1.5 Females employed w/advanced degrees, %	18.8	36
1.2.3 Cost of redundancy dismissal	18.8	82	5.2 Innovation linkages	18.9	82
1.3 Business environment	17.9	124	5.2.1 University-industry R&D collaboration†	28.2	101
1.3.1 Policies for doing business†	28.2	109	5.2.2 State of cluster development†	38.6	74
1.3.2 Entrepreneurship policies and culture†	7.6	81	5.2.3 GERD financed by abroad, % GDP	0.1	30
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	93
			5.2.5 Patent families/bn PPP\$ GDP	0.2	48
 Human capital and research	33.9	53	5.3 Knowledge absorption	33.9	63
2.1 Education	53.5	61	5.3.1 Intellectual property payments, % total trade	0.7	54
2.1.1 Expenditure on education, % GDP	4.3	61	5.3.2 High-tech imports, % total trade	11.4	23
2.1.2 Government funding/pupil, secondary, % GDP/cap	21.7	42	5.3.3 ICT services imports, % total trade	1.2	70
2.1.3 School life expectancy, years	14.6	65	5.3.4 FDI net inflows, % GDP	0.6	109
2.1.4 PISA scales in reading, maths and science	469.4	38	5.3.5 Research talent, % in businesses	27.2	47
2.1.5 Pupil-teacher ratio, secondary	11.1	42			
2.2 Tertiary education	31.7	62	 Knowledge and technology outputs	34.7	31
2.2.1 Tertiary enrolment, % gross	47.6	68	6.1 Knowledge creation	22.1	48
2.2.2 Graduates in science and engineering, %	22.2	60	6.1.1 Patents by origin/bn PPP\$ GDP	1.0	58
2.2.3 Tertiary inbound mobility, %	10.3	25	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	46
2.3 Research and development (R&D)	16.7	47	6.1.3 Utility models by origin/bn PPP\$ GDP	1.3	18
2.3.1 Researchers, FTE/mn pop.	3,220.0	31	6.1.4 Scientific and technical articles/bn PPP\$ GDP	20.4	36
2.3.2 Gross expenditure on R&D, % GDP	0.9	44	6.1.5 Citable documents H-index	17.3	50
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2 Knowledge impact	39.7	30
2.3.4 QS university ranking, top 3*	16.8	58	6.2.1 Labor productivity growth, %	1.1	60
			6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.3	49
			6.2.4 High-tech manufacturing, %	61.4	3
 Infrastructure	53.2	41	6.3 Knowledge diffusion	42.3	28
3.1 Information and communication technologies (ICTs)	71.7	61	6.3.1 Intellectual property receipts, % total trade	0.0	71
3.1.1 ICT access*	87.9	35	6.3.2 Production and export complexity	82.5	13
3.1.2 ICT use*	83.7	46	6.3.3 High-tech exports, % total trade	7.9	24
3.1.3 Government's online service*	69.7	62	6.3.4 ICT services exports, % total trade	1.8	62
3.1.4 E-participation*	45.3	81	6.3.5 ISO 9001 quality/bn PPP\$ GDP	21.2	9
3.2 General infrastructure	32.0	50			
3.2.1 Electricity output, GWh/mn pop.	5,397.2	44	 Creative outputs	28.6	56
3.2.2 Logistics performance*	54.5	42	7.1 Intangible assets	19.2	87
3.2.3 Gross capital formation, % GDP	20.5	96	7.1.1 Intangible asset intensity, top 15, %	-175.0	79
3.3 Ecological sustainability	55.8	11	7.1.2 Trademarks by origin/bn PPP\$ GDP	61.7	36
3.3.1 GDP/unit of energy use	10.1	64	7.1.3 Global brand value, top 5,000, % GDP	0.2	72
3.3.2 Environmental performance*	69.7	18	7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.5	39
3.3.3 ISO 14001 environment/bn PPP\$ GDP	9.5	7	7.2 Creative goods and services	43.2	10
			7.2.1 Cultural and creative services exports, % total trade	0.3	63
			7.2.2 National feature films/mn pop. 15-69	6.5	15
			7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
			7.2.4 Creative goods exports, % total trade	6.9	8
 Market sophistication	33.5	72	7.3 Online creativity	32.6	37
4.1 Credit	38.6	43	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.7	63
4.1.1 Finance for startups and scaleups†	53.3	42	7.3.2 Country-code TLDs/th pop. 15-69	32.6	23
4.1.2 Domestic credit to private sector, % GDP	66.2	56	7.3.3 GitHub commits/mn pop. 15-69	22.4	40
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	71.9	44
4.2 Investment	2.7	95			
4.2.1 Market capitalization, % GDP	5.6	74			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	58			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	82			
4.2.4 VC received, value, % GDP	0.0	83			
4.3 Trade, diversification and market scale	59.2	60			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	82.8	69			
4.3.3 Domestic market scale, bn PPP\$	211.1	67			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
38	29	High	EUR	2.1	105.5	49,968


	Score/Value	Rank		Score/Value	Rank
 Institutions	63.3	38	 Business sophistication	47.6	26
1.1 Institutional environment	69.4	26	5.1 Knowledge workers	60.4	20
1.1.1 Operational stability for businesses*	69.4	29	5.1.1 Knowledge-intensive employment, %	46.7	18
1.1.2 Government effectiveness*	69.3	26	5.1.2 Firms offering formal training, %	44.0	26
1.2 Regulatory environment	80.8	26	5.1.3 GERD performed by business, % GDP	1.6	15
1.2.1 Regulatory quality*	63.8	38	5.1.4 GERD financed by business, %	49.5	31
1.2.2 Rule of law*	69.9	27	5.1.5 Females employed w/advanced degrees, %	25.7	17
1.2.3 Cost of redundancy dismissal	10.7	35	5.2 Innovation linkages	42.4	28
1.3 Business environment	39.8	86 ○	5.2.1 University-industry R&D collaboration†	50.2	51
1.3.1 Policies for doing business†	46.3	67	5.2.2 State of cluster development†	40.3	70
1.3.2 Entrepreneurship policies and culture†	33.3	54 ○	5.2.3 GERD financed by abroad, % GDP	0.5	4 ●◆
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	49
			5.2.5 Patent families/bn PPP\$ GDP	1.2	26
 Human capital and research	47.6	25	5.3 Knowledge absorption	40.0	44
2.1 Education	61.2	29	5.3.1 Intellectual property payments, % total trade	0.6	63
2.1.1 Expenditure on education, % GDP	4.9	43 ○	5.3.2 High-tech imports, % total trade	6.5	98 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap	23.2	32	5.3.3 ICT services imports, % total trade	1.6	55
2.1.3 School life expectancy, years	17.7	15	5.3.4 FDI net inflows, % GDP	2.8	55
2.1.4 PISA scales in reading, maths and science	503.7	11	5.3.5 Research talent, % in businesses	59.9	16
2.1.5 Pupil-teacher ratio, secondary	14.1	72 ◇	 Knowledge and technology outputs	37.7	27
2.2 Tertiary education	43.0	26	6.1 Knowledge creation	42.3	22
2.2.1 Tertiary enrolment, % gross	79.9	24	6.1.1 Patents by origin/bn PPP\$ GDP	4.4	19 ○
2.2.2 Graduates in science and engineering, %	28.6	25	6.1.2 PCT patents by origin/bn PPP\$ GDP	1.1	25
2.2.3 Tertiary inbound mobility, %	7.8	33	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	38.6	28	6.1.4 Scientific and technical articles/bn PPP\$ GDP	41.7	6 ●◆
2.3.1 Researchers, FTE/mn pop.	5,252.6	16	6.1.5 Citable documents H-index	19.5	45
2.3.2 Gross expenditure on R&D, % GDP	2.1	18	6.2 Knowledge impact	29.6	58
2.3.3 Global corporate R&D investors, top 3, mn USD	50.9	31	6.2.1 Labor productivity growth, %	1.6	41
2.3.4 QS university ranking, top 3*	10.8	63	6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
			6.2.3 Software spending, % GDP	0.1	95 ○◇
 Infrastructure	58.6	20	6.2.4 High-tech manufacturing, %	42.0	25
3.1 Information and communication technologies (ICTs)	84.9	22	6.3 Knowledge diffusion	41.4	32
3.1.1 ICT access*	93.9	11 ●	6.3.1 Intellectual property receipts, % total trade	0.2	44
3.1.2 ICT use*	85.9	35	6.3.2 Production and export complexity	84.8	11 ●
3.1.3 Government's online service*	85.3	22	6.3.3 High-tech exports, % total trade	5.0	38
3.1.4 E-participation*	74.4	25	6.3.4 ICT services exports, % total trade	1.8	63
3.2 General infrastructure	38.2	35	6.3.5 ISO 9001 quality/bn PPP\$ GDP	21.1	10 ●◆
3.2.1 Electricity output, GWh/mn pop.	7,400.4	25	 Creative outputs	30.6	48
3.2.2 Logistics performance*	54.5	42	7.1 Intangible assets	20.8	83 ○◇
3.2.3 Gross capital formation, % GDP	25.6	48	7.1.1 Intangible asset intensity, top 15, %	-164.6	79 ○◇
3.3 Ecological sustainability	52.8	16	7.1.2 Trademarks by origin/bn PPP\$ GDP	68.1	27
3.3.1 GDP/unit of energy use	12.2	44	7.1.3 Global brand value, top 5,000, % GDP	0.5	64
3.3.2 Environmental performance*	82.0	7 ●◆	7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.7	37
3.3.3 ISO 14001 environment/bn PPP\$ GDP	6.0	15 ●	7.2 Creative goods and services	38.3	14 ●
			7.2.1 Cultural and creative services exports, % total trade	1.0	27
 Market sophistication	34.5	68	7.2.2 National feature films/mn pop. 15-69	11.3	5 ●◆
4.1 Credit	35.1	52	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.1 Finance for startups and scaleups†	55.3	38	7.2.4 Creative goods exports, % total trade	1.8	28
4.1.2 Domestic credit to private sector, % GDP	43.3	80 ○◇	7.3 Online creativity	42.3	29
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	23.4	27
4.2 Investment	4.8	79 ○◇	7.3.2 Country-code TLDs/th pop. 15-69	29.7	24
4.2.1 Market capitalization, % GDP	14.6	65 ○	7.3.3 GitHub commits/mn pop. 15-69	37.0	27
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	70 ○	7.3.4 Mobile app creation/bn PPP\$ GDP	79.1	11 ●
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	53			
4.2.4 VC received, value, % GDP	0.0	72 ○◇			
4.3 Trade, diversification and market scale	63.6	38			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	98.2	9 ●			
4.3.3 Domestic market scale, bn PPP\$	105.5	87 ○			

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South Africa

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
57	71	Upper middle	SSA	59.9	949.8	15,556

	Score/Value	Rank		Score/Value	Rank
 Institutions	43.7	88	 Business sophistication	29.0	61
1.1 Institutional environment	37.6	84	5.1 Knowledge workers	20.4	97 ◇
1.1.1 Operational stability for businesses*	38.9	96 ○	5.1.1 Knowledge-intensive employment, %	22.3	67
1.1.2 Government effectiveness*	36.3	72	5.1.2 Firms offering formal training, %	7.9	95 ○ ◇
1.2 Regulatory environment	69.6	45	5.1.3 GERD performed by business, % GDP	⊙	0.2 52
1.2.1 Regulatory quality*	40.2	75	5.1.4 GERD financed by business, %	⊙	27.1 61
1.2.2 Rule of law*	43.5	58	5.1.5 Females employed w/advanced degrees, %	10.0	75
1.2.3 Cost of redundancy dismissal	9.3	25 ● ◆	5.2 Innovation linkages	28.1	45
1.3 Business environment	24.1	113 ○	5.2.1 University-industry R&D collaboration†	58.7	36 ◆
1.3.1 Policies for doing business†	35.3	100 ○	5.2.2 State of cluster development†	48.0	48
1.3.2 Entrepreneurship policies and culture†	12.8	77 ○ ◇	5.2.3 GERD financed by abroad, % GDP	⊙	0.1 39
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	31 ◆
			5.2.5 Patent families/bn PPP\$ GDP	0.2	42
 Human capital and research	25.8	84	5.3 Knowledge absorption	38.6	49
2.1 Education	49.9	69	5.3.1 Intellectual property payments, % total trade	1.3	27 ●
2.1.1 Expenditure on education, % GDP	6.6	11 ● ◆	5.3.2 High-tech imports, % total trade	9.2	49
2.1.2 Government funding/pupil, secondary, % GDP/cap	25.1	20 ●	5.3.3 ICT services imports, % total trade	2.7	22 ● ◆
2.1.3 School life expectancy, years	13.4	79	5.3.4 FDI net inflows, % GDP	4.0	31
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	⊙	11.4 59
2.1.5 Pupil-teacher ratio, secondary	27.2	115 ○ ◇	 Knowledge and technology outputs	25.0	56
2.2 Tertiary education	15.3	102 ○ ◇	6.1 Knowledge creation	23.5	45
2.2.1 Tertiary enrolment, % gross	24.2	95 ○	6.1.1 Patents by origin/bn PPP\$ GDP	2.1	34
2.2.2 Graduates in science and engineering, %	17.4	91 ○	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	40
2.2.3 Tertiary inbound mobility, %	3.0	65	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	12.2	53	6.1.4 Scientific and technical articles/bn PPP\$ GDP	15.8	46
2.3.1 Researchers, FTE/mn pop.	⊙	494.5 71	6.1.5 Citable documents H-index	31.8	31 ◆
2.3.2 Gross expenditure on R&D, % GDP	⊙	0.7 53	6.2 Knowledge impact	31.9	49
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○ ◇	6.2.1 Labor productivity growth, %	1.3	55
2.3.4 QS university ranking, top 3*	31.8	41	6.2.2 Unicorn valuation, % GDP	0.6	37
			6.2.3 Software spending, % GDP	0.3	28 ● ◆
 Infrastructure	39.3	68	6.2.4 High-tech manufacturing, %	⊙	23.4 56
3.1 Information and communication technologies (ICTs)	68.8	70	6.3 Knowledge diffusion	19.8	75
3.1.1 ICT access*	82.3	67	6.3.1 Intellectual property receipts, % total trade	0.1	49
3.1.2 ICT use*	62.6	88	6.3.2 Production and export complexity	49.4	69
3.1.3 Government's online service*	72.2	55	6.3.3 High-tech exports, % total trade	2.1	59
3.1.4 E-participation*	58.1	61	6.3.4 ICT services exports, % total trade	0.7	95
3.2 General infrastructure	32.1	49	6.3.5 ISO 9001 quality/bn PPP\$ GDP	4.4	59
3.2.1 Electricity output, GWh/mn pop.	3,987.7	55	 Creative outputs	25.3	63
3.2.2 Logistics performance*	72.7	18 ● ◆	7.1 Intangible assets	37.4	51
3.2.3 Gross capital formation, % GDP	13.8	125 ○ ◇	7.1.1 Intangible asset intensity, top 15, %	58.4	40
3.3 Ecological sustainability	16.9	100 ○ ◇	7.1.2 Trademarks by origin/bn PPP\$ GDP	29.7	78
3.3.1 GDP/unit of energy use	5.9	108 ○ ◇	7.1.3 Global brand value, top 5,000, % GDP	8.4	22 ● ◆
3.3.2 Environmental performance*	31.0	86	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.8	75
3.3.3 ISO 14001 environment/bn PPP\$ GDP	1.2	60	7.2 Creative goods and services	6.7	77
			7.2.1 Cultural and creative services exports, % total trade	0.3	66
 Market sophistication	40.4	45	7.2.2 National feature films/mn pop. 15-69	0.8	65 ○
4.1 Credit	30.9	64	7.2.3 Entertainment and media market/th pop. 15-69	8.2	37
4.1.1 Finance for startups and scaleups†	36.8	60	7.2.4 Creative goods exports, % total trade	0.7	55
4.1.2 Domestic credit to private sector, % GDP	111.2	22 ● ◆	7.3 Online creativity	19.7	67
4.1.3 Loans from microfinance institutions, % GDP	1.2	24	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.4	65
4.2 Investment	32.6	22 ● ◆	7.3.2 Country-code TLDs/th pop. 15-69	10.0	41
4.2.1 Market capitalization, % GDP	265.8	1 ● ◆	7.3.3 GitHub commits/mn pop. 15-69	4.5	73
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	40	7.3.4 Mobile app creation/bn PPP\$ GDP	61.0	78
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	41			
4.2.4 VC received, value, % GDP	0.0	55			
4.3 Trade, diversification and market scale	57.7	68			
4.3.1 Applied tariff rate, weighted avg., %	4.4	88			
4.3.2 Domestic industry diversification	⊙	81.2 70			
4.3.3 Domestic market scale, bn PPP\$	949.8	32			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
26	28	High	EUR	47.6	2,216.0	46,551

	Score/Value	Rank		Score/Value	Rank
 Institutions	59.2	46	 Business sophistication	42.8	32
1.1 Institutional environment	62.3	38	5.1 Knowledge workers	56.6	23
1.1.1 Operational stability for businesses*	61.8	41	5.1.1 Knowledge-intensive employment, %	35.7	39
1.1.2 Government effectiveness*	62.9	33	5.1.2 Firms offering formal training, %	55.2	13 ●
1.2 Regulatory environment	72.8	38	5.1.3 GERD performed by business, % GDP	0.8	30
1.2.1 Regulatory quality*	63.1	40	5.1.4 GERD financed by business, %	49.2	33
1.2.2 Rule of law*	65.4	33	5.1.5 Females employed w/advanced degrees, %	24.9	20
1.2.3 Cost of redundancy dismissal	17.4	75 ○	5.2 Innovation linkages	29.4	41
1.3 Business environment	42.4	77 ○	5.2.1 University-industry R&D collaboration†	42.0	70 ○
1.3.1 Policies for doing business†	38.1	91 ○◇	5.2.2 State of cluster development†	64.1	32
1.3.2 Entrepreneurship policies and culture†	46.6	39	5.2.3 GERD financed by abroad, % GDP	0.1	34
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	35
			5.2.5 Patent families/bn PPP\$ GDP	0.5	31
 Human capital and research	45.6	27	5.3 Knowledge absorption	42.3	38
2.1 Education	58.0	47	5.3.1 Intellectual property payments, % total trade	1.3	26
2.1.1 Expenditure on education, % GDP	4.2	63 ○	5.3.2 High-tech imports, % total trade	8.5	57
2.1.2 Government funding/pupil, secondary, % GDP/cap	19.1	58 ○	5.3.3 ICT services imports, % total trade	2.2	31
2.1.3 School life expectancy, years	18.1	14 ●	5.3.4 FDI net inflows, % GDP	2.6	61
2.1.4 PISA scales in reading, maths and science	482.3	29	5.3.5 Research talent, % in businesses	39.2	35
2.1.5 Pupil-teacher ratio, secondary	11.2	44	 Knowledge and technology outputs	39.4	24
2.2 Tertiary education	35.6	46	6.1 Knowledge creation	38.6	25
2.2.1 Tertiary enrolment, % gross	96.0	6 ●◆	6.1.1 Patents by origin/bn PPP\$ GDP	1.6	42
2.2.2 Graduates in science and engineering, %	20.8	65 ○	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.7	28
2.2.3 Tertiary inbound mobility, %	3.8	57 ○	6.1.3 Utility models by origin/bn PPP\$ GDP	1.5	13 ◆
2.3 Research and development (R&D)	43.3	24	6.1.4 Scientific and technical articles/bn PPP\$ GDP	28.1	25
2.3.1 Researchers, FTE/mn pop.	3,256.3	30	6.1.5 Citable documents H-index	61.8	12 ●
2.3.2 Gross expenditure on R&D, % GDP	1.4	30	6.2 Knowledge impact	39.3	32
2.3.3 Global corporate R&D investors, top 3, mn USD	68.8	15 ●	6.2.1 Labor productivity growth, %	-0.5	107 ○◇
2.3.4 QS university ranking, top 3*	45.1	25	6.2.2 Unicorn valuation, % GDP	0.5	39
			6.2.3 Software spending, % GDP	0.7	12 ●◆
			6.2.4 High-tech manufacturing, %	37.1	31
 Infrastructure	59.7	16 ●	6.3 Knowledge diffusion	40.3	34
3.1 Information and communication technologies (ICTs)	84.0	24	6.3.1 Intellectual property receipts, % total trade	0.8	24
3.1.1 ICT access*	87.6	38	6.3.2 Production and export complexity	68.6	33
3.1.2 ICT use*	90.1	21	6.3.3 High-tech exports, % total trade	5.1	37
3.1.3 Government's online service*	84.1	25	6.3.4 ICT services exports, % total trade	3.0	43
3.1.4 E-participation*	74.4	25	6.3.5 ISO 9001 quality/bn PPP\$ GDP	15.9	18
3.2 General infrastructure	42.9	29	 Creative outputs	43.0	29
3.2.1 Electricity output, GWh/mn pop.	5,724.2	35	7.1 Intangible assets	52.4	20
3.2.2 Logistics performance*	81.8	13	7.1.1 Intangible asset intensity, top 15, %	64.5	29
3.2.3 Gross capital formation, % GDP	22.7	74 ○	7.1.2 Trademarks by origin/bn PPP\$ GDP	49.4	47
3.3 Ecological sustainability	52.2	19	7.1.3 Global brand value, top 5,000, % GDP	8.2	24
3.3.1 GDP/unit of energy use	14.6	28	7.1.4 Industrial designs by origin/bn PPP\$ GDP	7.7	14 ●◆
3.3.2 Environmental performance*	63.9	27	7.2 Creative goods and services	28.0	34
3.3.3 ISO 14001 environment/bn PPP\$ GDP	7.2	11 ●◆	7.2.1 Cultural and creative services exports, % total trade	1.0	28
			7.2.2 National feature films/mn pop. 15-69	8.1	8 ●
			7.2.3 Entertainment and media market/th pop. 15-69	29.8	24
			7.2.4 Creative goods exports, % total trade	0.8	51
 Market sophistication	46.0	33	7.3 Online creativity	39.4	30
4.1 Credit	45.5	34	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	32.2	22
4.1.1 Finance for startups and scaleups†	50.1	45 ○	7.3.2 Country-code TLDs/th pop. 15-69	17.4	31
4.1.2 Domestic credit to private sector, % GDP	108.9	23	7.3.3 GitHub commits/mn pop. 15-69	33.9	32
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	73.9	33
4.2 Investment	15.3	45			
4.2.1 Market capitalization, % GDP	55.8	32			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	41			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	39			
4.2.4 VC received, value, % GDP	0.0	37			
4.3 Trade, diversification and market scale	77.1	14 ●			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	93.3	38			
4.3.3 Domestic market scale, bn PPP\$	2,216.0	16 ●			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ◎ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Sri Lanka

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
79	103	Lower middle	CSA	21.8	318.7	14,230	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		34.9	92	5.1 Knowledge workers		23.4	86
1.1.1	Operational stability for businesses*	35.4	110	5.1.1	Knowledge-intensive employment, %	21.7	70
1.1.2	Government effectiveness*	34.5	75	5.1.2	Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment		18.3	131 ○◇	5.1.3	GERD performed by business, % GDP	0.1	71
1.2.1	Regulatory quality*	32.5	92	5.1.4	GERD financed by business, %	40.3	42 ●
1.2.2	Rule of law*	40.8	61 ◆	5.1.5	Females employed w/advanced degrees, %	3.7	99
1.2.3	Cost of redundancy dismissal	58.5	130 ○◇	5.2 Innovation linkages		23.3	61
1.3 Business environment		39.2	[89]	5.2.1	University-industry R&D collaboration†	52.9	49 ●
1.3.1	Policies for doing business†	39.2	86	5.2.2	State of cluster development†	49.5	46 ●
1.3.2	Entrepreneurship policies and culture†	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	0.0	75
Human capital and research		17.3	110	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	40 ●◆
2.1 Education		32.2	116	5.2.5	Patent families/bn PPP\$ GDP	0.0	77
2.1.1	Expenditure on education, % GDP	2.0	120 ○◇	5.3 Knowledge absorption		34.0	62
2.1.2	Government funding/pupil, secondary, % GDP/cap	6.3	97 ○◇	5.3.1	Intellectual property payments, % total trade	n/a	n/a
2.1.3	School life expectancy, years	14.1	71	5.3.2	High-tech imports, % total trade	11.3	24 ●
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	0.9	91
2.1.5	Pupil-teacher ratio, secondary	17.7	89	5.3.4	FDI net inflows, % GDP	0.7	107
2.2 Tertiary education		18.9	93	5.3.5	Research talent, % in businesses	20.0	53
2.2.1	Tertiary enrolment, % gross	22.2	97	Knowledge and technology outputs		21.5	71
2.2.2	Graduates in science and engineering, %	24.1	48	6.1 Knowledge creation		8.7	88
2.2.3	Tertiary inbound mobility, %	0.4	105 ○	6.1.1	Patents by origin/bn PPP\$ GDP	0.8	66
2.3 Research and development (R&D)		0.7	105	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	71
2.3.1	Researchers, FTE/mn pop.	105.6	89	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP	0.1	101	6.1.4	Scientific and technical articles/bn PPP\$ GDP	4.7	108
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.1.5	Citable documents H-index	11.2	70
2.3.4	QS university ranking, top 3*	0.0	71 ○◇	6.2 Knowledge impact		24.7	75
Infrastructure		35.5	82 ◆	6.2.1	Labor productivity growth, %	-0.6	112
3.1 Information and communication technologies (ICTs)		55.7	89	6.2.2	Unicorn valuation, % GDP	0.0	48 ○◇
3.1.1	ICT access*	71.4	88	6.2.3	Software spending, % GDP	0.5	20 ●◆
3.1.2	ICT use*	65.7	83	6.2.4	High-tech manufacturing, %	7.9	95
3.1.3	Government's online service*	51.9	89	6.3 Knowledge diffusion		31.1	53 ●◆
3.1.4	E-participation*	33.7	97	6.3.1	Intellectual property receipts, % total trade	n/a	n/a
3.2 General infrastructure		18.8	96	6.3.2	Production and export complexity	48.5	71
3.2.1	Electricity output, GWh/mn pop.	710.8	104	6.3.3	High-tech exports, % total trade	0.7	78
3.2.2	Logistics performance*	31.8	71	6.3.4	ICT services exports, % total trade	6.6	14 ●◆
3.2.3	Gross capital formation, % GDP	24.7	58	6.3.5	ISO 9001 quality/bn PPP\$ GDP	4.1	62 ◆
3.3 Ecological sustainability		32.1	46 ●◆	Creative outputs		18.6	83
3.3.1	GDP/unit of energy use	23.6	6 ●◆	7.1 Intangible assets		24.4	79
3.3.2	Environmental performance*	26.8	94	7.1.1	Intangible asset intensity, top 15, %	46.6	54
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.9	66	7.1.2	Trademarks by origin/bn PPP\$ GDP	19.4	94
Market sophistication		22.4	106	7.1.3	Global brand value, top 5,000, % GDP	0.0	74 ○◇
4.1 Credit		16.4	[98]	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.3	93
4.1.1	Finance for startups and scaleups†	n/a	n/a	7.2 Creative goods and services		7.8	[76]
4.1.2	Domestic credit to private sector, % GDP	47.0	76	7.2.1	Cultural and creative services exports, % total trade	n/a	n/a
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
4.2 Investment		2.0	102	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	17.6	63	7.2.4	Creative goods exports, % total trade	0.7	56 ●
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	92 ○◇	7.3 Online creativity		17.8	79
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	94	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.8	102
4.2.4	VC received, value, % GDP	0.0	97 ○	7.3.2	Country-code TLDs/th pop. 15-69	1.1	89
4.3 Trade, diversification and market scale		48.8	89	7.3.3	GitHub commits/mn pop. 15-69	12.1	51 ●◆
4.3.1	Applied tariff rate, weighted avg., %	6.3	100	7.3.4	Mobile app creation/bn PPP\$ GDP	57.1	89
4.3.2	Domestic industry diversification	80.4	74				
4.3.3	Domestic market scale, bn PPP\$	318.7	58				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
3	4	High	EUR	10.5	684.5	63,877	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
		74.3	18			75.8	1
1.1 Institutional environment		80.1	10	5.1 Knowledge workers		77.7	1
1.1.1 Operational stability for businesses*		77.8	10	5.1.1 Knowledge-intensive employment, %		57.1	3
1.1.2 Government effectiveness*		82.4	8	5.1.2 Firms offering formal training, %		61.9	7
1.2 Regulatory environment		88.1	14	5.1.3 GERD performed by business, % GDP		2.4	6
1.2.1 Regulatory quality*		87.6	8	5.1.4 GERD financed by business, %	⊙	62.4	13
1.2.2 Rule of law*		90.5	11	5.1.5 Females employed w/advanced degrees, %		28.7	5
1.2.3 Cost of redundancy dismissal		14.4	56	5.2 Innovation linkages		77.0	2
1.3 Business environment		54.8	48	5.2.1 University-industry R&D collaboration†		82.1	11
1.3.1 Policies for doing business†		66.5	29	5.2.2 State of cluster development†		78.5	13
1.3.2 Entrepreneurship policies and culture†		43.1	43	5.2.3 GERD financed by abroad, % GDP	⊙	0.3	11
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.2	4
				5.2.5 Patent families/bn PPP\$ GDP		7.0	1
				5.3 Knowledge absorption		72.7	2
				5.3.1 Intellectual property payments, % total trade		3.5	6
				5.3.2 High-tech imports, % total trade		8.8	54
				5.3.3 ICT services imports, % total trade		4.5	6
				5.3.4 FDI net inflows, % GDP		4.9	21
				5.3.5 Research talent, % in businesses		77.6	4
Human capital and research		Score/Value	Rank	Knowledge and technology outputs		Score/Value	Rank
		62.7	3			63.4	3
2.1 Education		71.8	4	6.1 Knowledge creation		74.3	2
2.1.1 Expenditure on education, % GDP	⊙	7.6	5	6.1.1 Patents by origin/bn PPP\$ GDP		10.8	8
2.1.2 Government funding/pupil, secondary, % GDP/cap		23.8	27	6.1.2 PCT patents by origin/bn PPP\$ GDP		6.5	1
2.1.3 School life expectancy, years		19.7	4	6.1.3 Utility models by origin/bn PPP\$ GDP		n/a	n/a
2.1.4 PISA scales in reading, maths and science		502.5	14	6.1.4 Scientific and technical articles/bn PPP\$ GDP		41.3	7
2.1.5 Pupil-teacher ratio, secondary		12.5	56	6.1.5 Citable documents H-index		59.3	13
2.2 Tertiary education		41.8	28	6.2 Knowledge impact		57.1	6
2.2.1 Tertiary enrolment, % gross		84.5	17	6.2.1 Labor productivity growth, %		1.0	63
2.2.2 Graduates in science and engineering, %		27.0	33	6.2.2 Unicorn valuation, % GDP		3.5	13
2.2.3 Tertiary inbound mobility, %		7.0	35	6.2.3 Software spending, % GDP		0.6	19
2.3 Research and development (R&D)		74.4	3	6.2.4 High-tech manufacturing, %		47.4	14
2.3.1 Researchers, FTE/mn pop.		9,640.3	1	6.3 Knowledge diffusion		58.9	8
2.3.2 Gross expenditure on R&D, % GDP		3.3	4	6.3.1 Intellectual property receipts, % total trade		3.4	7
2.3.3 Global corporate R&D investors, top 3, mn USD		77.7	10	6.3.2 Production and export complexity		85.9	8
2.3.4 QS university ranking, top 3*		59.7	15	6.3.3 High-tech exports, % total trade		6.8	27
				6.3.4 ICT services exports, % total trade		6.2	16
				6.3.5 ISO 9001 quality/bn PPP\$ GDP		5.1	53
Infrastructure		Score/Value	Rank	Creative outputs		Score/Value	Rank
		67.6	2			57.3	8
3.1 Information and communication technologies (ICTs)		86.7	16	7.1 Intangible assets		56.9	12
3.1.1 ICT access*		89.2	27	7.1.1 Intangible asset intensity, top 15, %		79.4	7
3.1.2 ICT use*		96.5	6	7.1.2 Trademarks by origin/bn PPP\$ GDP		44.7	52
3.1.3 Government's online service*		89.0	13	7.1.3 Global brand value, top 5,000, % GDP		17.8	5
3.1.4 E-participation*		72.1	32	7.1.4 Industrial designs by origin/bn PPP\$ GDP		3.3	30
3.2 General infrastructure		64.8	3	7.2 Creative goods and services		48.6	4
3.2.1 Electricity output, GWh/mn pop.		16,179.7	7	7.2.1 Cultural and creative services exports, % total trade		3.3	4
3.2.2 Logistics performance*		86.4	7	7.2.2 National feature films/mn pop. 15-69		7.0	12
3.2.3 Gross capital formation, % GDP		27.5	34	7.2.3 Entertainment and media market/th pop. 15-69		61.5	10
3.3 Ecological sustainability		51.4	21	7.2.4 Creative goods exports, % total trade		1.8	29
3.3.1 GDP/unit of energy use		11.4	54	7.3 Online creativity		66.7	11
3.3.2 Environmental performance*		91.2	5	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		47.6	17
3.3.3 ISO 14001 environment/bn PPP\$ GDP		4.6	22	7.3.2 Country-code TLDs/th pop. 15-69		61.8	14
				7.3.3 GitHub commits/mn pop. 15-69		77.2	8
				7.3.4 Mobile app creation/bn PPP\$ GDP		80.3	10
Market sophistication		Score/Value	Rank				
		59.9	10				
4.1 Credit		62.2	16				
4.1.1 Finance for startups and scaleups†		72.1	15				
4.1.2 Domestic credit to private sector, % GDP		137.8	15				
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a				
4.2 Investment		49.6	12				
4.2.1 Market capitalization, % GDP		n/a	n/a				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		0.4	15				
4.2.3 VC recipients, deals/bn PPP\$ GDP		0.2	11				
4.2.4 VC received, value, % GDP		0.0	7				
4.3 Trade, diversification and market scale		67.9	22				
4.3.1 Applied tariff rate, weighted avg., %		1.5	20				
4.3.2 Domestic industry diversification		98.5	8				
4.3.3 Domestic market scale, bn PPP\$		684.5	38				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Switzerland

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
1	3	High	EUR	8.7	737.8	84,469

	Score/ Value	Rank		Score/ Value	Rank
 Institutions	87.3	2 ●◆	 Business sophistication	65.5	5
1.1 Institutional environment	85.3	4	5.1 Knowledge workers	67.1	9
1.1.1 Operational stability for businesses*	77.8	10	5.1.1 Knowledge-intensive employment, %	50.9	10
1.1.2 Government effectiveness*	92.8	2 ●◆	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	92.8	5	5.1.3 GERD performed by business, % GDP	⊙	2.2 8
1.2.1 Regulatory quality*	87.1	9	5.1.4 GERD financed by business, %	⊙	64.7 7
1.2.2 Rule of law*	92.7	6	5.1.5 Females employed w/advanced degrees, %	20.7	31
1.2.3 Cost of redundancy dismissal	10.1	31	5.2 Innovation linkages	76.8	3 ●◆
1.3 Business environment	83.8	3 ●◆	5.2.1 University–industry R&D collaboration†	99.4	3 ●◆
1.3.1 Policies for doing business†	100.0	1 ●◆	5.2.2 State of cluster development†	91.3	3 ●◆
1.3.2 Entrepreneurship policies and culture†	67.7	15	5.2.3 GERD financed by abroad, % GDP	⊙	0.2 21
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.2	9
			5.2.5 Patent families/bn PPP\$ GDP	8.6	1 ●◆
 Human capital and research	59.8	6	5.3 Knowledge absorption	52.6	13
2.1 Education	61.9	25	5.3.1 Intellectual property payments, % total trade	5.5	1 ●◆
2.1.1 Expenditure on education, % GDP	⊙	5.1 38	5.3.2 High-tech imports, % total trade	5.2	112 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊙	22.9 34 ○	5.3.3 ICT services imports, % total trade	3.3	13
2.1.3 School life expectancy, years	16.6	23	5.3.4 FDI net inflows, % GDP	-10.8	131 ○◇
2.1.4 PISA scales in reading, maths and science	498.2	21	5.3.5 Research talent, % in businesses	⊙	48.3 27
2.1.5 Pupil–teacher ratio, secondary	9.7	27	 Knowledge and technology outputs	65.3	1 ●◆
2.2 Tertiary education	45.6	21	6.1 Knowledge creation	78.7	1 ●◆
2.2.1 Tertiary enrolment, % gross	65.3	47 ○	6.1.1 Patents by origin/bn PPP\$ GDP	14.4	4
2.2.2 Graduates in science and engineering, %	25.2	44 ○	6.1.2 PCT patents by origin/bn PPP\$ GDP	7.3	1 ●◆
2.2.3 Tertiary inbound mobility, %	18.1	9	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	71.8	4	6.1.4 Scientific and technical articles/bn PPP\$ GDP	43.3	3 ●◆
2.3.1 Researchers, FTE/mn pop.	⊙	5,562.4 13	6.1.5 Citable documents H-index	66.2	10
2.3.2 Gross expenditure on R&D, % GDP	⊙	3.2 7	6.2 Knowledge impact	56.9	7
2.3.3 Global corporate R&D investors, top 3, mn USD	89.0	4	6.2.1 Labor productivity growth, %	0.9	68 ○
2.3.4 QS university ranking, top 3*	83.2	5	6.2.2 Unicorn valuation, % GDP	1.5	28
			6.2.3 Software spending, % GDP	0.7	9
 Infrastructure	64.3	4	6.2.4 High-tech manufacturing, %	⊙	67.3 2 ●◆
3.1 Information and communication technologies (ICTs)	83.7	25	6.3 Knowledge diffusion	60.4	4
3.1.1 ICT access*	90.9	21	6.3.1 Intellectual property receipts, % total trade	6.0	1 ●◆
3.1.2 ICT use*	100.0	1 ●◆	6.3.2 Production and export complexity	97.4	2 ●◆
3.1.3 Government's online service*	74.3	49 ○◇	6.3.3 High-tech exports, % total trade	7.4	26
3.1.4 E-participation*	69.8	41	6.3.4 ICT services exports, % total trade	2.6	49 ○
3.2 General infrastructure	50.5	16	6.3.5 ISO 9001 quality/bn PPP\$ GDP	11.0	25
3.2.1 Electricity output, GWh/mn pop.	7,196.8	26	 Creative outputs	68.5	1 ●◆
3.2.2 Logistics performance*	90.9	3 ●◆	7.1 Intangible assets	67.5	6 ◆
3.2.3 Gross capital formation, % GDP	26.5	42	7.1.1 Intangible asset intensity, top 15, %	76.2	10
3.3 Ecological sustainability	58.7	7 ◆	7.1.2 Trademarks by origin/bn PPP\$ GDP	68.9	25
3.3.1 GDP/unit of energy use	26.5	4 ◆	7.1.3 Global brand value, top 5,000, % GDP	22.6	2 ●◆
3.3.2 Environmental performance*	79.7	9	7.1.4 Industrial designs by origin/bn PPP\$ GDP	5.0	21
3.3.3 ISO 14001 environment/bn PPP\$ GDP	3.3	29	7.2 Creative goods and services	53.0	2 ●◆
 Market sophistication	64.4	7	7.2.1 Cultural and creative services exports, % total trade	0.7	44 ○
4.1 Credit	70.1	5	7.2.2 National feature films/mn pop. 15–69	11.7	4 ◆
4.1.1 Finance for startups and scaleups†	75.1	12	7.2.3 Entertainment and media market/th pop. 15–69	91.0	2 ●◆
4.1.2 Domestic credit to private sector, % GDP	⊙	170.4 5	7.2.4 Creative goods exports, % total trade	2.8	19
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	86.1	2 ●◆
4.2 Investment	59.5	10	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	68.4	10
4.2.1 Market capitalization, % GDP	241.1	3 ●◆	7.3.2 Country-code TLDs/th pop. 15–69	100.0	1 ●◆
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.7	9	7.3.3 GitHub commits/mn pop. 15–69	100.0	1 ●◆
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.3	8	7.3.4 Mobile app creation/bn PPP\$ GDP	75.9	20
4.2.4 VC received, value, % GDP	0.0	24			
4.3 Trade, diversification and market scale	63.7	36			
4.3.1 Applied tariff rate, weighted avg., %	1.4	18			
4.3.2 Domestic industry diversification	⊙	84.1 66 ○			
4.3.3 Domestic market scale, bn PPP\$	737.8	34			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Tajikistan

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$		
107	109	Lower middle	CSA	10.0	47.2	4,803		
		Score/Value	Rank			Score/Value	Rank	
🏛️ Institutions		41.3	90	📁 Business sophistication		19.7	110	
1.1 Institutional environment	26.9	107	5.1 Knowledge workers	25.2	[76]			
1.1.1 Operational stability for businesses*	33.3	114	5.1.1 Knowledge-intensive employment, %	n/a	n/a			
1.1.2 Government effectiveness*	20.4	102	5.1.2 Firms offering formal training, %	24.3	67			
1.2 Regulatory environment	40.9	119	5.1.3 GERD performed by business, % GDP	n/a	n/a			
1.2.1 Regulatory quality*	12.9	128	5.1.4 GERD financed by business, %	n/a	n/a			
1.2.2 Rule of law*	5.0	129	5.1.5 Females employed w/advanced degrees, %	n/a	n/a			
1.2.3 Cost of redundancy dismissal	21.7	96	5.2 Innovation linkages	10.6	118			
1.3 Business environment	56.1	[45]	5.2.1 University-industry R&D collaboration [†]	⊖	31.0	95		
1.3.1 Policies for doing business [†]	⊖	56.1	5.2.2 State of cluster development [†]	⊖	16.3	119		
1.3.2 Entrepreneurship policies and culture [†]	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	⊖	0.0	96	○◇	
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	⊖	0.0	73	●	
			5.2.5 Patent families/bn PPP\$ GDP	⊖	0.0	95	○◇	
👤 Human capital and research		20.8	99	📄 Knowledge absorption		23.3	113	
2.1 Education	42.4	[90]	5.3.1 Intellectual property payments, % total trade	0.0	116	○◇		
2.1.1 Expenditure on education, % GDP	5.7	21	5.3.2 High-tech imports, % total trade	8.5	58	●		
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	0.4	117			
2.1.3 School life expectancy, years	⊖	11.4	5.3.4 FDI net inflows, % GDP	1.6	83			
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	n/a	n/a			
2.1.5 Pupil-teacher ratio, secondary	n/a	n/a						
2.2 Tertiary education	19.4	92	📡 Knowledge and technology outputs		17.5	85		
2.2.1 Tertiary enrolment, % gross	⊖	31.3	6.1 Knowledge creation	19.4	55	●		
2.2.2 Graduates in science and engineering, %	⊖	22.0	6.1.1 Patents by origin/bn PPP\$ GDP	⊖	0.1	110		
2.2.3 Tertiary inbound mobility, %	⊖	0.8	6.1.2 PCT patents by origin/bn PPP\$ GDP	⊖	0.0	101	○◇	
2.3 Research and development (R&D)	0.5	110	6.1.3 Utility models by origin/bn PPP\$ GDP	⊖	3.6	4		
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.4 Scientific and technical articles/bn PPP\$ GDP	2.2	122			
2.3.2 Gross expenditure on R&D, % GDP	⊖	0.1	6.1.5 Citable documents H-index	1.3	128	○◇		
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	○◇					
2.3.4 QS university ranking, top 3*	0.0	71	○◇	6.2 Knowledge impact	24.9	74	●	
				6.2.1 Labor productivity growth, %	5.3	5	◆	
				6.2.2 Unicorn valuation, % GDP	0.0	48	○◇	
				6.2.3 Software spending, % GDP	0.1	101		
				6.2.4 High-tech manufacturing, %	⊖	2.6	109	○◇
⚙️ Infrastructure		19.5	122	○◇				
3.1 Information and communication technologies (ICTs)	29.6	120	○◇	6.3 Knowledge diffusion	8.2	115		
3.1.1 ICT access*	49.1	110		6.3.1 Intellectual property receipts, % total trade	0.0	103		
3.1.2 ICT use*	12.7	129	○◇	6.3.2 Production and export complexity	39.7	93		
3.1.3 Government's online service*	33.3	117		6.3.3 High-tech exports, % total trade	0.0	129		
3.1.4 E-participation*	23.3	115		6.3.4 ICT services exports, % total trade	0.1	123		
3.2 General infrastructure	11.3	119		6.3.5 ISO 9001 quality/bn PPP\$ GDP	0.1	131	○◇	
3.2.1 Electricity output, GWh/mn pop.	⊖	2,107.4	79					
3.2.2 Logistics performance*	18.2	89						
3.2.3 Gross capital formation, % GDP	14.9	120	○◇					
3.3 Ecological sustainability	17.5	93						
3.3.1 GDP/unit of energy use	9.5	75	●					
3.3.2 Environmental performance*	30.8	87						
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.1	130	○					
🏠 Market sophistication		24.8	94					
4.1 Credit	16.3	99		🎨 Creative outputs		5.3	123	○◇
4.1.1 Finance for startups and scaleups [†]	n/a	n/a		7.1 Intangible assets	2.7	126	○◇	
4.1.2 Domestic credit to private sector, % GDP	13.0	124		7.1.1 Intangible asset intensity, top 15, %	n/a	n/a		
4.1.3 Loans from microfinance institutions, % GDP	2.5	16	●	7.1.2 Trademarks by origin/bn PPP\$ GDP	⊖	13.2	104	
4.2 Investment	6.0	[70]		7.1.3 Global brand value, top 5,000, % GDP	0.0	74	○◇	
4.2.1 Market capitalization, % GDP	n/a	n/a		7.1.4 Industrial designs by origin/bn PPP\$ GDP	⊖	0.0	120	
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a		7.2 Creative goods and services	0.6	[121]		
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	58	●	7.2.1 Cultural and creative services exports, % total trade	0.0	108		
4.2.4 VC received, value, % GDP	0.0	69		7.2.2 National feature films/mn pop. 15-69	n/a	n/a		
4.3 Trade, diversification and market scale	52.0	83		7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a		
4.3.1 Applied tariff rate, weighted avg., %	3.9	82		7.2.4 Creative goods exports, % total trade	0.1	99		
4.3.2 Domestic industry diversification	⊖	80.5	73	7.3 Online creativity	15.3	95		
4.3.3 Domestic market scale, bn PPP\$	47.2	110		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	0.3	106		
				7.3.3 GitHub commits/mn pop. 15-69	0.4	122		
				7.3.4 Mobile app creation/bn PPP\$ GDP	60.3	82		

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Thailand

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
43	44	Upper middle	SEAO	71.7	1,479.6	21,114	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		46.9	62	5.1 Knowledge workers		36.7	56
1.1.1	Operational stability for businesses*	50.0	71	5.1.1	Knowledge-intensive employment, %	13.7	95 ◊
1.1.2	Government effectiveness*	43.7	57	5.1.2	Firms offering formal training, %	18.0	85 ○
1.2 Regulatory environment		44.2	112 ◊	5.1.3	GERD performed by business, % GDP	0.8	31 ◆
1.2.1	Regulatory quality*	44.5	65	5.1.4	GERD financed by business, %	80.8	1 ◆◆
1.2.2	Rule of law*	43.1	59	5.1.5	Females employed w/advanced degrees, %	10.6	72
1.2.3	Cost of redundancy dismissal	36.0	124 ◊	5.2 Innovation linkages		22.2	64
1.3 Business environment		43.1	73	5.2.1	University–industry R&D collaboration†	53.7	46
1.3.1	Policies for doing business†	36.6	97	5.2.2	State of cluster development†	44.7	56
1.3.2	Entrepreneurship policies and culture†	49.6	36	5.2.3	GERD financed by abroad, % GDP	0.0	79 ○
Human capital and research		29.2	74	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	51
2.1 Education		39.6	100	5.2.5	Patent families/bn PPP\$ GDP	0.1	62
2.1.1	Expenditure on education, % GDP	3.0	107 ◊	5.3 Knowledge absorption		48.7	24 ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	18.4	60	5.3.1	Intellectual property payments, % total trade	1.8	16 ◆◆
2.1.3	School life expectancy, years	15.4	45	5.3.2	High-tech imports, % total trade	18.0	10 ◆◆
2.1.4	PISA scales in reading, maths and science	412.4	61	5.3.3	ICT services imports, % total trade	0.4	116 ◊
2.1.5	Pupil–teacher ratio, secondary	22.0	104 ◊	5.3.4	FDI net inflows, % GDP	1.0	98
2.2 Tertiary education		28.3	72	5.3.5	Research talent, % in businesses	60.8	12 ◆◆
2.2.1	Tertiary enrolment, % gross	44.0	73	Knowledge and technology outputs		31.3	42
2.2.2	Graduates in science and engineering, %	27.9	29	6.1 Knowledge creation		24.2	42
2.2.3	Tertiary inbound mobility, %	1.3	84	6.1.1	Patents by origin/bn PPP\$ GDP	0.6	71
2.3 Research and development (R&D)		19.7	45	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	57
2.3.1	Researchers, FTE/mn pop.	2,069.9	40 ◆	6.1.3	Utility models by origin/bn PPP\$ GDP	2.7	6 ◆◆
2.3.2	Gross expenditure on R&D, % GDP	1.3	32 ◆	6.1.4	Scientific and technical articles/bn PPP\$ GDP	9.4	78
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40 ◊	6.1.5	Citable documents H-index	21.1	41
2.3.4	QS university ranking, top 3*	33.5	37	6.2 Knowledge impact		33.9	45
Infrastructure		47.4	49	6.2.1	Labor productivity growth, %	-0.1	99
3.1 Information and communication technologies (ICTs)		81.5	33 ◆	6.2.2	Unicorn valuation, % GDP	0.6	38
3.1.1	ICT access*	88.9	29	6.2.3	Software spending, % GDP	0.3	52
3.1.2	ICT use*	83.7	47 ◆	6.2.4	High-tech manufacturing, %	44.0	20 ◆
3.1.3	Government's online service*	75.3	47	6.3 Knowledge diffusion		35.8	38
3.1.4	E-participation*	77.9	18 ◆◆	6.3.1	Intellectual property receipts, % total trade	0.1	61
3.2 General infrastructure		35.1	41 ◆	6.3.2	Production and export complexity	75.7	25 ◆
3.2.1	Electricity output, GWh/mn pop.	2,671.7	68	6.3.3	High-tech exports, % total trade	16.7	8 ◆◆
3.2.2	Logistics performance*	63.6	33 ◆	6.3.4	ICT services exports, % total trade	0.1	128 ○
3.2.3	Gross capital formation, % GDP	29.1	27	6.3.5	ISO 9001 quality/bn PPP\$ GDP	9.5	30
3.3 Ecological sustainability		25.7	63	Creative outputs		33.1	44 ◆
3.3.1	GDP/unit of energy use	8.8	82	7.1 Intangible assets		42.5	37
3.3.2	Environmental performance*	32.5	80	7.1.1	Intangible asset intensity, top 15, %	66.5	26
3.3.3	ISO 14001 environment/bn PPP\$ GDP	3.3	30	7.1.2	Trademarks by origin/bn PPP\$ GDP	24.9	84
Market sophistication		52.7	22 ◆	7.1.3	Global brand value, top 5,000, % GDP	7.4	30 ◆
4.1 Credit		65.2	9 ◆◆	7.1.4	Industrial designs by origin/bn PPP\$ GDP	3.2	32
4.1.1	Finance for startups and scaleups†	69.3	19 ◆	7.2 Creative goods and services		28.0	33 ◆
4.1.2	Domestic credit to private sector, % GDP	160.4	10 ◆◆	7.2.1	Cultural and creative services exports, % total trade	0.0	96 ○
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.2	National feature films/mn pop. 15–69	0.4	72 ○
4.2 Investment		24.2	29	7.2.3	Entertainment and media market/th pop. 15–69	9.2	35
4.2.1	Market capitalization, % GDP	104.0	14	7.2.4	Creative goods exports, % total trade	8.5	1 ◆◆
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	31	7.3 Online creativity		19.4	69
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.1	19 ◆	7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	6.1	52
4.2.4	VC received, value, % GDP	0.0	45	7.3.2	Country-code TLDs/th pop. 15–69	0.4	102
4.3 Trade, diversification and market scale		68.7	21	7.3.3	GitHub commits/mn pop. 15–69	4.0	77
4.3.1	Applied tariff rate, weighted avg., %	3.5	77	7.3.4	Mobile app creation/bn PPP\$ GDP	67.2	61
4.3.2	Domestic industry diversification	97.2	15 ◆◆				
4.3.3	Domestic market scale, bn PPP\$	1,479.6	23				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◊ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.




Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
105	120	Low	SSA	8.8	22.8	2,619	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
37.5		102		14.4 [131]			
1.1 Institutional environment	31.0	99		5.1 Knowledge workers	20.1	[99]	
1.1.1 Operational stability for businesses*	43.1	85 ●		5.1.1 Knowledge-intensive employment, %	⊖ 14.1	91 ◆	
1.1.2 Government effectiveness*	18.9	110		5.1.2 Firms offering formal training, %	⊖ 33.7	49 ●	
1.2 Regulatory environment	56.4	84 ●		5.1.3 GERD performed by business, % GDP	n/a	n/a	
1.2.1 Regulatory quality*	25.7	109		5.1.4 GERD financed by business, %	n/a	n/a	
1.2.2 Rule of law*	23.3	97		5.1.5 Females employed w/advanced degrees, %	⊖ 0.9	118	
1.2.3 Cost of redundancy dismissal	13.9	52 ●		5.2 Innovation linkages	1.2	[131]	
1.3 Business environment	25.0	[111]		5.2.1 University-industry R&D collaboration†	n/a	n/a	
1.3.1 Policies for doing business†	n/a	n/a		5.2.2 State of cluster development†	n/a	n/a	
1.3.2 Entrepreneurship policies and culture†	25.0	67		5.2.3 GERD financed by abroad, % GDP	⊖ 0.0	68	
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	n/a	n/a	
				5.2.5 Patent families/bn PPP\$ GDP	0.0	95 ○◇	
Human capital and research		Score/Value	Rank	Knowledge absorption		Score/Value	Rank
16.8 [111]				21.8		121	
2.1 Education	41.5	[94]		5.3.1 Intellectual property payments, % total trade	0.0	118 ○◇	
2.1.1 Expenditure on education, % GDP	4.2	66 ●		5.3.2 High-tech imports, % total trade	5.3	110	
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a		5.3.3 ICT services imports, % total trade	0.6	102 ○◇	
2.1.3 School life expectancy, years	⊖ 12.7	87 ◆		5.3.4 FDI net inflows, % GDP	1.8	78 ●	
2.1.4 PISA scales in reading, maths and science	n/a	n/a		5.3.5 Research talent, % in businesses	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	25.9	111					
2.2 Tertiary education	7.5	[116]		Knowledge and technology outputs		12.4	108
2.2.1 Tertiary enrolment, % gross	15.4	105 ◆		6.1 Knowledge creation	3.6	119	
2.2.2 Graduates in science and engineering, %	n/a	n/a		6.1.1 Patents by origin/bn PPP\$ GDP	0.1	111	
2.2.3 Tertiary inbound mobility, %	n/a	n/a		6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	101 ○◇	
2.3 Research and development (R&D)	1.2	98		6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	75 ○◇	
2.3.1 Researchers, FTE/mn pop.	45.2	95		6.1.4 Scientific and technical articles/bn PPP\$ GDP	7.7	87	
2.3.2 Gross expenditure on R&D, % GDP	⊖ 0.3	82		6.1.5 Citable documents H-index	1.5	127 ○◇	
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇		6.2 Knowledge impact	22.5	90	
2.3.4 QS university ranking, top 3*	0.0	71 ○◇		6.2.1 Labor productivity growth, %	1.8	39 ●	
				6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇	
				6.2.3 Software spending, % GDP	0.1	94 ◆	
				6.2.4 High-tech manufacturing, %	n/a	n/a	
Infrastructure		Score/Value	Rank	Knowledge diffusion		Score/Value	Rank
20.8		117		11.1		102	
3.1 Information and communication technologies (ICTs)	36.0	113		6.3.1 Intellectual property receipts, % total trade	0.0	113	
3.1.1 ICT access*	41.0	117		6.3.2 Production and export complexity	36.1	99	
3.1.2 ICT use*	28.4	118 ◆		6.3.3 High-tech exports, % total trade	0.1	115	
3.1.3 Government's online service*	37.4	112		6.3.4 ICT services exports, % total trade	1.7	66 ●	
3.1.4 E-participation*	37.2	91		6.3.5 ISO 9001 quality/bn PPP\$ GDP	1.5	94 ◆	
3.2 General infrastructure	14.3	108		Creative outputs		11.1	105
3.2.1 Electricity output, GWh/mn pop.	⊖ 84.6	122 ○		7.1 Intangible assets	6.2	117	
3.2.2 Logistics performance*	18.2	89		7.1.1 Intangible asset intensity, top 15, %	n/a	n/a	
3.2.3 Gross capital formation, % GDP	26.7	40 ●		7.1.2 Trademarks by origin/bn PPP\$ GDP	19.7	93	
3.3 Ecological sustainability	12.0	118		7.1.3 Global brand value, top 5,000, % GDP	0.0	74 ○◇	
3.3.1 GDP/unit of energy use	4.7	117		7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.2	101	
3.3.2 Environmental performance*	25.6	97		7.2 Creative goods and services	17.4	[53]	
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.4	90 ◆		7.2.1 Cultural and creative services exports, % total trade	1.7	17 ●◆	
				7.2.2 National feature films/mn pop. 15-69	n/a	n/a	
				7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a	
				7.2.4 Creative goods exports, % total trade	0.0	117	
Market sophistication		Score/Value	Rank	Online creativity		Score/Value	Rank
21.1		111 ◆		14.8		98 ◆	
4.1 Credit	27.6	71 ●◆		7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.6	104 ◆	
4.1.1 Finance for startups and scaleups†	17.8	80		7.3.2 Country-code TLDs/th pop. 15-69	0.1	119	
4.1.2 Domestic credit to private sector, % GDP	26.6	105 ◆		7.3.3 GitHub commits/mn pop. 15-69	0.7	118	
4.1.3 Loans from microfinance institutions, % GDP	4.8	6 ◆◆		7.3.4 Mobile app creation/bn PPP\$ GDP	57.6	88 ◆	
4.2 Investment	n/a	[n/a]					
4.2.1 Market capitalization, % GDP	n/a	n/a					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a					
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a					
4.2.4 VC received, value, % GDP	n/a	n/a					
4.3 Trade, diversification and market scale	14.7	128 ○◇					
4.3.1 Applied tariff rate, weighted avg., %	11.0	122					
4.3.2 Domestic industry diversification	n/a	n/a					
4.3.3 Domestic market scale, bn PPP\$	22.8	129 ○					

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊖ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Trinidad and Tobago

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
108	92	High	LCN	1.5	42.1	29,797

	Score/Value	Rank		Score/Value	Rank
 Institutions	49.2	68	 Business sophistication	19.2	113
1.1 Institutional environment	48.8	56	5.1 Knowledge workers	23.7	83
1.1.1 Operational stability for businesses*	55.6	56	5.1.1 Knowledge-intensive employment, %	31.9	47
1.1.2 Government effectiveness*	42.1	60	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	56.5	83	5.1.3 GERD performed by business, % GDP	0.0	84
1.2.1 Regulatory quality*	39.9	78	5.1.4 GERD financed by business, %	4.6	81
1.2.2 Rule of law*	35.7	71	5.1.5 Females employed w/advanced degrees, %	12.8	60
1.2.3 Cost of redundancy dismissal	20.5	89	5.2 Innovation linkages	13.8	104
1.3 Business environment	42.2	[78]	5.2.1 University-industry R&D collaboration†	22.8	111
1.3.1 Policies for doing business†	42.2	80	5.2.2 State of cluster development†	31.6	89
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.0	77
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	33
			5.2.5 Patent families/bn PPP\$ GDP	0.0	95
 Human capital and research	36.2	45	5.3 Knowledge absorption	20.0	130
2.1 Education	39.2	101	5.3.1 Intellectual property payments, % total trade	0.5	67
2.1.1 Expenditure on education, % GDP	3.0	106	5.3.2 High-tech imports, % total trade	5.5	108
2.1.2 Government funding/pupil, secondary, % GDP/cap	13.9	78	5.3.3 ICT services imports, % total trade	0.6	103
2.1.3 School life expectancy, years	n/a	n/a	5.3.4 FDI net inflows, % GDP	0.4	116
2.1.4 PISA scales in reading, maths and science	423.0	54	5.3.5 Research talent, % in businesses	1.4	78
2.1.5 Pupil-teacher ratio, secondary	12.1	53	 Knowledge and technology outputs	13.4	103
2.2 Tertiary education	67.7	[3]	6.1 Knowledge creation	3.8	118
2.2.1 Tertiary enrolment, % gross	n/a	n/a	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	122
2.2.2 Graduates in science and engineering, %	32.3	14	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	63
2.2.3 Tertiary inbound mobility, %	n/a	n/a	6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	67
2.3 Research and development (R&D)	1.9	93	6.1.4 Scientific and technical articles/bn PPP\$ GDP	5.6	104
2.3.1 Researchers, FTE/mn pop.	638.8	63	6.1.5 Citable documents H-index	4.6	108
2.3.2 Gross expenditure on R&D, % GDP	0.1	108	6.2 Knowledge impact	20.4	[102]
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2.1 Labor productivity growth, %	-0.4	106
2.3.4 QS university ranking, top 3*	0.0	71	6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	n/a	n/a
 Infrastructure	32.4	88	6.2.4 High-tech manufacturing, %	n/a	n/a
3.1 Information and communication technologies (ICTs)	53.9	91	6.3 Knowledge diffusion	15.9	91
3.1.1 ICT access*	84.4	55	6.3.1 Intellectual property receipts, % total trade	0.0	94
3.1.2 ICT use*	65.5	84	6.3.2 Production and export complexity	55.3	55
3.1.3 Government's online service*	43.5	103	6.3.3 High-tech exports, % total trade	1.0	73
3.1.4 E-participation*	22.1	120	6.3.4 ICT services exports, % total trade	0.1	124
3.2 General infrastructure	25.9	68	6.3.5 ISO 9001 quality/bn PPP\$ GDP	2.1	86
3.2.1 Electricity output, GWh/mn pop.	6,590.4	30	 Creative outputs	9.2	109
3.2.2 Logistics performance*	18.2	89	7.1 Intangible assets	12.3	104
3.2.3 Gross capital formation, % GDP	n/a	n/a	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	17.4	95	7.1.2 Trademarks by origin/bn PPP\$ GDP	17.5	97
3.3.1 GDP/unit of energy use	2.2	126	7.1.3 Global brand value, top 5,000, % GDP	0.0	74
3.3.2 Environmental performance*	49.0	47	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.5	52
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.5	86	7.2 Creative goods and services	1.2	[114]
			7.2.1 Cultural and creative services exports, % total trade	n/a	n/a
 Market sophistication	13.9	[124]	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	16.0	[100]	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.2.4 Creative goods exports, % total trade	0.1	94
4.1.2 Domestic credit to private sector, % GDP	46.1	77	7.3 Online creativity	10.8	113
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	4.4	59
4.2 Investment	3.2	[91]	7.3.2 Country-code TLDs/th pop. 15-69	1.0	90
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.3 GitHub commits/mn pop. 15-69	4.2	75
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	54	7.3.4 Mobile app creation/bn PPP\$ GDP	33.7	118
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a			
4.2.4 VC received, value, % GDP	n/a	n/a			
4.3 Trade, diversification and market scale	22.5	125			
4.3.1 Applied tariff rate, weighted avg., %	8.6	109			
4.3.2 Domestic industry diversification	n/a	n/a			
4.3.3 Domestic market scale, bn PPP\$	42.1	115			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
61	96	Lower middle	NAWA	12.4	151.5	12,490	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		34.8	94	5.1 Knowledge workers		18.5	103
1.1.1	Operational stability for businesses*	37.5	101	5.1.1	Knowledge-intensive employment, %	15.9	86
1.1.2	Government effectiveness*	32.1	82	5.1.2	Firms offering formal training, %	19.1	83
1.2 Regulatory environment		55.2	88	5.1.3	GERD performed by business, % GDP	0.1	60
1.2.1	Regulatory quality*	32.0	93	5.1.4	GERD financed by business, %	18.9	68
1.2.2	Rule of law*	42.5	60	5.1.5	Females employed w/advanced degrees, %	8.8	80
1.2.3	Cost of redundancy dismissal	21.6	94	5.2 Innovation linkages		11.5	112
1.3 Business environment		18.6	121	5.2.1	University-industry R&D collaboration†	23.4	109
1.3.1	Policies for doing business†	26.5	111	5.2.2	State of cluster development†	22.9	107
1.3.2	Entrepreneurship policies and culture†	10.6	78	5.2.3	GERD financed by abroad, % GDP	0.0	58
Human capital and research		36.1	46	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	63
2.1 Education		62.9	20	5.2.5	Patent families/bn PPP\$ GDP	0.0	78
2.1.1	Expenditure on education, % GDP	6.2	16	5.3 Knowledge absorption		20.3	129
2.1.2	Government funding/pupil, secondary, % GDP/cap	51.1	1	5.3.1	Intellectual property payments, % total trade	0.1	101
2.1.3	School life expectancy, years	15.1	50	5.3.2	High-tech imports, % total trade	8.7	55
2.1.4	PISA scales in reading, maths and science	371.4	74	5.3.3	ICT services imports, % total trade	0.4	120
2.1.5	Pupil-teacher ratio, secondary	13.3	61	5.3.4	FDI net inflows, % GDP	1.5	89
2.2 Tertiary education		37.9	38	5.3.5	Research talent, % in businesses	5.2	69
2.2.1	Tertiary enrolment, % gross	37.5	80	Knowledge and technology outputs		27.1	50
2.2.2	Graduates in science and engineering, %	37.9	5	6.1 Knowledge creation		26.2	37
2.2.3	Tertiary inbound mobility, %	2.9	68	6.1.1	Patents by origin/bn PPP\$ GDP	1.3	50
2.3 Research and development (R&D)		7.5	69	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	76
2.3.1	Researchers, FTE/mn pop.	1,621.6	47	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP	0.7	49	6.1.4	Scientific and technical articles/bn PPP\$ GDP	36.8	10
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40	6.1.5	Citable documents H-index	11.9	68
2.3.4	QS university ranking, top 3*	0.0	71	6.2 Knowledge impact		26.7	65
Infrastructure		32.3	89	6.2.1	Labor productivity growth, %	0.2	91
3.1 Information and communication technologies (ICTs)		63.0	80	6.2.2	Unicorn valuation, % GDP	0.0	48
3.1.1	ICT access*	74.9	82	6.2.3	Software spending, % GDP	0.3	36
3.1.2	ICT use*	67.4	77	6.2.4	High-tech manufacturing, %	24.3	53
3.1.3	Government's online service*	56.1	85	6.3 Knowledge diffusion		28.4	54
3.1.4	E-participation*	53.5	67	6.3.1	Intellectual property receipts, % total trade	0.1	56
3.2 General infrastructure		7.9	127	6.3.2	Production and export complexity	62.1	44
3.2.1	Electricity output, GWh/mn pop.	1,830.1	85	6.3.3	High-tech exports, % total trade	4.5	40
3.2.2	Logistics performance*	n/a	n/a	6.3.4	ICT services exports, % total trade	1.5	71
3.2.3	Gross capital formation, % GDP	15.9	117	6.3.5	ISO 9001 quality/bn PPP\$ GDP	8.2	33
3.3 Ecological sustainability		26.1	61	Creative outputs		22.3	72
3.3.1	GDP/unit of energy use	11.0	57	7.1 Intangible assets		33.1	61
3.3.2	Environmental performance*	36.9	72	7.1.1	Intangible asset intensity, top 15, %	37.4	63
3.3.3	ISO 14001 environment/bn PPP\$ GDP	2.0	44	7.1.2	Trademarks by origin/bn PPP\$ GDP	n/a	n/a
Market sophistication		24.2	98	7.1.3	Global brand value, top 5,000, % GDP	0.0	74
4.1 Credit		23.5	83	7.1.4	Industrial designs by origin/bn PPP\$ GDP	1.6	50
4.1.1	Finance for startups and scaleups†	27.3	74	7.2 Creative goods and services		6.4	81
4.1.2	Domestic credit to private sector, % GDP	81.7	42	7.2.1	Cultural and creative services exports, % total trade	0.0	103
4.1.3	Loans from microfinance institutions, % GDP	1.1	25	7.2.2	National feature films/mn pop. 15-69	1.8	50
4.2 Investment		5.5	72	7.2.3	Entertainment and media market/th pop. 15-69	0.1	60
4.2.1	Market capitalization, % GDP	20.0	59	7.2.4	Creative goods exports, % total trade	1.2	41
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	55	7.3 Online creativity		16.5	88
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	48	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	3.1	68
4.2.4	VC received, value, % GDP	0.0	85	7.3.2	Country-code TLDs/th pop. 15-69	1.9	72
4.3 Trade, diversification and market scale		43.7	99	7.3.3	GitHub commits/mn pop. 15-69	6.3	65
4.3.1	Applied tariff rate, weighted avg., %	9.3	116	7.3.4	Mobile app creation/bn PPP\$ GDP	54.8	96
4.3.2	Domestic industry diversification	88.3	55				
4.3.3	Domestic market scale, bn PPP\$	151.5	77				

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Türkiye







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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
32	52	Upper middle	NAWA	85.3	3,321.0	38,759

	Score/Value	Rank		Score/Value	Rank
 Institutions	36.5	105 ○	 Business sophistication	33.5	46
1.1 Institutional environment	37.0	85	5.1 Knowledge workers	39.8	48
1.1.1 Operational stability for businesses*	39.6	95 ○	5.1.1 Knowledge-intensive employment, %	23.9	59
1.1.2 Government effectiveness*	34.4	77	5.1.2 Firms offering formal training, %	30.7	55
1.2 Regulatory environment	45.3	110 ○◇	5.1.3 GERD performed by business, % GDP	0.8	32 ◆
1.2.1 Regulatory quality*	40.0	77	5.1.4 GERD financed by business, %	62.4	12 ◆◆
1.2.2 Rule of law*	27.5	88	5.1.5 Females employed w/advanced degrees, %	11.3	69
1.2.3 Cost of redundancy dismissal	29.8	118 ○◇	5.2 Innovation linkages	19.0	81
1.3 Business environment	27.2	107 ○	5.2.1 University-industry R&D collaboration†	39.4	76
1.3.1 Policies for doing business†	25.5	114 ○	5.2.2 State of cluster development†	44.4	57
1.3.2 Entrepreneurship policies and culture†	28.9	60	5.2.3 GERD financed by abroad, % GDP	0.0	60
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	114 ○
			5.2.5 Patent families/bn PPP\$ GDP	0.3	39
 Human capital and research	37.5	41	5.3 Knowledge absorption	41.9	39
2.1 Education	50.7	67	5.3.1 Intellectual property payments, % total trade	1.0	39
2.1.1 Expenditure on education, % GDP	3.4	96 ○	5.3.2 High-tech imports, % total trade	8.2	66
2.1.2 Government funding/pupil, secondary, % GDP/cap	14.6	76 ○	5.3.3 ICT services imports, % total trade	1.0	87
2.1.3 School life expectancy, years	18.5	11 ◆◆	5.3.4 FDI net inflows, % GDP	1.3	94 ○
2.1.4 PISA scales in reading, maths and science	462.5	41	5.3.5 Research talent, % in businesses	66.9	7 ◆◆
2.1.5 Pupil-teacher ratio, secondary	15.1	76			
2.2 Tertiary education	33.7	56	 Knowledge and technology outputs	31.1	44
2.2.1 Tertiary enrolment, % gross	117.1	2 ◆◆	6.1 Knowledge creation	27.4	36
2.2.2 Graduates in science and engineering, %	15.2	100 ○	6.1.1 Patents by origin/bn PPP\$ GDP	3.0	25 ◆
2.2.3 Tertiary inbound mobility, %	2.3	74	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.5	31
2.3 Research and development (R&D)	28.1	37 ◆	6.1.3 Utility models by origin/bn PPP\$ GDP	1.5	11 ◆
2.3.1 Researchers, FTE/mn pop.	2,007.0	42 ◆	6.1.4 Scientific and technical articles/bn PPP\$ GDP	12.4	63
2.3.2 Gross expenditure on R&D, % GDP	1.1	35 ◆	6.1.5 Citable documents H-index	29.7	33 ◆
2.3.3 Global corporate R&D investors, top 3, mn USD	47.2	35 ◆	6.2 Knowledge impact	43.7	23 ◆
2.3.4 QS university ranking, top 3*	24.4	45	6.2.1 Labor productivity growth, %	2.6	21
			6.2.2 Unicorn valuation, % GDP	1.4	30 ◆
			6.2.3 Software spending, % GDP	0.5	23 ◆
			6.2.4 High-tech manufacturing, %	30.0	36
 Infrastructure	46.7	50	6.3 Knowledge diffusion	22.4	64
3.1 Information and communication technologies (ICTs)	80.5	39 ◆	6.3.1 Intellectual property receipts, % total trade	0.1	60
3.1.1 ICT access*	83.8	59	6.3.2 Production and export complexity	65.7	41
3.1.2 ICT use*	75.8	60	6.3.3 High-tech exports, % total trade	2.0	60
3.1.3 Government's online service*	84.5	24 ◆	6.3.4 ICT services exports, % total trade	0.9	89
3.1.4 E-participation*	77.9	18 ◆	6.3.5 ISO 9001 quality/bn PPP\$ GDP	3.2	71
3.2 General infrastructure	38.5	34 ◆			
3.2.1 Electricity output, GWh/mn pop.	3,939.4	56	 Creative outputs	43.6	27 ◆
3.2.2 Logistics performance*	59.1	37 ◆	7.1 Intangible assets	68.0	5 ◆◆
3.2.3 Gross capital formation, % GDP	34.2	15 ◆◆	7.1.1 Intangible asset intensity, top 15, %	75.0	12
3.3 Ecological sustainability	21.1	77	7.1.2 Trademarks by origin/bn PPP\$ GDP	133.8	5 ◆◆
3.3.1 GDP/unit of energy use	16.7	17 ◆	7.1.3 Global brand value, top 5,000, % GDP	1.3	51
3.3.2 Environmental performance*	12.5	127 ○◇	7.1.4 Industrial designs by origin/bn PPP\$ GDP	20.1	4 ◆◆
3.3.3 ISO 14001 environment/bn PPP\$ GDP	1.1	62	7.2 Creative goods and services	13.9	61
			7.2.1 Cultural and creative services exports, % total trade	0.2	71
			7.2.2 National feature films/mn pop. 15-69	1.3	56
			7.2.3 Entertainment and media market/th pop. 15-69	4.6	43
			7.2.4 Creative goods exports, % total trade	3.3	18
 Market sophistication	45.1	36	7.3 Online creativity	24.4	53
4.1 Credit	41.4	39	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	12.4	40 ◆
4.1.1 Finance for startups and scaleups†	55.3	37	7.3.2 Country-code TLDs/th pop. 15-69	2.2	70
4.1.2 Domestic credit to private sector, % GDP	75.2	46	7.3.3 GitHub commits/mn pop. 15-69	7.0	63
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	76.0	18
4.2 Investment	9.6	56			
4.2.1 Market capitalization, % GDP	25.5	51			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	74 ○			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	70			
4.2.4 VC received, value, % GDP	0.0	34			
4.3 Trade, diversification and market scale	84.1	11 ◆◆			
4.3.1 Applied tariff rate, weighted avg., %	2.8	71			
4.3.2 Domestic industry diversification	99.4	4 ◆◆			
4.3.3 Domestic market scale, bn PPP\$	3,321.0	11 ◆◆			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
121	117	Low	SSA	47.2	132.0	3,018

	Score/Value	Rank		Score/Value	Rank
 Institutions	50.5	64 ●◆	 Business sophistication	17.0	118
1.1 Institutional environment	29.9	101	5.1 Knowledge workers	11.7	117
1.1.1 Operational stability for businesses*	38.9	96	5.1.1 Knowledge-intensive employment, %	⊙ 4.5	120 ○
1.1.2 Government effectiveness*	21.0	101	5.1.2 Firms offering formal training, %	⊙ 34.7	47
1.2 Regulatory environment	64.1	63 ●◆	5.1.3 GERD performed by business, % GDP	⊙ 0.0	87
1.2.1 Regulatory quality*	29.7	98	5.1.4 GERD financed by business, %	⊙ 3.4	85
1.2.2 Rule of law*	29.4	84	5.1.5 Females employed w/advanced degrees, %	⊙ 3.3	101 ◆
1.2.3 Cost of redundancy dismissal	8.7	20 ●	5.2 Innovation linkages	17.0	90
1.3 Business environment	57.4	[41]	5.2.1 University-industry R&D collaboration†	⊙ 39.6	74
1.3.1 Policies for doing business†	⊙ 57.4	43 ●	5.2.2 State of cluster development†	⊙ 30.9	92
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	⊙ 0.1	43
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	⊙ 0.0	113 ◇
			5.2.5 Patent families/bn PPP\$ GDP	0.0	95 ○◇
 Human capital and research	12.8	[124]	5.3 Knowledge absorption	22.5	117
2.1 Education	37.3	[107]	5.3.1 Intellectual property payments, % total trade	0.1	100
2.1.1 Expenditure on education, % GDP	2.6	112 ◇	5.3.2 High-tech imports, % total trade	⊙ 6.6	95
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	1.2	73
2.1.3 School life expectancy, years	n/a	n/a	5.3.4 FDI net inflows, % GDP	2.9	50 ●
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	⊙ 4.0	72
2.1.5 Pupil-teacher ratio, secondary	⊙ 20.5	98	 Knowledge and technology outputs	12.8	105
2.2 Tertiary education	0.5	[129]	6.1 Knowledge creation	8.8	87
2.2.1 Tertiary enrolment, % gross	⊙ 5.1	125 ○	6.1.1 Patents by origin/bn PPP\$ GDP	⊙ 0.1	106
2.2.2 Graduates in science and engineering, %	n/a	n/a	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	93 ◆
2.2.3 Tertiary inbound mobility, %	n/a	n/a	6.1.3 Utility models by origin/bn PPP\$ GDP	⊙ 0.2	44 ●
2.3 Research and development (R&D)	0.6	107	6.1.4 Scientific and technical articles/bn PPP\$ GDP	13.6	56 ●◆
2.3.1 Researchers, FTE/mn pop.	⊙ 27.8	101	6.1.5 Citable documents H-index	10.3	76 ◆
2.3.2 Gross expenditure on R&D, % GDP	⊙ 0.1	97	6.2 Knowledge impact	17.0	117
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40 ○◇	6.2.1 Labor productivity growth, %	0.6	77
2.3.4 QS university ranking, top 3*	0.0	71 ○◇	6.2.2 Unicorn valuation, % GDP	0.0	48 ○◇
			6.2.3 Software spending, % GDP	0.0	126 ○
			6.2.4 High-tech manufacturing, %	n/a	n/a
 Infrastructure	21.0	116	6.3 Knowledge diffusion	12.6	96 ◆
3.1 Information and communication technologies (ICTs)	35.4	116	6.3.1 Intellectual property receipts, % total trade	0.1	52 ●◆
3.1.1 ICT access*	30.4	123	6.3.2 Production and export complexity	42.7	86 ◆
3.1.2 ICT use*	25.2	120	6.3.3 High-tech exports, % total trade	⊙ 0.2	113
3.1.3 Government's online service*	46.6	98	6.3.4 ICT services exports, % total trade	1.3	77
3.1.4 E-participation*	39.5	89	6.3.5 ISO 9001 quality/bn PPP\$ GDP	1.4	96 ◆
3.2 General infrastructure	13.4	113	 Creative outputs	5.8	122
3.2.1 Electricity output, GWh/mn pop.	⊙ 97.3	121 ○	7.1 Intangible assets	6.4	116
3.2.2 Logistics performance*	n/a	n/a	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.2.3 Gross capital formation, % GDP	28.0	31 ●	7.1.2 Trademarks by origin/bn PPP\$ GDP	⊙ 14.7	100
3.3 Ecological sustainability	14.2	106	7.1.3 Global brand value, top 5,000, % GDP	0.0	74 ○◇
3.3.1 GDP/unit of energy use	5.8	109	7.1.4 Industrial designs by origin/bn PPP\$ GDP	⊙ 0.4	86
3.3.2 Environmental performance*	28.6	89	7.2 Creative goods and services	0.6	[120]
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.5	87 ◆	7.2.1 Cultural and creative services exports, % total trade	0.0	94
			7.2.2 National feature films/mn pop. 15-69	n/a	n/a
 Market sophistication	11.9	128 ○	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1 Credit	3.4	126 ○	7.2.4 Creative goods exports, % total trade	⊙ 0.1	105
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.3 Online creativity	10.1	114
4.1.2 Domestic credit to private sector, % GDP	14.2	121	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.2	117
4.1.3 Loans from microfinance institutions, % GDP	0.3	46	7.3.2 Country-code TLDs/th pop. 15-69	0.1	122
4.2 Investment	7.2	65	7.3.3 GitHub commits/mn pop. 15-69	1.3	110
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	38.8	114
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	⊙ 0.0	89 ◆			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	42 ●			
4.2.4 VC received, value, % GDP	0.0	62 ◆			
4.3 Trade, diversification and market scale	25.2	121			
4.3.1 Applied tariff rate, weighted avg., %	8.1	106			
4.3.2 Domestic industry diversification	n/a	n/a			
4.3.3 Domestic market scale, bn PPP\$	132.0	80			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Ukraine

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
42	78	Lower middle	EUR	39.7	NA	NA	
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank
1.1 Institutional environment		17.2	126	5.1 Knowledge workers		44.6	42
1.1.1	Operational stability for businesses*	9.0	130	5.1.1	Knowledge-intensive employment, %	37.9	36
1.1.2	Government effectiveness*	25.5	95	5.1.2	Firms offering formal training, %	24.3	67
1.2 Regulatory environment		58.9	77	5.1.3	GERD performed by business, % GDP	0.3	49
1.2.1	Regulatory quality*	34.9	87	5.1.4	GERD financed by business, %	30.5	58
1.2.2	Rule of law*	20.4	107	5.1.5	Females employed w/advanced degrees, %	30.0	2
1.2.3	Cost of redundancy dismissal	13.0	41	5.2 Innovation linkages		19.4	77
1.3 Business environment		39.2	[88]	5.2.1	University-industry R&D collaboration†	44.7	63
1.3.1	Policies for doing business†	39.2	85	5.2.2	State of cluster development†	30.0	94
1.3.2	Entrepreneurship policies and culture†	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	0.1	36
Human capital and research		35.6	47	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	109
2.1 Education		60.9	31	5.2.5	Patent families/bn PPP\$ GDP	0.2	47
2.1.1	Expenditure on education, % GDP	5.6	24	5.3 Knowledge absorption		33.2	66
2.1.2	Government funding/pupil, secondary, % GDP/cap	28.5	10	5.3.1	Intellectual property payments, % total trade	0.9	45
2.1.3	School life expectancy, years	14.9	56	5.3.2	High-tech imports, % total trade	9.2	48
2.1.4	PISA scales in reading, maths and science	462.7	40	5.3.3	ICT services imports, % total trade	1.1	77
2.1.5	Pupil-teacher ratio, secondary	8.3	14	5.3.4	FDI net inflows, % GDP	2.6	57
2.2 Tertiary education		38.2	37	5.3.5	Research talent, % in businesses	27.3	46
2.2.1	Tertiary enrolment, % gross	82.7	21	Knowledge and technology outputs		30.0	45
2.2.2	Graduates in science and engineering, %	25.7	43	6.1 Knowledge creation		32.9	28
2.2.3	Tertiary inbound mobility, %	4.9	50	6.1.1	Patents by origin/bn PPP\$ GDP	2.2	33
2.3 Research and development (R&D)		7.8	68	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.2	44
2.3.1	Researchers, FTE/mn pop.	587.5	66	6.1.3	Utility models by origin/bn PPP\$ GDP	7.4	1
2.3.2	Gross expenditure on R&D, % GDP	0.3	76	6.1.4	Scientific and technical articles/bn PPP\$ GDP	8.2	85
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	40	6.1.5	Citable documents H-index	17.0	51
2.3.4	QS university ranking, top 3*	20.1	53	6.2 Knowledge impact		25.3	71
Infrastructure		36.9	77	6.2.1	Labor productivity growth, %	-3.4	129
3.1 Information and communication technologies (ICTs)		72.6	59	6.2.2	Unicorn valuation, % GDP	0.0	48
3.1.1	ICT access*	82.2	68	6.2.3	Software spending, % GDP	0.7	4
3.1.2	ICT use*	69.6	73	6.2.4	High-tech manufacturing, %	18.8	65
3.1.3	Government's online service*	79.5	34	6.3 Knowledge diffusion		31.8	48
3.1.4	E-participation*	59.3	57	6.3.1	Intellectual property receipts, % total trade	0.1	57
3.2 General infrastructure		16.3	105	6.3.2	Production and export complexity	58.5	49
3.2.1	Electricity output, GWh/mn pop.	3,604.0	60	6.3.3	High-tech exports, % total trade	1.6	66
3.2.2	Logistics performance*	27.3	76	6.3.4	ICT services exports, % total trade	8.6	6
3.2.3	Gross capital formation, % GDP	13.8	124	6.3.5	ISO 9001 quality/bn PPP\$ GDP	2.5	79
3.3 Ecological sustainability		21.9	74	Creative outputs		34.6	37
3.3.1	GDP/unit of energy use	5.4	115	7.1 Intangible assets		52.4	[19]
3.3.2	Environmental performance*	52.0	43	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environment/bn PPP\$ GDP	0.6	79	7.1.2	Trademarks by origin/bn PPP\$ GDP	75.1	22
Market sophistication		23.2	104	7.1.3	Global brand value, top 5,000, % GDP	n/a	n/a
4.1 Credit		4.9	124	7.1.4	Industrial designs by origin/bn PPP\$ GDP	6.0	16
4.1.1	Finance for startups and scaleups†	n/a	n/a	7.2 Creative goods and services		6.0	82
4.1.2	Domestic credit to private sector, % GDP	28.2	101	7.2.1	Cultural and creative services exports, % total trade	0.6	49
4.1.3	Loans from microfinance institutions, % GDP	0.1	52	7.2.2	National feature films/mn pop. 15-69	0.8	66
4.2 Investment		1.2	107	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	4.3	75	7.2.4	Creative goods exports, % total trade	0.2	86
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	67	7.3 Online creativity		27.6	44
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.0	97	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	5.7	55
4.2.4	VC received, value, % GDP	0.0	90	7.3.2	Country-code TLDs/th pop. 15-69	6.1	53
4.3 Trade, diversification and market scale		63.5	40	7.3.3	GitHub commits/mn pop. 15-69	20.8	43
4.3.1	Applied tariff rate, weighted avg., %	1.7	52	7.3.4	Mobile app creation/bn PPP\$ GDP	78.0	12
4.3.2	Domestic industry diversification	88.7	54				
4.3.3	Domestic market scale, bn PPP\$	588.4	43				

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United Arab Emirates

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
54	19	High	NAWA	9.4	814.7	77,272

	Score/Value	Rank		Score/Value	Rank	
 Institutions	80.8	10	 Business sophistication	51.6	23	
1.1 Institutional environment	67.5	30	5.1 Knowledge workers	49.9	29	
1.1.1 Operational stability for businesses*	59.7	47	5.1.1 Knowledge-intensive employment, %	⊙ 35.1	42	
1.1.2 Government effectiveness*	75.4	18	5.1.2 Firms offering formal training, %	n/a	n/a	
1.2 Regulatory environment	83.1	21	5.1.3 GERD performed by business, % GDP	⊙ 0.8	33	
1.2.1 Regulatory quality*	68.4	30	5.1.4 GERD financed by business, %	⊙ 74.3	5	
1.2.2 Rule of law*	64.0	36	5.1.5 Females employed w/advanced degrees, %	⊙ 12.2	63	
1.2.3 Cost of redundancy dismissal	8.0	1	◆◆	56.3	15	
1.3 Business environment	91.7	2	◆◆	5.2.1 University–industry R&D collaboration†	73.1	20
1.3.1 Policies for doing business†	83.3	5	◆◆	5.2.2 State of cluster development†	86.7	4
1.3.2 Entrepreneurship policies and culture†	100.0	1	◆◆	5.2.3 GERD financed by abroad, % GDP	n/a	n/a
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.2	8
				5.2.5 Patent families/bn PPP\$ GDP	0.1	55
 Human capital and research	54.3	16	5.3 Knowledge absorption	48.6	25	
2.1 Education	54.5	56	5.3.1 Intellectual property payments, % total trade	0.7	58	
2.1.1 Expenditure on education, % GDP	3.9	77	○	5.3.2 High-tech imports, % total trade	14.3	17
2.1.2 Government funding/pupil, secondary, % GDP/cap	25.6	17	5.3.3 ICT services imports, % total trade	1.1	78	
2.1.3 School life expectancy, years	16.0	38	5.3.4 FDI net inflows, % GDP	5.0	20	
2.1.4 PISA scales in reading, maths and science	433.5	47	◇	5.3.5 Research talent, % in businesses	⊙ 77.9	3
2.1.5 Pupil–teacher ratio, secondary	8.5	16				
2.2 Tertiary education	71.2	1	 Knowledge and technology outputs	23.9	59	
2.2.1 Tertiary enrolment, % gross	55.3	61				
2.2.2 Graduates in science and engineering, %	36.2	7	◆◆	6.1 Knowledge creation	7.4	96
2.2.3 Tertiary inbound mobility, %	70.3	1	◆◆	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	112
2.3 Research and development (R&D)	37.3	29		6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	54
2.3.1 Researchers, FTE/mn pop.	2,488.8	34		6.1.3 Utility models by origin/bn PPP\$ GDP	⊙ 0.0	72
2.3.2 Gross expenditure on R&D, % GDP	1.5	26		6.1.4 Scientific and technical articles/bn PPP\$ GDP	9.0	80
2.3.3 Global corporate R&D investors, top 3, mn USD	59.4	24		6.1.5 Citable documents H-index	14.7	58
2.3.4 QS university ranking, top 3*	37.5	34		6.2 Knowledge impact	32.4	48
				6.2.1 Labor productivity growth, %	1.0	64
				6.2.2 Unicorn valuation, % GDP	1.0	34
				6.2.3 Software spending, % GDP	0.2	60
				6.2.4 High-tech manufacturing, %	29.3	42
 Infrastructure	59.8	15	6.3 Knowledge diffusion	31.9	47	
3.1 Information and communication technologies (ICTs)	89.0	14	6.3.1 Intellectual property receipts, % total trade	1.0	22	
3.1.1 ICT access*	97.9	4	◆◆	6.3.2 Production and export complexity	37.1	98
3.1.2 ICT use*	91.1	20	6.3.3 High-tech exports, % total trade	10.6	16	
3.1.3 Government's online service*	89.1	12	6.3.4 ICT services exports, % total trade	2.0	59	
3.1.4 E-participation*	77.9	18	6.3.5 ISO 9001 quality/bn PPP\$ GDP	6.2	46	
3.2 General infrastructure	58.4	8	 Creative outputs	30.3	50	
3.2.1 Electricity output, GWh/mn pop.	⊙ 13,883.7	8	◆◆	7.1 Intangible assets	34.6	55
3.2.2 Logistics performance*	86.4	7	◆	7.1.1 Intangible asset intensity, top 15, %	60.3	37
3.2.3 Gross capital formation, % GDP	22.9	73		7.1.2 Trademarks by origin/bn PPP\$ GDP	11.4	109
3.3 Ecological sustainability	32.0	47		7.1.3 Global brand value, top 5,000, % GDP	12.1	12
3.3.1 GDP/unit of energy use	7.6	92	○	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.1	110
3.3.2 Environmental performance*	56.8	34		7.2 Creative goods and services	24.9	41
3.3.3 ISO 14001 environment/bn PPP\$ GDP	3.0	31		7.2.1 Cultural and creative services exports, % total trade	0.1	78
				7.2.2 National feature films/mn pop. 15–69	1.4	54
				7.2.3 Entertainment and media market/th pop. 15–69	22.3	27
				7.2.4 Creative goods exports, % total trade	5.6	11
				7.3 Online creativity	27.1	47
 Market sophistication	50.3	25		7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	13.1	36
4.1 Credit	54.4	24		7.3.2 Country-code TLDs/th pop. 15–69	8.2	43
4.1.1 Finance for startups and scaleups†	75.1	13		7.3.3 GitHub commits/mn pop. 15–69	12.0	52
4.1.2 Domestic credit to private sector, % GDP	90.8	35		7.3.4 Mobile app creation/bn PPP\$ GDP	75.0	24
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a				
4.2 Investment	32.1	23				
4.2.1 Market capitalization, % GDP	65.9	27				
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.3	18				
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	30				
4.2.4 VC received, value, % GDP	0.0	12				
4.3 Trade, diversification and market scale	64.4	33				
4.3.1 Applied tariff rate, weighted avg., %	3.3	75				
4.3.2 Domestic industry diversification	96.8	20				
4.3.3 Domestic market scale, bn PPP\$	814.7	33				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

United Kingdom

4

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
2	6	High	EUR	67.5	3,776.0	55,862

		Score/ Value	Rank			Score/ Value	Rank
 Institutions		70.9	24	 Business sophistication		58.4	13
1.1 Institutional environment		66.9	32	5.1 Knowledge workers		67.1	10
1.1.1 Operational stability for businesses*		61.8	41	5.1.1 Knowledge-intensive employment, %	⊙	50.6	11
1.1.2 Government effectiveness*		72.1	24	5.1.2 Firms offering formal training, %		n/a	n/a
1.2 Regulatory environment		89.1	12	5.1.3 GERD performed by business, % GDP		2.1	10
1.2.1 Regulatory quality*		80.1	17	5.1.4 GERD financed by business, %		57.5	17
1.2.2 Rule of law*		81.5	19	5.1.5 Females employed w/advanced degrees, %	⊙	24.1	22
1.2.3 Cost of redundancy dismissal		9.3	25	5.2 Innovation linkages		62.4	11
1.3 Business environment		56.5	43	5.2.1 University-industry R&D collaboration†		82.0	12
1.3.1 Policies for doing business†		65.8	32	5.2.2 State of cluster development†		77.7	14
1.3.2 Entrepreneurship policies and culture†		47.3	38	5.2.3 GERD financed by abroad, % GDP		0.3	9
 Human capital and research		58.9	8	5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.2	10
2.1 Education		59.6	38	5.2.5 Patent families/bn PPP\$ GDP		1.9	20
2.1.1 Expenditure on education, % GDP	⊙	5.2	27	5.3 Knowledge absorption		45.7	30
2.1.2 Government funding/pupil, secondary, % GDP/cap		22.3	38	5.3.1 Intellectual property payments, % total trade		2.0	13
2.1.3 School life expectancy, years		17.3	16	5.3.2 High-tech imports, % total trade		10.0	36
2.1.4 PISA scales in reading, maths and science		503.5	12	5.3.3 ICT services imports, % total trade		1.8	40
2.1.5 Pupil-teacher ratio, secondary		17.3	87	5.3.4 FDI net inflows, % GDP		1.9	76
2.2 Tertiary education		46.0	18	5.3.5 Research talent, % in businesses	⊙	41.8	34
2.2.1 Tertiary enrolment, % gross		69.5	38	 Knowledge and technology outputs		61.4	7
2.2.2 Graduates in science and engineering, %		22.8	57	6.1 Knowledge creation		60.6	9
2.2.3 Tertiary inbound mobility, %		20.1	7	6.1.1 Patents by origin/bn PPP\$ GDP		5.1	16
2.3 Research and development (R&D)		71.3	6	6.1.2 PCT patents by origin/bn PPP\$ GDP		1.5	20
2.3.1 Researchers, FTE/mn pop.	⊙	4,683.8	20	6.1.3 Utility models by origin/bn PPP\$ GDP		n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP	⊙	2.9	11	6.1.4 Scientific and technical articles/bn PPP\$ GDP		32.0	16
2.3.3 Global corporate R&D investors, top 3, mn USD		84.6	7	6.1.5 Citable documents H-index		100.0	1
2.3.4 QS university ranking, top 3*		99.4	2	6.2 Knowledge impact		65.4	4
 Infrastructure		63.7	6	6.2.1 Labor productivity growth, %		0.3	86
3.1 Information and communication technologies (ICTs)		94.2	6	6.2.2 Unicorn valuation, % GDP		5.2	7
3.1.1 ICT access*		94.4	10	6.2.3 Software spending, % GDP		0.7	2
3.1.2 ICT use*		99.5	3	6.2.4 High-tech manufacturing, %		42.9	22
3.1.3 Government's online service*		87.4	17	6.3 Knowledge diffusion		58.0	9
3.1.4 E-participation*		95.3	6	6.3.1 Intellectual property receipts, % total trade		2.9	9
3.2 General infrastructure		35.0	42	6.3.2 Production and export complexity		84.8	10
3.2.1 Electricity output, GWh/mn pop.		4,560.7	50	6.3.3 High-tech exports, % total trade		8.1	22
3.2.2 Logistics performance*		72.7	18	6.3.4 ICT services exports, % total trade		4.8	20
3.2.3 Gross capital formation, % GDP		17.4	114	6.3.5 ISO 9001 quality/bn PPP\$ GDP		11.7	23
3.3 Ecological sustainability		61.9	2	 Creative outputs		60.0	2
3.3.1 GDP/unit of energy use		17.9	12	7.1 Intangible assets		63.4	8
3.3.2 Environmental performance*		99.7	2	7.1.1 Intangible asset intensity, top 15, %		85.2	4
3.3.3 ISO 14001 environment/bn PPP\$ GDP		5.1	20	7.1.2 Trademarks by origin/bn PPP\$ GDP		65.7	30
 Market sophistication		69.3	3	7.1.3 Global brand value, top 5,000, % GDP		14.1	10
4.1 Credit		60.2	18	7.1.4 Industrial designs by origin/bn PPP\$ GDP		8.3	13
4.1.1 Finance for startups and scaleups†		64.8	27	7.2 Creative goods and services		45.0	9
4.1.2 Domestic credit to private sector, % GDP		146.6	11	7.2.1 Cultural and creative services exports, % total trade		3.1	6
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a	7.2.2 National feature films/mn pop. 15-69		3.4	36
4.2 Investment		57.4	11	7.2.3 Entertainment and media market/th pop. 15-69		70.9	6
4.2.1 Market capitalization, % GDP	⊙	126.6	9	7.2.4 Creative goods exports, % total trade		2.1	25
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP		0.6	11	7.3 Online creativity		68.1	9
4.2.3 VC recipients, deals/bn PPP\$ GDP		0.3	7	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		70.5	9
4.2.4 VC received, value, % GDP		0.0	8	7.3.2 Country-code TLDs/th pop. 15-69		70.9	7
4.3 Trade, diversification and market scale		90.1	6	7.3.3 GitHub commits/mn pop. 15-69		55.3	17
4.3.1 Applied tariff rate, weighted avg., %		1.3	16	7.3.4 Mobile app creation/bn PPP\$ GDP		75.5	22
4.3.2 Domestic industry diversification		97.5	14				
4.3.3 Domestic market scale, bn PPP\$		3,776.0	9				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

United Republic of Tanzania

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
123	105	Lower middle	SSA	65.5	207.6	3,374	
		Score/Value	Rank			Score/Value	Rank
Institutions		47.8	73 ●	Business sophistication		20.5	105
1.1 Institutional environment	28.4	103	5.1 Knowledge workers	11.9	[116]		
1.1.1 Operational stability for businesses*	37.5	101	5.1.1 Knowledge-intensive employment, %	⊙	3.2	125	○◇
1.1.2 Government effectiveness*	19.3	109	5.1.2 Firms offering formal training, %	⊙	30.7	55	
1.2 Regulatory environment	61.2	69 ●◆	5.1.3 GERD performed by business, % GDP	n/a	n/a		
1.2.1 Regulatory quality*	25.8	108	5.1.4 GERD financed by business, %	n/a	n/a		
1.2.2 Rule of law*	24.4	95	5.1.5 Females employed w/advanced degrees, %	⊙	0.2	127	○◇
1.2.3 Cost of redundancy dismissal	9.3	25 ●◆	5.2 Innovation linkages	28.6	44 ●◆		
1.3 Business environment	53.7	[50]	5.2.1 University–industry R&D collaboration†	58.6	37	●◆	
1.3.1 Policies for doing business†	53.7	54 ●	5.2.2 State of cluster development†	52.4	44	●	
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	n/a	n/a		
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	95		
			5.2.5 Patent families/bn PPP\$ GDP	0.0	95	○◇	
Human capital and research		11.0	126 ◇	Knowledge absorption		21.1	126
2.1 Education	28.7	123	5.3.1 Intellectual property payments, % total trade	0.0	107		
2.1.1 Expenditure on education, % GDP	3.4	95	5.3.2 High-tech imports, % total trade	6.8	92		
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊙	15.2	74	5.3.3 ICT services imports, % total trade	0.2	126	◇
2.1.3 School life expectancy, years	8.7	109	◇	5.3.4 FDI net inflows, % GDP	1.5	90	
2.1.4 PISA scales in reading, maths and science	n/a	n/a		5.3.5 Research talent, % in businesses	n/a	n/a	
2.1.5 Pupil–teacher ratio, secondary	23.3	107					
2.2 Tertiary education	2.0	125	◇	Knowledge and technology outputs		10.9	119
2.2.1 Tertiary enrolment, % gross	7.8	118	◇	6.1 Knowledge creation	4.9	115	
2.2.2 Graduates in science and engineering, %	⊙	9.5	111	○◇	0.0	131	
2.2.3 Tertiary inbound mobility, %	n/a	n/a		6.1.1 Patents by origin/bn PPP\$ GDP	⊙	0.0	131
2.3 Research and development (R&D)	2.3	89		6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	101	○◇
2.3.1 Researchers, FTE/mn pop.	⊙	19.2	104	6.1.3 Utility models by origin/bn PPP\$ GDP	⊙	0.0	73
2.3.2 Gross expenditure on R&D, % GDP	⊙	0.5	60	6.1.4 Scientific and technical articles/bn PPP\$ GDP	7.7	89	
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	○◇	6.1.5 Citable documents H-index	9.9	79	
2.3.4 QS university ranking, top 3*	0.0	71	○◇	6.2 Knowledge impact	19.7	106	
				6.2.1 Labor productivity growth, %	2.9	17	●
				6.2.2 Unicorn valuation, % GDP	0.0	48	○◇
				6.2.3 Software spending, % GDP	0.0	129	○◇
				6.2.4 High-tech manufacturing, %	⊙	6.9	98
Infrastructure		21.4	115	6.3 Knowledge diffusion	8.2	117	
3.1 Information and communication technologies (ICTs)	29.2	121	◇	6.3.1 Intellectual property receipts, % total trade	0.0	110	
3.1.1 ICT access*	22.2	125	◇	6.3.2 Production and export complexity	32.5	107	
3.1.2 ICT use*	27.6	119	◇	6.3.3 High-tech exports, % total trade	0.2	105	
3.1.3 Government's online service*	41.4	107		6.3.4 ICT services exports, % total trade	0.2	117	
3.1.4 E-participation*	25.6	111		6.3.5 ISO 9001 quality/bn PPP\$ GDP	0.6	116	
3.2 General infrastructure	21.3	85					
3.2.1 Electricity output, GWh/mn pop.	⊙	133.1	120	Creative outputs		6.3	[120]
3.2.2 Logistics performance*	n/a	n/a		7.1 Intangible assets	6.8	[115]	
3.2.3 Gross capital formation, % GDP	37.6	10	●◆	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a	
3.3 Ecological sustainability	13.6	109		7.1.2 Trademarks by origin/bn PPP\$ GDP	⊙	11.5	108
3.3.1 GDP/unit of energy use	6.7	101		7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a	
3.3.2 Environmental performance*	25.9	96		7.1.4 Industrial designs by origin/bn PPP\$ GDP	n/a	n/a	
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.3	105		7.2 Creative goods and services	0.6	[118]	
				7.2.1 Cultural and 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 and media market/th pop. 15–69	n/a	n/a	
				7.2.4 Creative goods exports, % total trade	0.1	107	
				7.3 Online creativity	11.1	112	
				7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.2	120	
				7.3.2 Country-code TLDs/th pop. 15–69	0.2	114	
				7.3.3 GitHub commits/mn pop. 15–69	0.3	124	
				7.3.4 Mobile app creation/bn PPP\$ GDP	43.7	110	
Market sophistication		30.3	83				
4.1 Credit	51.5	26 ●◆					
4.1.1 Finance for startups and scaleups†	n/a	n/a					
4.1.2 Domestic credit to private sector, % GDP	13.2	123					
4.1.3 Loans from microfinance institutions, % GDP	⊙	14.5	1				
4.2 Investment	3.8	87					
4.2.1 Market capitalization, % GDP	10.4	71					
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	91	◇				
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	69					
4.2.4 VC received, value, % GDP	0.0	67					
4.3 Trade, diversification and market scale	35.6	112					
4.3.1 Applied tariff rate, weighted avg., %	8.9	111					
4.3.2 Domestic industry diversification	⊙	60.2	101				
4.3.3 Domestic market scale, bn PPP\$	207.6	68	●				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

United States of America

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
4	2	High	NAC	338.3	25,035.2	75,180

	Score/ Value	Rank		Score/ Value	Rank
 Institutions	77.4	16	 Business sophistication	69.9	2 ◆◆
1.1 Institutional environment	69.1	27	5.1 Knowledge workers	76.8	2 ◆◆
1.1.1 Operational stability for businesses*	64.6	37	5.1.1 Knowledge-intensive employment, %	51.5	9
1.1.2 Government effectiveness*	73.6	21	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	90.2	11	5.1.3 GERD performed by business, % GDP	2.7	3 ●
1.2.1 Regulatory quality*	79.8	18	5.1.4 GERD financed by business, %	67.9	6
1.2.2 Rule of law*	81.2	20	5.1.5 Females employed w/advanced degrees, %	27.9	9
1.2.3 Cost of redundancy dismissal	8.0	1 ●	5.2 Innovation linkages	75.8	4 ◆
1.3 Business environment	72.7	21	5.2.1 University-industry R&D collaboration†	99.9	2 ◆◆
1.3.1 Policies for doing business†	81.4	7	5.2.2 State of cluster development†	100.0	1 ◆◆
1.3.2 Entrepreneurship policies and culture†	64.0	18	5.2.3 GERD financed by abroad, % GDP	0.2	15
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.2	5
			5.2.5 Patent families/bn PPP\$ GDP	3.3	12
 Human capital and research	56.5	12	5.3 Knowledge absorption	57.2	5
2.1 Education	58.3	45	5.3.1 Intellectual property payments, % total trade	1.6	20
2.1.1 Expenditure on education, % GDP	5.0	41	5.3.2 High-tech imports, % total trade	18.5	9 ◆
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.6	36	5.3.3 ICT services imports, % total trade	1.5	60
2.1.3 School life expectancy, years	16.3	31	5.3.4 FDI net inflows, % GDP	1.4	91 ○
2.1.4 PISA scales in reading, maths and science	495.3	24	5.3.5 Research talent, % in businesses	80.4	2 ◆◆
2.1.5 Pupil-teacher ratio, secondary	14.5	73 ○◇			
2.2 Tertiary education	34.1	53	 Knowledge and technology outputs	63.7	2 ◆◆
2.2.1 Tertiary enrolment, % gross	87.6	14	6.1 Knowledge creation	61.2	8
2.2.2 Graduates in science and engineering, %	20.1	70 ○	6.1.1 Patents by origin/bn PPP\$ GDP	11.4	7
2.2.3 Tertiary inbound mobility, %	5.1	47	6.1.2 PCT patents by origin/bn PPP\$ GDP	2.4	13
2.3 Research and development (R&D)	77.2	2 ◆◆	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1 Researchers, FTE/mn pop.	4,500.5	24	6.1.4 Scientific and technical articles/bn PPP\$ GDP	14.1	52 ○
2.3.2 Gross expenditure on R&D, % GDP	3.5	3 ●	6.1.5 Citable documents H-index	100.0	1 ◆◆
2.3.3 Global corporate R&D investors, top 3, mn USD	100.0	1 ◆◆	6.2 Knowledge impact	77.6	1 ◆◆
2.3.4 QS university ranking, top 3*	100.0	1 ◆◆	6.2.1 Labor productivity growth, %	1.4	50
			6.2.2 Unicorn valuation, % GDP	7.8	1 ◆◆
			6.2.3 Software spending, % GDP	1.0	1 ◆◆
			6.2.4 High-tech manufacturing, %	42.4	24
 Infrastructure	56.7	25	6.3 Knowledge diffusion	52.5	14
3.1 Information and communication technologies (ICTs)	90.6	11	6.3.1 Intellectual property receipts, % total trade	4.4	1 ◆◆
3.1.1 ICT access*	84.4	56	6.3.2 Production and export complexity	83.4	12
3.1.2 ICT use*	95.0	11	6.3.3 High-tech exports, % total trade	9.2	20
3.1.3 Government's online service*	92.3	9	6.3.4 ICT services exports, % total trade	2.0	57
3.1.4 E-participation*	90.7	10	6.3.5 ISO 9001 quality/bn PPP\$ GDP	1.1	104 ○◇
3.2 General infrastructure	53.7	12			
3.2.1 Electricity output, GWh/mn pop.	13,154.8	9	 Creative outputs	53.0	12
3.2.2 Logistics performance*	77.3	16	7.1 Intangible assets	52.2	21
3.2.3 Gross capital formation, % GDP	22.0	81 ○	7.1.1 Intangible asset intensity, top 15, %	93.4	1 ◆◆
3.3 Ecological sustainability	25.8	62 ○	7.1.2 Trademarks by origin/bn PPP\$ GDP	24.0	86 ○◇
3.3.1 GDP/unit of energy use	9.7	73 ○	7.1.3 Global brand value, top 5,000, % GDP	20.6	3 ◆◆
3.3.2 Environmental performance*	54.6	36	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.0	69 ○◇
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.2	116 ○◇	7.2 Creative goods and services	47.3	5 ◆
			7.2.1 Cultural and creative services exports, % total trade	1.6	19
			7.2.2 National feature films/mn pop. 15-69	4.0	34
			7.2.3 Entertainment and media market/th pop. 15-69	100.0	1 ◆◆
			7.2.4 Creative goods exports, % total trade	2.7	20
			7.3 Online creativity	60.4	13
			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	2.3	68 ○◇
			7.3.3 GitHub commits/mn pop. 15-69	63.7	11
			7.3.4 Mobile app creation/bn PPP\$ GDP	75.7	21
 Market sophistication	82.9	1 ◆◆			
4.1 Credit	83.5	2 ◆◆			
4.1.1 Finance for startups and scaleups†	83.9	6 ◆			
4.1.2 Domestic credit to private sector, % GDP	216.2	2 ◆◆			
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a			
4.2 Investment	68.8	4 ◆			
4.2.1 Market capitalization, % GDP	166.7	7			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.4	13			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.3	6 ◆			
4.2.4 VC received, value, % GDP	0.0	1 ◆◆			
4.3 Trade, diversification and market scale	96.3	1 ◆◆			
4.3.1 Applied tariff rate, weighted avg., %	1.5	49			
4.3.2 Domestic industry diversification	98.7	6			
4.3.3 Domestic market scale, bn PPP\$	25,035.2	1 ◆◆			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
73	56	High	LCN	3.4	96.8	27,233


	Score/ Value	Rank		Score/ Value	Rank
 Institutions	67.5	31	 Business sophistication	29.2	59
1.1 Institutional environment	68.9	28	5.1 Knowledge workers	29.2	73
1.1.1 Operational stability for businesses*	77.8	10 ●	5.1.1 Knowledge-intensive employment, %	24.7	56
1.1.2 Government effectiveness*	59.9	38	5.1.2 Firms offering formal training, %	53.3	16 ●
1.2 Regulatory environment	67.8	49	5.1.3 GERD performed by business, % GDP	0.1	59
1.2.1 Regulatory quality*	60.9	42	5.1.4 GERD financed by business, %	4.2	82
1.2.2 Rule of law*	61.2	37	5.1.5 Females employed w/advanced degrees, %	10.4	73
1.2.3 Cost of redundancy dismissal	20.8	91	5.2 Innovation linkages	18.8	83
1.3 Business environment	65.9	27	5.2.1 University–industry R&D collaboration†	43.5	67
1.3.1 Policies for doing business†	89.3	4 ●◆	5.2.2 State of cluster development†	37.8	79
1.3.2 Entrepreneurship policies and culture†	42.5	44	5.2.3 GERD financed by abroad, % GDP	0.0	57
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	72
			5.2.5 Patent families/bn PPP\$ GDP	0.1	52
 Human capital and research	26.7	83	5.3 Knowledge absorption	39.6	47
2.1 Education	48.0	73	5.3.1 Intellectual property payments, % total trade	0.9	42
2.1.1 Expenditure on education, % GDP	4.5	55	5.3.2 High-tech imports, % total trade	6.6	94
2.1.2 Government funding/pupil, secondary, % GDP/cap	14.5	77	5.3.3 ICT services imports, % total trade	4.6	5 ●◆
2.1.3 School life expectancy, years	16.8	21 ●	5.3.4 FDI net inflows, % GDP	3.2	43
2.1.4 PISA scales in reading, maths and science	423.5	52	5.3.5 Research talent, % in businesses	0.8	80
2.1.5 Pupil–teacher ratio, secondary	15.1	77			
2.2 Tertiary education	22.4	84	 Knowledge and technology outputs	22.8	66
2.2.1 Tertiary enrolment, % gross	67.9	46	6.1 Knowledge creation	11.8	74
2.2.2 Graduates in science and engineering, %	15.2	99	6.1.1 Patents by origin/bn PPP\$ GDP	0.3	90
2.2.3 Tertiary inbound mobility, %	2.1	76	6.1.2 PCT patents by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	9.7	61	6.1.3 Utility models by origin/bn PPP\$ GDP	0.3	38
2.3.1 Researchers, FTE/mn pop.	795.4	57	6.1.4 Scientific and technical articles/bn PPP\$ GDP	12.0	65
2.3.2 Gross expenditure on R&D, % GDP	0.4	64	6.1.5 Citable documents H-index	10.7	73
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2 Knowledge impact	21.4	96
2.3.4 QS university ranking, top 3*	22.8	48	6.2.1 Labor productivity growth, %	0.5	79
			6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.2	71
			6.2.4 High-tech manufacturing, %	15.0	78
 Infrastructure	43.9	57	6.3 Knowledge diffusion	35.2	39
3.1 Information and communication technologies (ICTs)	74.8	51	6.3.1 Intellectual property receipts, % total trade	0.2	46
3.1.1 ICT access*	79.3	74	6.3.2 Production and export complexity	51.1	64
3.1.2 ICT use*	88.0	25 ●	6.3.3 High-tech exports, % total trade	0.8	75
3.1.3 Government's online service*	73.9	52	6.3.4 ICT services exports, % total trade	7.9	7 ●◆
3.1.4 E-participation*	58.1	61	6.3.5 ISO 9001 quality/bn PPP\$ GDP	16.6	17 ●
3.2 General infrastructure	24.9	75			
3.2.1 Electricity output, GWh/mn pop.	4,545.2	51	 Creative outputs	19.2	78
3.2.2 Logistics performance*	40.9	60	7.1 Intangible assets	17.1	93
3.2.3 Gross capital formation, % GDP	18.4	108	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	31.9	48	7.1.2 Trademarks by origin/bn PPP\$ GDP	56.3	41
3.3.1 GDP/unit of energy use	14.1	31	7.1.3 Global brand value, top 5,000, % GDP	0.0	74
3.3.2 Environmental performance*	31.4	85	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.7	79
3.3.3 ISO 14001 environment/bn PPP\$ GDP	3.8	26 ●	7.2 Creative goods and services	14.6	59
			7.2.1 Cultural and creative services exports, % total trade	0.8	40
			7.2.2 National feature films/mn pop. 15–69	4.2	31
			7.2.3 Entertainment and media market/th pop. 15–69	n/a	n/a
			7.2.4 Creative goods exports, % total trade	0.0	113
			7.3 Online creativity	27.8	43
			7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	7.6	51
			7.3.2 Country-code TLDs/th pop. 15–69	12.3	38
			7.3.3 GitHub commits/mn pop. 15–69	20.7	44
			7.3.4 Mobile app creation/bn PPP\$ GDP	70.8	49
 Market sophistication	28.1	86			
4.1 Credit	19.1	93			
4.1.1 Finance for startups and scaleups†	29.4	71			
4.1.2 Domestic credit to private sector, % GDP	27.9	103			
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a			
4.2 Investment	17.9	40			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.3	17 ●			
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	66			
4.2.4 VC received, value, % GDP	0.0	31			
4.3 Trade, diversification and market scale	47.3	92			
4.3.1 Applied tariff rate, weighted avg., %	5.3	92			
4.3.2 Domestic industry diversification	74.0	89			
4.3.3 Domestic market scale, bn PPP\$	96.8	88			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Uzbekistan

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
88	72	Lower middle	CSA	34.6	334.3	9,478

	Score/Value	Rank		Score/Value	Rank
 Institutions	54.7	55	 Business sophistication	25.5	78
1.1 Institutional environment	40.0	76	5.1 Knowledge workers	23.3	87
1.1.1 Operational stability for businesses*	48.6	74	5.1.1 Knowledge-intensive employment, %	n/a	n/a
1.1.2 Government effectiveness*	31.3	84	5.1.2 Firms offering formal training, %	16.9	88 ○◇
1.2 Regulatory environment	51.0	97	5.1.3 GERD performed by business, % GDP	⊙ 0.1	69
1.2.1 Regulatory quality*	27.0	104	5.1.4 GERD financed by business, %	⊙ 42.4	40
1.2.2 Rule of law*	13.8	115	5.1.5 Females employed w/advanced degrees, %	⊙ 8.1	84
1.2.3 Cost of redundancy dismissal	17.3	73	5.2 Innovation linkages	26.3	51
1.3 Business environment	73.3	[19]	5.2.1 University-industry R&D collaboration†	⊙ 62.4	32
1.3.1 Policies for doing business†	⊙ 73.3	23	5.2.2 State of cluster development†	⊙ 66.1	29
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	⊙ 0.0	92
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	96
			5.2.5 Patent families/bn PPP\$ GDP	0.0	95
 Human capital and research	25.2	89	5.3 Knowledge absorption	27.0	92
2.1 Education	46.4	78	5.3.1 Intellectual property payments, % total trade	0.5	75
2.1.1 Expenditure on education, % GDP	4.6	52	5.3.2 High-tech imports, % total trade	10.9	27
2.1.2 Government funding/pupil, secondary, % GDP/cap	13.9	79	5.3.3 ICT services imports, % total trade	0.6	101
2.1.3 School life expectancy, years	12.1	93	5.3.4 FDI net inflows, % GDP	3.3	41
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	⊙ 12.9	57
2.1.5 Pupil-teacher ratio, secondary	9.8	28			
2.2 Tertiary education	27.4	74	 Knowledge and technology outputs	19.3	78
2.2.1 Tertiary enrolment, % gross	21.2	99	6.1 Knowledge creation	12.4	72
2.2.2 Graduates in science and engineering, %	32.8	12	6.1.1 Patents by origin/bn PPP\$ GDP	1.4	47
2.2.3 Tertiary inbound mobility, %	0.7	97	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	99
2.3 Research and development (R&D)	1.9	92	6.1.3 Utility models by origin/bn PPP\$ GDP	1.3	17
2.3.1 Researchers, FTE/mn pop.	523.4	69	6.1.4 Scientific and technical articles/bn PPP\$ GDP	2.8	117
2.3.2 Gross expenditure on R&D, % GDP	0.1	99	6.1.5 Citable documents H-index	4.1	115
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2 Knowledge impact	33.9	44
2.3.4 QS university ranking, top 3*	0.0	71	6.2.1 Labor productivity growth, %	5.0	6
			6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.2	80
			6.2.4 High-tech manufacturing, %	24.8	51
 Infrastructure	37.9	73	6.3 Knowledge diffusion	11.6	100
3.1 Information and communication technologies (ICTs)	71.4	63	6.3.1 Intellectual property receipts, % total trade	0.0	104
3.1.1 ICT access*	79.1	75	6.3.2 Production and export complexity	47.2	77
3.1.2 ICT use*	74.5	63	6.3.3 High-tech exports, % total trade	0.1	122
3.1.3 Government's online service*	71.7	57	6.3.4 ICT services exports, % total trade	0.8	92
3.1.4 E-participation*	60.5	55	6.3.5 ISO 9001 quality/bn PPP\$ GDP	1.2	103
3.2 General infrastructure	27.3	62	 Creative outputs	14.6	93
3.2.1 Electricity output, GWh/mn pop.	⊙ 1,942.6	83	7.1 Intangible assets	19.5	[86]
3.2.2 Logistics performance*	22.7	82	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.2.3 Gross capital formation, % GDP	42.1	6	7.1.2 Trademarks by origin/bn PPP\$ GDP	35.3	65
3.3 Ecological sustainability	15.1	102	7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a
3.3.1 GDP/unit of energy use	5.8	110	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.8	77
3.3.2 Environmental performance*	32.7	79	7.2 Creative goods and services	3.0	96
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.3	99	7.2.1 Cultural and creative services exports, % total trade	0.1	88
			7.2.2 National feature films/mn pop. 15-69	0.4	73
			7.2.3 Entertainment and media market/th pop. 15-69	3.2	49
			7.2.4 Creative goods exports, % total trade	0.4	64
 Market sophistication	33.9	69	7.3 Online creativity	16.2	90
4.1 Credit	7.0	121	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.0	132
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	1.4	78
4.1.2 Domestic credit to private sector, % GDP	35.7	90	7.3.3 GitHub commits/mn pop. 15-69	2.6	94
4.1.3 Loans from microfinance institutions, % GDP	0.2	49	7.3.4 Mobile app creation/bn PPP\$ GDP	60.8	79
4.2 Investment	n/a	[n/a]			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a			
4.2.3 VC recipients, deals/bn PPP\$ GDP	n/a	n/a			
4.2.4 VC received, value, % GDP	n/a	n/a			
4.3 Trade, diversification and market scale	60.8	51			
4.3.1 Applied tariff rate, weighted avg., %	2.6	68			
4.3.2 Domestic industry diversification	92.4	42			
4.3.3 Domestic market scale, bn PPP\$	334.3	56			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.





Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	
40	57	Lower middle	SEAO	98.2	1,299.7	13,075	
		Score/Value	Rank			Score/Value	Rank
 Institutions		55.1	54	 Business sophistication		32.2	49
1.1 Institutional environment	53.8	48	◆	5.1 Knowledge workers	28.2	75	
1.1.1 Operational stability for businesses*	63.2	40	◆	5.1.1 Knowledge-intensive employment, %	7.8	112	○
1.1.2 Government effectiveness*	44.4	54	◆	5.1.2 Firms offering formal training, %	22.2	71	⊙
1.2 Regulatory environment	50.4	98		5.1.3 GERD performed by business, % GDP	0.4	47	◆
1.2.1 Regulatory quality*	31.8	94		5.1.4 GERD financed by business, %	64.1	9	◆◆
1.2.2 Rule of law*	35.4	72	◆	5.1.5 Females employed w/advanced degrees, %	7.5	87	
1.2.3 Cost of redundancy dismissal	24.6	105	○	5.2 Innovation linkages	28.6	43	◆
1.3 Business environment	61.2	31	◆	5.2.1 University–industry R&D collaboration†	65.3	27	◆
1.3.1 Policies for doing business†	62.0	36	◆	5.2.2 State of cluster development†	68.8	26	◆
1.3.2 Entrepreneurship policies and culture†	60.4	24	⊙	5.2.3 GERD financed by abroad, % GDP	0.0	59	⊙
Human capital and research		29.9	71	5.3 Knowledge absorption	39.8	45	◆
2.1 Education	49.3	[70]		5.3.1 Intellectual property payments, % total trade	0.3	85	⊙
2.1.1 Expenditure on education, % GDP	3.0	108	○	5.3.2 High-tech imports, % total trade	29.5	4	◆◆
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a		5.3.3 ICT services imports, % total trade	0.2	127	⊙
2.1.3 School life expectancy, years	n/a	n/a		5.3.4 FDI net inflows, % GDP	4.6	24	
2.1.4 PISA scales in reading, maths and science	502.0	16	◆	5.3.5 Research talent, % in businesses	24.1	52	⊙
2.1.5 Pupil–teacher ratio, secondary	20.6	100	○	Knowledge and technology outputs		28.7	48
2.2 Tertiary education	20.5	89		6.1 Knowledge creation	9.9	80	
2.2.1 Tertiary enrolment, % gross	35.4	83		6.1.1 Patents by origin/bn PPP\$ GDP	0.9	60	
2.2.2 Graduates in science and engineering, %	22.7	59	⊙	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	88	
2.2.3 Tertiary inbound mobility, %	0.4	103	○	6.1.3 Utility models by origin/bn PPP\$ GDP	0.3	39	
2.3 Research and development (R&D)	19.9	44	◆	6.1.4 Scientific and technical articles/bn PPP\$ GDP	6.5	97	
2.3.1 Researchers, FTE/mn pop.	756.7	59	⊙	6.1.5 Citable documents H-index	14.2	59	
2.3.2 Gross expenditure on R&D, % GDP	0.4	66	⊙	6.2 Knowledge impact	43.0	24	◆
2.3.3 Global corporate R&D investors, top 3, mn USD	52.3	29	◆	6.2.1 Labor productivity growth, %	5.3	4	◆◆
2.3.4 QS university ranking, top 3*	12.4	61		6.2.2 Unicorn valuation, % GDP	1.1	33	
Infrastructure		38.9	70	6.2.3 Software spending, % GDP	0.2	64	
3.1 Information and communication technologies (ICTs)	68.4	71	◆	6.2.4 High-tech manufacturing, %	29.9	38	◆
3.1.1 ICT access*	87.2	40	◆	6.3 Knowledge diffusion	33.4	46	◆
3.1.2 ICT use*	72.8	67	◆	6.3.1 Intellectual property receipts, % total trade	0.0	95	⊙
3.1.3 Government's online service*	61.1	75		6.3.2 Production and export complexity	56.2	52	◆
3.1.4 E-participation*	52.3	71	◆	6.3.3 High-tech exports, % total trade	35.1	3	◆◆
3.2 General infrastructure	34.8	43	◆	6.3.4 ICT services exports, % total trade	0.3	115	⊙
3.2.1 Electricity output, GWh/mn pop.	2,466.8	75	⊙	6.3.5 ISO 9001 quality/bn PPP\$ GDP	5.6	50	◆
3.2.2 Logistics performance*	54.5	42	◆	Creative outputs		37.3	36
3.2.3 Gross capital formation, % GDP	34.7	13	●	7.1 Intangible assets	47.1	32	◆
3.3 Ecological sustainability	13.4	110	○	7.1.1 Intangible asset intensity, top 15, %	59.3	38	
3.3.1 GDP/unit of energy use	9.7	72		7.1.2 Trademarks by origin/bn PPP\$ GDP	68.3	26	◆
3.3.2 Environmental performance*	2.0	130	◇	7.1.3 Global brand value, top 5,000, % GDP	8.4	23	◆
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.1	43	◆	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.9	43	
Market sophistication		38.2	49	7.2 Creative goods and services	31.2	29	◆
4.1 Credit	31.3	62		7.2.1 Cultural and creative services exports, % total trade	0.1	87	
4.1.1 Finance for startups and scaleups†	49.4	47	⊙	7.2.2 National feature films/mn pop. 15–69	0.3	77	○
4.1.2 Domestic credit to private sector, % GDP	115.5	21	◆◆	7.2.3 Entertainment and media market/th pop. 15–69	n/a	n/a	
4.1.3 Loans from microfinance institutions, % GDP	0.1	51	○	7.2.4 Creative goods exports, % total trade	7.7	7	◆◆
4.2 Investment	10.8	53		7.3 Online creativity	23.9	54	◆
4.2.1 Market capitalization, % GDP	47.1	36		7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	2.9	73	
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.0	60		7.3.2 Country-code TLDs/th pop. 15–69	2.2	71	
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	47		7.3.3 GitHub commits/mn pop. 15–69	7.9	58	◆
4.2.4 VC received, value, % GDP	0.0	48		7.3.4 Mobile app creation/bn PPP\$ GDP	82.6	8	◆◆
4.3 Trade, diversification and market scale	72.6	19	◆◆				
4.3.1 Applied tariff rate, weighted avg., %	1.3	17	◆◆				
4.3.2 Domestic industry diversification	98.7	7	◆◆				
4.3.3 Domestic market scale, bn PPP\$	1,299.7	25					

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Zambia

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
122	111	Low	SSA	20.0	76.3	3,808

	Score/Value	Rank		Score/Value	Rank
 Institutions	31.3	119	 Business sophistication	21.7	98
1.1 Institutional environment	28.3	104	5.1 Knowledge workers	22.8	[90]
1.1.1 Operational stability for businesses*	42.4	86	5.1.1 Knowledge-intensive employment, %	10.6	106
1.1.2 Government effectiveness*	14.2	119	5.1.2 Firms offering formal training, %	36.6	42
1.2 Regulatory environment	20.4	130	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	27.8	102	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	22.3	99	5.1.5 Females employed w/advanced degrees, %	3.8	98
1.2.3 Cost of redundancy dismissal	50.6	128	5.2 Innovation linkages	21.0	67
1.3 Business environment	45.4	[68]	5.2.1 University-industry R&D collaboration†	38.6	77
1.3.1 Policies for doing business†	45.4	73	5.2.2 State of cluster development†	38.8	73
1.3.2 Entrepreneurship policies and culture†	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	n/a	n/a
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	65
			5.2.5 Patent families/bn PPP\$ GDP	0.0	95
 Human capital and research	22.7	[93]	5.3 Knowledge absorption	21.2	125
2.1 Education	45.3	[80]	5.3.1 Intellectual property payments, % total trade	0.3	86
2.1.1 Expenditure on education, % GDP	3.9	74	5.3.2 High-tech imports, % total trade	4.2	123
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	0.5	109
2.1.3 School life expectancy, years	n/a	n/a	5.3.4 FDI net inflows, % GDP	-0.0	122
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	21.1	103	 Knowledge and technology outputs	8.7	130
2.2 Tertiary education	n/a	[n/a]	6.1 Knowledge creation	6.8	100
2.2.1 Tertiary enrolment, % gross	n/a	n/a	6.1.1 Patents by origin/bn PPP\$ GDP	0.3	93
2.2.2 Graduates in science and engineering, %	n/a	n/a	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	101
2.2.3 Tertiary inbound mobility, %	n/a	n/a	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	0.0	[119]	6.1.4 Scientific and technical articles/bn PPP\$ GDP	8.2	84
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index	6.8	90
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	6.2 Knowledge impact	11.3	127
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	6.2.1 Labor productivity growth, %	-1.3	120
2.3.4 QS university ranking, top 3*	0.0	71	6.2.2 Unicorn valuation, % GDP	0.0	48
			6.2.3 Software spending, % GDP	0.0	118
 Infrastructure	23.5	111	6.2.4 High-tech manufacturing, %	10.1	91
3.1 Information and communication technologies (ICTs)	37.7	111	6.3 Knowledge diffusion	8.1	118
3.1.1 ICT access*	52.3	105	6.3.1 Intellectual property receipts, % total trade	0.0	100
3.1.2 ICT use*	24.1	121	6.3.2 Production and export complexity	34.5	103
3.1.3 Government's online service*	38.3	111	6.3.3 High-tech exports, % total trade	0.1	116
3.1.4 E-participation*	36.0	93	6.3.4 ICT services exports, % total trade	0.3	113
3.2 General infrastructure	18.3	97	6.3.5 ISO 9001 quality/bn PPP\$ GDP	0.5	119
3.2.1 Electricity output, GWh/mn pop.	932.3	98	 Creative outputs	8.7	112
3.2.2 Logistics performance*	n/a	n/a	7.1 Intangible assets	16.9	94
3.2.3 Gross capital formation, % GDP	31.5	21	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	14.6	104	7.1.2 Trademarks by origin/bn PPP\$ GDP	31.4	74
3.3.1 GDP/unit of energy use	5.5	113	7.1.3 Global brand value, top 5,000, % GDP	0.0	74
3.3.2 Environmental performance*	33.1	78	7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.0	41
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.2	118	7.2 Creative goods and services	0.5	[122]
			7.2.1 Cultural and creative services exports, % total trade	n/a	n/a
 Market sophistication	21.7	110	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	9.7	113	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.1 Finance for startups and scaleups†	n/a	n/a	7.2.4 Creative goods exports, % total trade	0.0	111
4.1.2 Domestic credit to private sector, % GDP	15.2	118	7.3 Online creativity	0.3	129
4.1.3 Loans from microfinance institutions, % GDP	1.3	22	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.1	125
4.2 Investment	5.9	[71]	7.3.2 Country-code TLDs/th pop. 15-69	0.1	118
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.3 GitHub commits/mn pop. 15-69	0.6	119
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	n/a	n/a
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	57			
4.2.4 VC received, value, % GDP	0.0	70			
4.3 Trade, diversification and market scale	49.6	87			
4.3.1 Applied tariff rate, weighted avg., %	4.8	89			
4.3.2 Domestic industry diversification	78.4	82			
4.3.3 Domestic market scale, bn PPP\$	76.3	93			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$		
97	127	Lower middle	SSA	16.3	40.4	2,555		
Institutions		Score/Value	Rank	Business sophistication		Score/Value	Rank	
21.3		130	◇	19.3		112		
1.1 Institutional environment	8.5	130	◇	5.1 Knowledge workers	23.5	[84]		
1.1.1 Operational stability for businesses*	14.6	129	◇	5.1.1 Knowledge-intensive employment, %	⊙	9.4	108	
1.1.2 Government effectiveness*	2.4	130	◇	5.1.2 Firms offering formal training, %	⊙	26.4	63	
1.2 Regulatory environment	35.2	125		5.1.3 GERD performed by business, % GDP	n/a	n/a		
1.2.1 Regulatory quality*	6.5	131	◇	5.1.4 GERD financed by business, %	n/a	n/a		
1.2.2 Rule of law*	2.8	130	◇	5.1.5 Females employed w/advanced degrees, %	⊙	9.8	76	
1.2.3 Cost of redundancy dismissal	25.3	106		5.2 Innovation linkages	7.7	125	◇	
1.3 Business environment	20.2	[117]		5.2.1 University–industry R&D collaboration†	⊙	14.5	121	
1.3.1 Policies for doing business†	⊙	20.2	119	◇	5.2.2 State of cluster development†	⊙	5.8	126
1.3.2 Entrepreneurship policies and culture†	n/a	n/a		5.2.3 GERD financed by abroad, % GDP	n/a	n/a		
				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	46	◆◆	
				5.2.5 Patent families/bn PPP\$ GDP	0.0	95	◇◇	
				5.3 Knowledge absorption	26.6	98		
2.1 Education	33.6	114		5.3.1 Intellectual property payments, % total trade	0.1	106		
2.1.1 Expenditure on education, % GDP	⊙	2.1	119	◇	5.3.2 High-tech imports, % total trade	8.3	63	
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊙	22.6	35		5.3.3 ICT services imports, % total trade	1.1	83	
2.1.3 School life expectancy, years	⊙	11.4	96		5.3.4 FDI net inflows, % GDP	0.8	103	
2.1.4 PISA scales in reading, maths and science	n/a	n/a			5.3.5 Research talent, % in businesses	n/a	n/a	
2.1.5 Pupil–teacher ratio, secondary	⊙	22.5	106					
2.2 Tertiary education	21.9	86		Knowledge and technology outputs	11.4	113		
2.2.1 Tertiary enrolment, % gross	⊙	8.9	117	◇	6.1 Knowledge creation	9.1	85	
2.2.2 Graduates in science and engineering, %	⊙	30.2	17	●	6.1.1 Patents by origin/bn PPP\$ GDP	⊙	0.2	100
2.2.3 Tertiary inbound mobility, %	⊙	0.5	100		6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	75	
2.3 Research and development (R&D)	0.0	[119]		6.1.3 Utility models by origin/bn PPP\$ GDP	0.1	55		
2.3.1 Researchers, FTE/mn pop.	n/a	n/a		6.1.4 Scientific and technical articles/bn PPP\$ GDP	15.3	48	●	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a		6.1.5 Citable documents H-index	7.5	89		
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	40	◇◇	6.2 Knowledge impact	17.0	118		
2.3.4 QS university ranking, top 3*	0.0	71	◇◇	6.2.1 Labor productivity growth, %	-1.8	122	◇	
				6.2.2 Unicorn valuation, % GDP	0.0	48	◇◇	
				6.2.3 Software spending, % GDP	0.2	70	●	
				6.2.4 High-tech manufacturing, %	⊙	17.5	70	
Infrastructure	20.4	119	◇	6.3 Knowledge diffusion	8.2	116		
3.1 Information and communication technologies (ICTs)	33.4	118	◇	6.3.1 Intellectual property receipts, % total trade	⊙	0.0	74	
3.1.1 ICT access*	46.8	112		6.3.2 Production and export complexity	32.4	108		
3.1.2 ICT use*	33.9	114	◇	6.3.3 High-tech exports, % total trade	⊙	0.2	111	
3.1.3 Government's online service*	32.0	120		6.3.4 ICT services exports, % total trade	0.4	106		
3.1.4 E-participation*	20.9	122		6.3.5 ISO 9001 quality/bn PPP\$ GDP	0.4	125		
3.2 General infrastructure	10.2	123		6.4 Creative outputs	16.9	86		
3.2.1 Electricity output, GWh/mn pop.	⊙	451.5	112	7.1 Intangible assets	26.8	77	●	
3.2.2 Logistics performance*	18.2	89		7.1.1 Intangible asset intensity, top 15, %	46.5	55		
3.2.3 Gross capital formation, % GDP	n/a	n/a		7.1.2 Trademarks by origin/bn PPP\$ GDP	⊙	4.1	126	
3.3 Ecological sustainability	17.6	92		7.1.3 Global brand value, top 5,000, % GDP	0.5	63	●	
3.3.1 GDP/unit of energy use	3.5	124	◇◇	7.1.4 Industrial designs by origin/bn PPP\$ GDP	n/a	n/a		
3.3.2 Environmental performance*	46.3	54	◆◆	7.2 Creative goods and services	1.4	[111]		
3.3.3 ISO 14001 environment/bn PPP\$ GDP	0.4	93		7.2.1 Cultural and creative services exports, % total trade	n/a	n/a		
				7.2.2 National feature films/mn pop. 15–69	0.2	78		
				7.2.3 Entertainment and media market/th pop. 15–69	n/a	n/a		
				7.2.4 Creative goods exports, % total trade	0.2	88		
Market sophistication	15.2	121	◇	7.3 Online creativity	12.3	107		
4.1 Credit	1.5	131	◇◇	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.5	113		
4.1.1 Finance for startups and scaleups†	n/a	n/a		7.3.2 Country-code TLDs/th pop. 15–69	1.4	80		
4.1.2 Domestic credit to private sector, % GDP	5.4	129	◇◇	7.3.3 GitHub commits/mn pop. 15–69	0.8	116		
4.1.3 Loans from microfinance institutions, % GDP	0.2	47		7.3.4 Mobile app creation/bn PPP\$ GDP	46.5	106		
4.2 Investment	5.4	[73]						
4.2.1 Market capitalization, % GDP	n/a	n/a						
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	n/a						
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	50	●					
4.2.4 VC received, value, % GDP	0.0	88						
4.3 Trade, diversification and market scale	38.5	106						
4.3.1 Applied tariff rate, weighted avg., %	⊙	5.0	90					
4.3.2 Domestic industry diversification	⊙	47.2	104	◇				
4.3.3 Domestic market scale, bn PPP\$	40.4	118						

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.