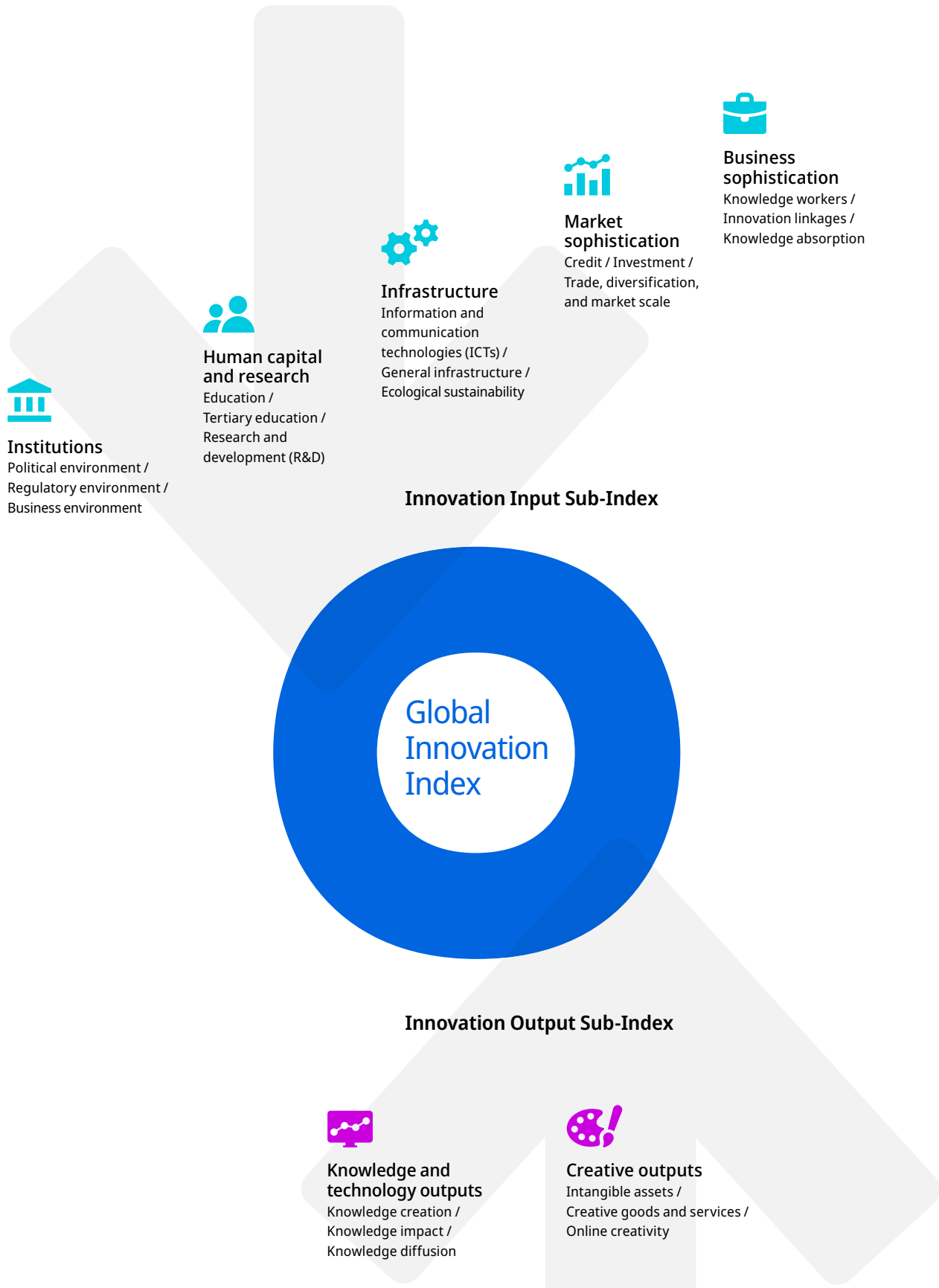


GII 2022 Economy profiles

The following tables provide detailed profiles for 132 economies.

Framework of the Global Innovation Index 2022



Source: Global Innovation Index Database, WIPO, 2022.

How to read the Economy profiles


The following tables provide detailed profiles for each of the 132 economies in the *Global Innovation Index 2022*. They are composed of four sections.

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

2 The next section provides key metrics at the beginning of each profile intended to provide context for that specific economy. They present the Innovation Output Sub-Index rank, Innovation Input Sub-Index rank, the income group to which the economy belongs, its geographical region,¹ population in millions,² GDP in billion USD purchasing power parity (PPP) and GDP per capita in USD PPP.³


Because economies may drop in or out of the GII, and due to adjustments made to the GII framework every year and other technical factors not directly related to actual performance (missing data, updates of data, etc.), 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 that fall within the 0–100 range.

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

The GII 2022 includes 81 indicators and three types of data. Composite (or index) indicators are identified with an asterisk (*), survey questions are identified with a dagger (†) and the remaining indicators are all hard data series.

As far as possible, we provide the (scaled/unscaled) value of the indicators rather than the score. Indicators that are based on survey responses (three indicators) or based on an index (13 indicators) are always reported as scores, while nine of the 65 hard data indicators are also reported as scores. This means that, overall, 56 out of 81 indicators are reported as values in the economy profiles.

When data are either not available or out of date, “n/a” is used, with a cutoff year of 2012, with a few exceptions. To the right of the indicator name, a clock symbol  is used to indicate that the economy’s data for that indicator 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 the indicators’ sources and definitions, see Appendix III.

4 On the far right-hand side of each column, strengths of the economy in question are indicated by a solid circle ● and weaknesses by a hollow circle ○. Strengths within the economy’s income group are indicated by a solid diamond ◆ and weaknesses by a hollow diamond ◇. The only exceptions to the income group strengths and weaknesses are the top 25 high-income economies, whose strengths and weaknesses are computed within the top 25 group.⁴

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

For a given economy, strengths ● are those scores with percent ranks greater than the 10th largest percent rank among the 81 indicators in that economy.

For that same economy, weaknesses ○ are those scores with percent ranks lower than the 10th smallest percent rank among the 81 indicators in that economy.

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

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

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

Notes

- 1 Economies are classified according to the World Bank Income Group Classification (June 2021, 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: 2019 Revision.
- 3 Data for GDP and GDP per capita are from the International Monetary Fund's World Economic Outlook Database: October 2021 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.
- 5 Data stringency requirements are applied in the attribution of strengths and weaknesses at the sub-pillar level. These levels were revised in 2019. When economies do not meet a DMC requirement at the sub-pillar level (for sub-pillars with two indicators, the DMC is 2; for three indicators it is 2; for four it is 3; and for five it is 4), no strength or weakness is attributed to the economies at the sub-pillar level. Furthermore, if the economy in question does not meet the DMC requirements at the sub-pillar level, but still obtains a ranking higher than or equal to 10, or a ranking equal to or lower than 100 at the sub-pillar level, for the sake of caution this rank is shown in brackets. This is to ensure that incomplete data coverage does not lead to erroneous conclusions being drawn about strengths or weaknesses, or, particularly, about strong or weak sub-pillar rankings.

Albania

84

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
89	80	Upper middle	EUR	2.9	44.5	15,487

Institutions		Score/Value	Rank
51.4		84	
1.1	Political environment	57.9	70
1.1.1	Political and operational stability*	69.1	63
1.1.2	Government effectiveness*	46.8	77
1.2	Regulatory environment	59.2	81
1.2.1	Regulatory quality*	50.9	61
1.2.2	Rule of law*	36.8	82
1.2.3	Cost of redundancy dismissal	20.8	91
1.3	Business environment	37.2	[91]
1.3.1	Policies for doing business†	37.2	100
1.3.2	Entrepreneurship policies and culture*	n/a	n/a

Human capital and research		Score/Value	Rank
22.7		89	
2.1	Education	42.1	91
2.1.1	Expenditure on education, % GDP	3.1	105
2.1.2	Government funding/pupil, secondary, % GDP/cap	9.8	97 ◊
2.1.3	School life expectancy, years	14.4	62
2.1.4	PISA scales in reading, maths and science	419.8	56
2.1.5	Pupil-teacher ratio, secondary	10.3	31 ●
2.2	Tertiary education	25.9	79
2.2.1	Tertiary enrolment, % gross	57.8	55
2.2.2	Graduates in science and engineering, %	20.1	67
2.2.3	Tertiary inbound mobility, %	1.7	82
2.3	Research and development (R&D)	0.0	[120]
2.3.1	Researchers, FTE/mn pop.	n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ◊
2.3.4	QS university ranking, top 3*	0.0	72 ◊

Infrastructure		Score/Value	Rank
46.3		57	
3.1	Information and communication technologies (ICTs)	78.0	53
3.1.1	ICT access*	84.5	71
3.1.2	ICT use*	58.7	75
3.1.3	Government's online service*	84.1	31 ●
3.1.4	E-participation*	84.5	36
3.2	General infrastructure	21.4	99
3.2.1	Electricity output, GWh/mn pop.	1,869.7	86
3.2.2	Logistics performance*	28.4	84
3.2.3	Gross capital formation, % GDP	20.8	86
3.3	Ecological sustainability	39.6	31 ●
3.3.1	GDP/unit of energy use	16.5	16 ●◆
3.3.2	Environmental performance*	47.1	48
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	4.0	22 ●

Market sophistication		Score/Value	Rank
25.4		91	
4.1	Credit	9.4	114 ◊
4.1.1	Finance for startups and scaleups*	n/a	n/a
4.1.2	Domestic credit to private sector, % GDP	38.6	83
4.1.3	Loans from microfinance institutions, % GDP	0.4	41
4.2	Investment	5.0	[79]
4.2.1	Market capitalization, % GDP	n/a	n/a
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	63
4.2.4	Venture capital received, value, % GDP	0.0	65
4.3	Trade, diversification, and market scale	62.0	47
4.3.1	Applied tariff rate, weighted avg., %	1.1	12 ●
4.3.2	Domestic industry diversification	92.2	40
4.3.3	Domestic market scale, bn PPP\$	44.5	107

Business sophistication		Score/Value	Rank
30.4		56	
5.1	Knowledge workers	41.2	[46]
5.1.1	Knowledge-intensive employment, %	18.4	81
5.1.2	Firms offering formal training, %	46.2	24 ●
5.1.3	GERD performed by business, % GDP	n/a	n/a
5.1.4	GERD financed by business, %	n/a	n/a
5.1.5	Females employed w/advanced degrees, %	12.9	59
5.2	Innovation linkages	21.4	76
5.2.1	University-industry R&D collaboration†	50.5	44
5.2.2	State of cluster development and depth†	28.9	126 ◊
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	70
5.2.5	Patent families/bn PPP\$ GDP	0.0	101 ◊
5.3	Knowledge absorption	28.7	69
5.3.1	Intellectual property payments, % total trade	0.6	61
5.3.2	High-tech imports, % total trade	4.3	121 ◊
5.3.3	ICT services imports, % total trade	1.7	52
5.3.4	FDI net inflows, % GDP	7.6	12 ●◆
5.3.5	Research talent, % in businesses	n/a	n/a

Knowledge and technology outputs		Score/Value	Rank
12.6		96	
6.1	Knowledge creation	3.0	119
6.1.1	Patents by origin/bn PPP\$ GDP	0.1	105
6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	101 ◊
6.1.3	Utility models by origin/bn PPP\$ GDP	0.0	65
6.1.4	Scientific and technical articles/bn PPP\$ GDP	7.9	100
6.1.5	Citable documents H-index	2.1	122 ◊
6.2	Knowledge impact	20.3	94
6.2.1	Labor productivity growth, %	1.3	56
6.2.2	New businesses/th pop. 15–64	1.5	69
6.2.3	Software spending, % GDP	0.1	86
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	9.4	30 ●
6.2.5	High-tech manufacturing, %	4.0	102 ◊
6.3	Knowledge diffusion	14.6	90
6.3.1	Intellectual property receipts, % total trade	0.3	33 ◆
6.3.2	Production and export complexity	31.3	81
6.3.3	High-tech exports, % total trade	0.1	116 ◊
6.3.4	ICT services exports, % total trade	1.8	69








Creative outputs		Score/Value	Rank
14.6		82	
7.1	Intangible assets	9.2	104
7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
7.1.2	Trademarks by origin/bn PPP\$ GDP	31.6	71
7.1.3	Global brand value, top 5,000, % GDP	0.0	77 ◊
7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.9	70
7.2	Creative goods and services	36.2	15 ●◆
7.2.1	Cultural and creative services exports, % total trade	1.7	18 ●◆
7.2.2	National feature films/mn pop. 15–69	1.9	48
7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a
7.2.4	Printing and other media, % manufacturing	3.7	1 ●◆
7.2.5	Creative goods exports, % total trade	0.0	108
7.3	Online creativity	3.9	67
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	6.7	49
7.3.2	Country-code TLDs/th pop. 15–69	3.5	61
7.3.3	GitHub commit pushes received/mn pop. 15–69	4.9	59
7.3.4	Mobile app creation/bn PPP\$ GDP	0.5	83

NOTES: ● indicates a strength; ◊ a weakness; ◆ an income group strength; ◊ an income group weakness; * an index; † a survey question. ◊ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Algeria

115

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
118	110	Lower middle	NAWA	44.6	532.6	11,829








		Score/ Value	Rank			Score/ Value	Rank
	Institutions	47.2	99		Business sophistication	16.8	120
1.1	Political environment	47.4	103	5.1	Knowledge workers	15.2	111
1.1.1	Political and operational stability*	56.4	108	5.1.1	Knowledge-intensive employment, %	17.9	85
1.1.2	Government effectiveness*	38.4	99	5.1.2	Firms offering formal training, %	n/a	n/a
1.2	Regulatory environment	50.4	105	5.1.3	GERD performed by business, % GDP	0.0	76
1.2.1	Regulatory quality*	12.7	128	5.1.4	GERD financed by business, %	6.7	81
1.2.2	Rule of law*	25.8	110	5.1.5	Females employed w/advanced degrees, %	8.1	81
1.2.3	Cost of redundancy dismissal	17.3	71	5.2	Innovation linkages	17.4	111
1.3	Business environment	43.9	[77]	5.2.1	University-industry R&D collaboration†	37.1	96
1.3.1	Policies for doing business†	43.9	83	5.2.2	State of cluster development and depth†	48.3	66
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	124
				5.2.5	Patent families/bn PPP\$ GDP	0.0	97
	Human capital and research	26.1	82	5.3	Knowledge absorption	17.8	125
2.1	Education	40.9	[94]	5.3.1	Intellectual property payments, % total trade	0.4	77
2.1.1	Expenditure on education, % GDP	6.1	19	5.3.2	High-tech imports, % total trade	8.9	55
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3	ICT services imports, % total trade	0.5	112
2.1.3	School life expectancy, years	14.3	67	5.3.4	FDI net inflows, % GDP	0.8	107
2.1.4	PISA scales in reading, maths and science	361.7	76	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	7.7	118
2.2	Tertiary education	34.3	51	6.1	Knowledge creation	6.8	94
2.2.1	Tertiary enrolment, % gross	52.5	61	6.1.1	Patents by origin/bn PPP\$ GDP	0.3	86
2.2.2	Graduates in science and engineering, %	29.6	20	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	93
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)	3.2	79	6.1.4	Scientific and technical articles/bn PPP\$ GDP	10.6	82
2.3.1	Researchers, FTE/mn pop.	819.3	56	6.1.5	Citable documents H-index	9.8	75
2.3.2	Gross expenditure on R&D, % GDP	0.5	58	6.2	Knowledge impact	11.5	116
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	6.2.1	Labor productivity growth, %	0.4	80
2.3.4	QS university ranking, top 3*	0.0	72	6.2.2	New businesses/th pop. 15-64	0.4	104
				6.2.3	Software spending, % GDP	0.0	122
	Infrastructure	31.1	102	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	1.0	107
3.1	Information and communication technologies (ICTs)	45.1	115	6.2.5	High-tech manufacturing, %	4.1	101
3.1.1	ICT access*	80.4	84	6.3	Knowledge diffusion	4.8	122
3.1.2	ICT use*	57.0	82	6.3.1	Intellectual property receipts, % total trade	0.0	103
3.1.3	Government's online service*	27.7	126	6.3.2	Production and export complexity	17.5	110
3.1.4	E-participation*	15.5	130	6.3.3	High-tech exports, % total trade	0.0	130
3.2	General infrastructure	31.1	61	6.3.4	ICT services exports, % total trade	0.2	124
3.2.1	Electricity output, GWh/mn pop.	1,893.8	83		Creative outputs	5.7	109
3.2.2	Logistics performance*	18.6	107	7.1	Intangible assets	10.5	98
3.2.3	Gross capital formation, % GDP	41.4	5	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3	Ecological sustainability	17.2	110	7.1.2	Trademarks by origin/bn PPP\$ GDP	24.8	86
3.3.1	GDP/unit of energy use	8.1	90	7.1.3	Global brand value, top 5,000, % GDP	0.0	77
3.3.2	Environmental performance*	29.6	110	7.1.4	Industrial designs by origin/bn PPP\$ GDP	2.4	43
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.4	91	7.2	Creative goods and services	1.3	120
	Market sophistication	12.1	125	7.2.1	Cultural and creative services exports, % total trade	0.0	101
4.1	Credit	9.5	[113]	7.2.2	National feature films/mn pop. 15-69	0.4	72
4.1.1	Finance for startups and scaleups*	n/a	n/a	7.2.3	Entertainment and media market/th pop. 15-69	0.8	58
4.1.2	Domestic credit to private sector, % GDP	29.7	94	7.2.4	Printing and other media, % manufacturing	0.3	94
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.5	Creative goods exports, % total trade	0.0	121
4.2	Investment	0.7	110	7.3	Online creativity	0.7	106
4.2.1	Market capitalization, % GDP	0.2	81	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.5	108
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.2	Country-code TLDs/th pop. 15-69	0.1	114
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	103	7.3.3	GitHub commit pushes received/mn pop. 15-69	2.2	83
4.2.4	Venture capital received, value, % GDP	0.0	72	7.3.4	Mobile app creation/bn PPP\$ GDP	0.0	103
4.3	Trade, diversification, and market scale	26.0	120				
4.3.1	Applied tariff rate, weighted avg., %	10.2	118				
4.3.2	Domestic industry diversification	31.9	107				
4.3.3	Domestic market scale, bn PPP\$	532.6	42				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Angola

127

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
117	129	Lower middle	SSA	33.9	218.0	6,820








	Score/Value	Rank		Score/Value	Rank
 Institutions	41.9	116	 Business sophistication	13.2	131
1.1 Political environment	43.0	122	5.1 Knowledge workers	9.7	[124]
1.1.1 Political and operational stability*	61.8	87 ●	5.1.1 Knowledge-intensive employment, %	11.1	103
1.1.2 Government effectiveness*	24.2	128 ◇	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	51.1	103	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	22.3	122	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	21.1	119	5.1.5 Females employed w/advanced degrees, %	1.6	110
1.2.3 Cost of redundancy dismissal	17.9	76 ●	5.2 Innovation linkages	12.1	127 ◇
1.3 Business environment	31.7	106	5.2.1 University-industry R&D collaboration†	18.7	128 ◇
1.3.1 Policies for doing business†	39.3	97 ●	5.2.2 State of cluster development and depth†	28.1	128 ◇
1.3.2 Entrepreneurship policies and culture*	24.2	57 ◇	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	101 ◇
 Human capital and research	10.9	125 ◇	5.3 Knowledge absorption	18.0	124
2.1 Education	26.6	[124]	5.3.1 Intellectual property payments, % total trade	0.6	62 ●
2.1.1 Expenditure on education, % GDP	2.4	119 ◇	5.3.2 High-tech imports, % total trade	3.3	125
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	0.8	93 ●
2.1.3 School life expectancy, years	9.6	106 ◇	5.3.4 FDI net inflows, % GDP	-4.7	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	112 ◇	 Knowledge and technology outputs	2.4	130 ◇
2.2 Tertiary education	6.1	117 ◇	6.1 Knowledge creation	0.3	132 ◇
2.2.1 Tertiary enrolment, % gross	9.3	115	6.1.1 Patents by origin/bn PPP\$ GDP	0.0	129
2.2.2 Graduates in science and engineering, %	12.0	103 ◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	97
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)	0.1	116	6.1.4 Scientific and technical articles/bn PPP\$ GDP	0.5	131 ◇
2.3.1 Researchers, FTE/mn pop.	18.8	107 ◇	6.1.5 Citable documents H-index	0.4	130 ◇
2.3.2 Gross expenditure on R&D, % GDP	0.0	112 ◇	6.2 Knowledge impact	3.6	[127]
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ◇	6.2.1 Labor productivity growth, %	-4.6	117 ◇
2.3.4 QS university ranking, top 3*	0.0	72 ◇	6.2.2 New businesses/th pop. 15-64	n/a	n/a
			6.2.3 Software spending, % GDP	n/a	n/a
 Infrastructure	24.4	122 ◇	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	0.5	120
3.1 Information and communication technologies (ICTs)	40.0	120 ◇	6.2.5 High-tech manufacturing, %	3.0	107 ◇
3.1.1 ICT access*	41.9	125 ◇	6.3 Knowledge diffusion	3.4	125 ◇
3.1.2 ICT use*	24.0	123 ◇	6.3.1 Intellectual property receipts, % total trade	0.0	95
3.1.3 Government's online service*	48.8	108	6.3.2 Production and export complexity	6.7	117 ◇
3.1.4 E-participation*	45.2	108	6.3.3 High-tech exports, % total trade	0.3	100 ●
3.2 General infrastructure	11.1	128 ◇	6.3.4 ICT services exports, % total trade	0.1	131 ◇
3.2.1 Electricity output, GWh/mn pop.	485.7	110	 Creative outputs	11.1	[92]
3.2.2 Logistics performance*	0.0	125 ◇	7.1 Intangible assets	7.0	[110]
3.2.3 Gross capital formation, % GDP	23.1	68 ●	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	22.1	82 ●	7.1.2 Trademarks by origin/bn PPP\$ GDP	12.0	105
3.3.1 GDP/unit of energy use	13.0	37 ●	7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a
3.3.2 Environmental performance*	30.5	106	7.1.4 Industrial designs by origin/bn PPP\$ GDP	n/a	n/a
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.1	129	7.2 Creative goods and services	30.3	[28]
			7.2.1 Cultural and creative services exports, % total trade	n/a	n/a
 Market sophistication	14.9	121 ◇	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	9.6	112	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.1 Finance for startups and scaleups*	25.7	67 ◇	7.2.4 Printing and other media, % manufacturing	2.3	8 ●
4.1.2 Domestic credit to private sector, % GDP	12.9	122	7.2.5 Creative goods exports, % total trade	0.0	127
4.1.3 Loans from microfinance institutions, % GDP	0.0	59	7.3 Online creativity	0.1	128
4.2 Investment	n/a	[n/a]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.0	130
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	0.1	117
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.3 GitHub commit pushes received/mn pop. 15-69	0.2	119
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	0.0	111
4.2.4 Venture capital received, value, % GDP	n/a	n/a			
4.3 Trade, diversification, and market scale	20.3	126 ◇			
4.3.1 Applied tariff rate, weighted avg., %	9.2	113			
4.3.2 Domestic industry diversification	16.0	108 ◇			
4.3.3 Domestic market scale, bn PPP\$	218.0	65 ●			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Argentina

69

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
62	77	Upper middle	LCN	45.6	1,049.4	22,892








	Score/Value	Rank		Score/Value	Rank
 Institutions	47.6	96	 Business sophistication	31.2	52
1.1 Political environment	54.3	83	5.1 Knowledge workers	34.9	59
1.1.1 Political and operational stability*	63.6	81	5.1.1 Knowledge-intensive employment, %	25.3	57
1.1.2 Government effectiveness*	45.0	83	5.1.2 Firms offering formal training, %	40.2	32
1.2 Regulatory environment	44.1	119 ○ ◇	5.1.3 GERD performed by business, % GDP	0.2	56
1.2.1 Regulatory quality*	30.8	101 ◇	5.1.4 GERD financed by business, %	26.5	62
1.2.2 Rule of law*	33.9	90	5.1.5 Females employed w/advanced degrees, %	16.3	45
1.2.3 Cost of redundancy dismissal	30.3	120 ○ ◇	5.2 Innovation linkages	18.4	105
1.3 Business environment	44.3	75	5.2.1 University-industry R&D collaboration†	38.0	91
1.3.1 Policies for doing business†	12.4	128 ○ ◇	5.2.2 State of cluster development and depth†	40.4	103
1.3.2 Entrepreneurship policies and culture*	76.2	10 ● ◆	5.2.3 GERD financed by abroad, % GDP	0.0	49
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	101
			5.2.5 Patent families/bn PPP\$ GDP	0.1	64
 Human capital and research	30.5	69	5.3 Knowledge absorption	40.3	35 ◆
2.1 Education	42.5	89	5.3.1 Intellectual property payments, % total trade	2.3	10 ● ◆
2.1.1 Expenditure on education, % GDP	4.7	49	5.3.2 High-tech imports, % total trade	10.6	33
2.1.2 Government funding/pupil, secondary, % GDP/cap	16.7	73	5.3.3 ICT services imports, % total trade	2.9	18 ● ◆
2.1.3 School life expectancy, years	17.9	14 ● ◆	5.3.4 FDI net inflows, % GDP	1.6	84
2.1.4 PISA scales in reading, maths and science	395.0	69 ○	5.3.5 Research talent, % in businesses	11.2	61
2.1.5 Pupil-teacher ratio, secondary	n/a	n/a			
2.2 Tertiary education	30.9	67	 Knowledge and technology outputs	19.0	77
2.2.1 Tertiary enrolment, % gross	95.4	5 ● ◆	6.1 Knowledge creation	13.6	62
2.2.2 Graduates in science and engineering, %	15.4	95	6.1.1 Patents by origin/bn PPP\$ GDP	1.0	65
2.2.3 Tertiary inbound mobility, %	3.5	62	6.1.2 PCT patents by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	18.1	43	6.1.3 Utility models by origin/bn PPP\$ GDP	0.2	52
2.3.1 Researchers, FTE/mn pop.	1,230.8	50	6.1.4 Scientific and technical articles/bn PPP\$ GDP	10.8	80
2.3.2 Gross expenditure on R&D, % GDP	0.5	65	6.1.5 Citable documents H-index	27.8	36 ◆
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2 Knowledge impact	21.2	86
2.3.4 QS university ranking, top 3*	43.1	28 ● ◆	6.2.1 Labor productivity growth, %	-1.6	109 ○ ◇
			6.2.2 New businesses/th pop. 15-64	0.2	112 ○
			6.2.3 Software spending, % GDP	0.2	53
 Infrastructure	44.0	64	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	6.5	40
3.1 Information and communication technologies (ICTs)	80.8	44	6.2.5 High-tech manufacturing, %	25.9	48
3.1.1 ICT access*	90.8	38	6.3 Knowledge diffusion	22.3	69
3.1.2 ICT use*	62.2	68	6.3.1 Intellectual property receipts, % total trade	0.4	29 ◆
3.1.3 Government's online service*	84.7	30	6.3.2 Production and export complexity	35.9	71
3.1.4 E-participation*	85.7	29	6.3.3 High-tech exports, % total trade	0.9	74
3.2 General infrastructure	26.0	76	6.3.4 ICT services exports, % total trade	3.1	39
3.2.1 Electricity output, GWh/mn pop.	3,184.7	61			
3.2.2 Logistics performance*	39.1	60	 Creative outputs	24.2	53
3.2.3 Gross capital formation, % GDP	18.9	100	7.1 Intangible assets	36.9	45
3.3 Ecological sustainability	25.3	72	7.1.1 Intangible asset intensity, top 15, %	70.7	22
3.3.1 GDP/unit of energy use	10.1	69	7.1.2 Trademarks by origin/bn PPP\$ GDP	68.4	28 ●
3.3.2 Environmental performance*	41.1	67	7.1.3 Global brand value, top 5,000, % GDP	15.1	50
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	1.4	61	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.3	60
			7.2 Creative goods and services	17.0	62
 Market sophistication	24.9	95	7.2.1 Cultural and creative services exports, % total trade	1.4	21 ● ◆
4.1 Credit	17.3	94	7.2.2 National feature films/mn pop. 15-69	7.0	17 ● ◆
4.1.1 Finance for startups and scaleups*	30.5	57	7.2.3 Entertainment and media market/th pop. 15-69	4.5	46
4.1.2 Domestic credit to private sector, % GDP	16.0	115 ○ ◇	7.2.4 Printing and other media, % manufacturing	n/a	n/a
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.2.5 Creative goods exports, % total trade	0.1	102
4.2 Investment	4.0	87	7.3 Online creativity	5.9	59
4.2.1 Market capitalization, % GDP	11.5	71 ○	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.1	63
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	84 ○	7.3.2 Country-code TLDs/th pop. 15-69	6.3	48
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	92 ○	7.3.3 GitHub commit pushes received/mn pop. 15-69	7.4	50
4.2.4 Venture capital received, value, % GDP	0.0	47	7.3.4 Mobile app creation/bn PPP\$ GDP	6.8	52
4.3 Trade, diversification, and market scale	53.4	74			
4.3.1 Applied tariff rate, weighted avg., %	6.9	101 ◇			
4.3.2 Domestic industry diversification	81.4	67			
4.3.3 Domestic market scale, bn PPP\$	1,049.4	27 ●			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Armenia

80

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
73	82	Upper middle	NAWA	3.0	43.5	14,701








	Score/Value	Rank		Score/Value	Rank
 Institutions	59.7	55	 Business sophistication	23.5	84
1.1 Political environment	54.4	82	5.1 Knowledge workers	33.1	61
1.1.1 Political and operational stability*	61.8	87	5.1.1 Knowledge-intensive employment, %	19.2	79
1.1.2 Government effectiveness*	47.0	76	5.1.2 Firms offering formal training, %	27.5	59
1.2 Regulatory environment	68.8	54	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	51.2	60	5.1.4 GERD financed by business, %	16.7	70
1.2.2 Rule of law*	43.9	65	5.1.5 Females employed w/advanced degrees, %	16.6	43 ●
1.2.3 Cost of redundancy dismissal	13.0	41	5.2 Innovation linkages	17.2	112
1.3 Business environment	55.9	44 ●	5.2.1 University-industry R&D collaboration†	35.7	100
1.3.1 Policies for doing business†	53.3	54	5.2.2 State of cluster development and depth†	42.8	89
1.3.2 Entrepreneurship policies and culture*	58.6	24 ● ◆	5.2.3 GERD financed by abroad, % GDP	0.0	74
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	102
			5.2.5 Patent families/bn PPP\$ GDP	0.1	61
 Human capital and research	22.0	91	5.3 Knowledge absorption	20.1	109 ◇
2.1 Education	43.4	85	5.3.1 Intellectual property payments, % total trade	0.0	122 ◇ ◇
2.1.1 Expenditure on education, % GDP	2.7	113 ◇ ◇	5.3.2 High-tech imports, % total trade	8.6	61
2.1.2 Government funding/pupil, secondary, % GDP/cap	15.6	79	5.3.3 ICT services imports, % total trade	0.5	110 ◇
2.1.3 School life expectancy, years	13.1	82	5.3.4 FDI net inflows, % GDP	1.1	100
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	10.7	35 ●	 Knowledge and technology outputs	19.6	71
2.2 Tertiary education	21.7	87	6.1 Knowledge creation	13.0	63
2.2.1 Tertiary enrolment, % gross	50.8	64	6.1.1 Patents by origin/bn PPP\$ GDP	1.6	46
2.2.2 Graduates in science and engineering, %	14.6	98 ◇ ◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	65
2.2.3 Tertiary inbound mobility, %	5.9	42	6.1.3 Utility models by origin/bn PPP\$ GDP	0.6	34
2.3 Research and development (R&D)	0.7	100	6.1.4 Scientific and technical articles/bn PPP\$ GDP	19.4	49
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index	9.9	73
2.3.2 Gross expenditure on R&D, % GDP	0.2	88	6.2 Knowledge impact	20.2	95
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ◇ ◇	6.2.1 Labor productivity growth, %	2.8	23 ●
2.3.4 QS university ranking, top 3*	0.0	72 ◇ ◇	6.2.2 New businesses/th pop. 15-64	2.9	47
			6.2.3 Software spending, % GDP	0.1	81
 Infrastructure	39.9	80	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	0.9	108
3.1 Information and communication technologies (ICTs)	75.3	62	6.2.5 High-tech manufacturing, %	5.4	98 ◇ ◇
3.1.1 ICT access*	93.3	20 ● ◆	6.3 Knowledge diffusion	25.4	58
3.1.2 ICT use*	62.9	64	6.3.1 Intellectual property receipts, % total trade	0.0	113 ◇ ◇
3.1.3 Government's online service*	70.0	69	6.3.2 Production and export complexity	35.3	74
3.1.4 E-participation*	75.0	57	6.3.3 High-tech exports, % total trade	0.7	84
3.2 General infrastructure	18.9	112	6.3.4 ICT services exports, % total trade	7.5	9 ● ◆
3.2.1 Electricity output, GWh/mn pop.	2,608.1	69	 Creative outputs	18.2	73
3.2.2 Logistics performance*	26.0	87	7.1 Intangible assets	23.3	71
3.2.3 Gross capital formation, % GDP	16.1	114 ◇ ◇	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	25.4	68	7.1.2 Trademarks by origin/bn PPP\$ GDP	87.9	17 ●
3.3.1 GDP/unit of energy use	10.5	65	7.1.3 Global brand value, top 5,000, % GDP	0.0	77 ◇ ◇
3.3.2 Environmental performance*	48.3	45 ●	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.8	74
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.1	127 ◇	7.2 Creative goods and services	19.7	[57]
			7.2.1 Cultural and creative services exports, % total trade	0.5	54
 Market sophistication	26.5	85	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	28.5	60	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.1 Finance for startups and scaleups*	30.7	54	7.2.4 Printing and other media, % manufacturing	1.6	22 ●
4.1.2 Domestic credit to private sector, % GDP	72.2	47	7.2.5 Creative goods exports, % total trade	0.8	52
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	6.6	55
4.2 Investment	2.6	[98]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.1	62
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	5.1	54
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	68	7.3.3 GitHub commit pushes received/mn pop. 15-69	8.0	48
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	10.1	40 ●
4.2.4 Venture capital received, value, % GDP	n/a	n/a			
4.3 Trade, diversification, and market scale	48.4	84			
4.3.1 Applied tariff rate, weighted avg., %	3.1	74			
4.3.2 Domestic industry diversification	64.5	94			
4.3.3 Domestic market scale, bn PPP\$	43.5	108			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Australia

25

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
32	19	High	SEAO	25.8	1,427.3	55,492








	Score/ Value	Rank		Score/ Value	Rank
 Institutions	77.2	17	 Business sophistication	48.6	24
1.1 Political environment	84.1	15	5.1 Knowledge workers	62.4	[19]
1.1.1 Political and operational stability*	83.6	16	5.1.1 Knowledge-intensive employment, %	47.8	13
1.1.2 Government effectiveness*	84.6	12	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	90.8	10	5.1.3 GERD performed by business, % GDP	0.9	25
1.2.1 Regulatory quality*	90.3	5 ●	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	88.9	13	5.1.5 Females employed w/advanced degrees, %	28.5	5 ● ◆
1.2.3 Cost of redundancy dismissal	12.0	39	5.2 Innovation linkages	48.0	16
1.3 Business environment	56.6	39 ◇	5.2.1 University-industry R&D collaboration [†]	53.8	34 ◇
1.3.1 Policies for doing business [†]	67.1	23	5.2.2 State of cluster development and depth [†]	55.2	36
1.3.2 Entrepreneurship policies and culture*	46.1	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	9
			5.2.5 Patent families/bn PPP\$ GDP	1.0	26 ◇
 Human capital and research	61.7	5 ●	5.3 Knowledge absorption	35.5	48 ◇
2.1 Education	60.5	36	5.3.1 Intellectual property payments, % total trade	1.2	31
2.1.1 Expenditure on education, % GDP	5.1	37	5.3.2 High-tech imports, % total trade	12.1	23
2.1.2 Government funding/pupil, secondary, % GDP/cap	18.0	64 ○ ◇	5.3.3 ICT services imports, % total trade	1.5	62
2.1.3 School life expectancy, years	21.1	1 ● ◆	5.3.4 FDI net inflows, % GDP	2.9	49
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	 Knowledge and technology outputs	32.2	37 ◇
2.2 Tertiary education	58.8	3 ● ◆	6.1 Knowledge creation	40.6	22
2.2.1 Tertiary enrolment, % gross	114.2	3 ● ◆	6.1.1 Patents by origin/bn PPP\$ GDP	1.8	41 ◇
2.2.2 Graduates in science and engineering, %	18.6	81 ○ ◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	1.2	26 ◇
2.2.3 Tertiary inbound mobility, %	26.0	5 ● ◆	6.1.3 Utility models by origin/bn PPP\$ GDP	0.7	29
2.3 Research and development (R&D)	65.7	12	6.1.4 Scientific and technical articles/bn PPP\$ GDP	55.9	7 ● ◆
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index	69.0	7 ●
2.3.2 Gross expenditure on R&D, % GDP	1.8	20	6.2 Knowledge impact	35.6	37
2.3.3 Global corporate R&D investors, top 3, mn USD	65.6	19	6.2.1 Labor productivity growth, %	0.4	78 ○
2.3.4 QS university ranking, top 3*	81.9	7 ●	6.2.2 New businesses/th pop. 15-64	14.3	7 ●
			6.2.3 Software spending, % GDP	0.2	55
 Infrastructure	58.8	18	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	6.1	46
3.1 Information and communication technologies (ICTs)	90.4	11	6.2.5 High-tech manufacturing, %	24.6	49 ◇
3.1.1 ICT access*	88.9	57 ◇	6.3 Knowledge diffusion	20.3	72 ○ ◇
3.1.2 ICT use*	81.8	18	6.3.1 Intellectual property receipts, % total trade	0.3	32 ◇
3.1.3 Government's online service*	94.7	7	6.3.2 Production and export complexity	31.0	84 ○ ◇
3.1.4 E-participation*	96.4	9	6.3.3 High-tech exports, % total trade	2.0	59 ◇
3.2 General infrastructure	53.7	19	6.3.4 ICT services exports, % total trade	1.4	78 ○
3.2.1 Electricity output, GWh/mn pop.	10,303.1	14	 Creative outputs	37.8	27
3.2.2 Logistics performance*	79.1	18	7.1 Intangible assets	43.3	31
3.2.3 Gross capital formation, % GDP	23.3	65 ○	7.1.1 Intangible asset intensity, top 15, %	68.1	27
3.3 Ecological sustainability	32.3	47	7.1.2 Trademarks by origin/bn PPP\$ GDP	67.6	30
3.3.1 GDP/unit of energy use	9.0	81 ○	7.1.3 Global brand value, top 5,000, % GDP	78.3	27
3.3.2 Environmental performance*	60.1	17	7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.0	47
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	2.3	38	7.2 Creative goods and services	24.5	48 ◇
			7.2.1 Cultural and creative services exports, % total trade	0.3	68 ○ ◇
 Market sophistication	50.2	20	7.2.2 National feature films/mn pop. 15-69	1.1	57 ○ ◇
4.1 Credit	49.1	21	7.2.3 Entertainment and media market/th pop. 15-69	54.3	11
4.1.1 Finance for startups and scaleups*	44.2	28 ◇	7.2.4 Printing and other media, % manufacturing	2.0	12 ◆
4.1.2 Domestic credit to private sector, % GDP	142.3	13	7.2.5 Creative goods exports, % total trade	0.6	58
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	40.2	16
4.2 Investment	28.3	27	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	61.4	10
4.2.1 Market capitalization, % GDP	108.3	13	7.3.2 Country-code TLDs/th pop. 15-69	54.8	15
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.2	23	7.3.3 GitHub commit pushes received/mn pop. 15-69	32.2	21
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	21	7.3.4 Mobile app creation/bn PPP\$ GDP	12.2	31
4.2.4 Venture capital received, value, % GDP	0.0	31			
4.3 Trade, diversification, and market scale	73.1	16			
4.3.1 Applied tariff rate, weighted avg., %	0.7	7 ●			
4.3.2 Domestic industry diversification	91.9	43			
4.3.3 Domestic market scale, bn PPP\$	1,427.3	18			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Austria

17

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
21	17	High	EUR	9.0	531.4	59,406








	Score/Value	Rank		Score/Value	Rank
 Institutions	82.8	8 ●	 Business sophistication	52.8	18
1.1 Political environment	84.5	13	5.1 Knowledge workers	57.3	23
1.1.1 Political and operational stability*	83.6	16	5.1.1 Knowledge-intensive employment, %	43.5	25
1.1.2 Government effectiveness*	85.3	10	5.1.2 Firms offering formal training, %	42.6	28
1.2 Regulatory environment	93.2	6 ●	5.1.3 GERD performed by business, % GDP	2.2	7
1.2.1 Regulatory quality*	79.9	18	5.1.4 GERD financed by business, %	50.1	29
1.2.2 Rule of law*	93.0	7 ●	5.1.5 Females employed w/advanced degrees, %	18.8	36 ◇
1.2.3 Cost of redundancy dismissal	8.0	1 ●	5.2 Innovation linkages	57.5	8 ●
1.3 Business environment	70.8	15	5.2.1 University-industry R&D collaboration†	62.4	19
1.3.1 Policies for doing business†	83.4	4 ● ◆	5.2.2 State of cluster development and depth†	66.9	11
1.3.2 Entrepreneurship policies and culture*	58.1	25	5.2.3 GERD financed by abroad, % GDP	0.5	4 ● ◆
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	43 ◇
			5.2.5 Patent families/bn PPP\$ GDP	3.5	11
 Human capital and research	58.8	11	5.3 Knowledge absorption	43.7	29
2.1 Education	63.0	20	5.3.1 Intellectual property payments, % total trade	0.8	55 ○
2.1.1 Expenditure on education, % GDP	5.2	35	5.3.2 High-tech imports, % total trade	7.9	76 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap	25.9	18	5.3.3 ICT services imports, % total trade	3.5	11
2.1.3 School life expectancy, years	16.0	37	5.3.4 FDI net inflows, % GDP	-4.5	128 ○
2.1.4 PISA scales in reading, maths and science	491.0	27	5.3.5 Research talent, % in businesses	62.9	8
2.1.5 Pupil-teacher ratio, secondary	9.3	24	 Knowledge and technology outputs	43.5	19
2.2 Tertiary education	58.5	4 ● ◆	6.1 Knowledge creation	48.8	14
2.2.1 Tertiary enrolment, % gross	86.5	15	6.1.1 Patents by origin/bn PPP\$ GDP	9.0	11
2.2.2 Graduates in science and engineering, %	30.6	15 ◆	6.1.2 PCT patents by origin/bn PPP\$ GDP	3.0	11
2.2.3 Tertiary inbound mobility, %	17.6	10	6.1.3 Utility models by origin/bn PPP\$ GDP	0.6	35 ○
2.3 Research and development (R&D)	54.9	19	6.1.4 Scientific and technical articles/bn PPP\$ GDP	40.6	22
2.3.1 Researchers, FTE/mn pop.	5,751.6	10	6.1.5 Citable documents H-index	44.2	18
2.3.2 Gross expenditure on R&D, % GDP	3.2	7 ●	6.2 Knowledge impact	34.9	38
2.3.3 Global corporate R&D investors, top 3, mn USD	57.9	24	6.2.1 Labor productivity growth, %	-0.2	95 ○
2.3.4 QS university ranking, top 3*	44.3	26	6.2.2 New businesses/th pop. 15-64	0.5	95 ○ ◇
			6.2.3 Software spending, % GDP	0.5	17
 Infrastructure	62.7	9 ●	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	7.5	35
3.1 Information and communication technologies (ICTs)	91.5	8 ●	6.2.5 High-tech manufacturing, %	45.8	17
3.1.1 ICT access*	91.0	37	6.3 Knowledge diffusion	46.7	21
3.1.2 ICT use*	82.5	15	6.3.1 Intellectual property receipts, % total trade	0.6	27
3.1.3 Government's online service*	94.7	7 ●	6.3.2 Production and export complexity	83.2	7 ●
3.1.4 E-participation*	97.6	6 ●	6.3.3 High-tech exports, % total trade	7.3	25
3.2 General infrastructure	56.1	11	6.3.4 ICT services exports, % total trade	4.0	27
3.2.1 Electricity output, GWh/mn pop.	7,759.0	22	 Creative outputs	38.0	26
3.2.2 Logistics performance*	92.1	4 ●	7.1 Intangible assets	43.8	30
3.2.3 Gross capital formation, % GDP	26.9	38	7.1.1 Intangible asset intensity, top 15, %	61.5	40 ○
3.3 Ecological sustainability	40.6	30	7.1.2 Trademarks by origin/bn PPP\$ GDP	56.9	41
3.3.1 GDP/unit of energy use	14.0	32	7.1.3 Global brand value, top 5,000, % GDP	60.7	32
3.3.2 Environmental performance*	66.5	8 ●	7.1.4 Industrial designs by origin/bn PPP\$ GDP	5.6	20
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	2.7	33	7.2 Creative goods and services	30.3	29
			7.2.1 Cultural and creative services exports, % total trade	1.2	22
 Market sophistication	41.0	38 ◇	7.2.2 National feature films/mn pop. 15-69	6.6	18
4.1 Credit	40.3	28	7.2.3 Entertainment and media market/th pop. 15-69	58.6	7
4.1.1 Finance for startups and scaleups*	46.0	22	7.2.4 Printing and other media, % manufacturing	1.0	47 ○
4.1.2 Domestic credit to private sector, % GDP	93.3	32	7.2.5 Creative goods exports, % total trade	0.9	46
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	34.1	20
4.2 Investment	15.5	41 ◇	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	35.5	18
4.2.1 Market capitalization, % GDP	28.7	49 ○ ◇	7.3.2 Country-code TLDs/th pop. 15-69	63.0	10
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.2	25	7.3.3 GitHub commit pushes received/mn pop. 15-69	29.6	23
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	36 ◇	7.3.4 Mobile app creation/bn PPP\$ GDP	8.2	46 ○
4.2.4 Venture capital received, value, % GDP	0.0	37 ◇			
4.3 Trade, diversification, and market scale	67.2	24			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	99.6	5 ●			
4.3.3 Domestic market scale, bn PPP\$	531.4	43			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Azerbaijan

93

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
110	79	Upper middle	NAWA	10.2	155.9	15,299




		Score/ Value	Rank			Score/ Value	Rank
	Institutions	62.9	46 ●		Business sophistication	24.9	77
1.1	Political environment	58.5	69	5.1	Knowledge workers	30.9	65
1.1.1	Political and operational stability*	70.9	53 ●	5.1.1	Knowledge-intensive employment, %	23.1	65
1.1.2	Government effectiveness*	46.0	81	5.1.2	Firms offering formal training, %	33.9	47
1.2	Regulatory environment	60.7	78	5.1.3	GERD performed by business, % GDP	0.0	88 ○
1.2.1	Regulatory quality*	37.1	92	5.1.4	GERD financed by business, %	30.8	59
1.2.2	Rule of law*	28.2	105	5.1.5	Females employed w/advanced degrees, %	13.5	57 ●
1.2.3	Cost of redundancy dismissal	13.7	51 ●	5.2	Innovation linkages	24.9	56 ●
1.3	Business environment	69.6	[19]	5.2.1	University-industry R&D collaboration†	59.8	23 ●◆
1.3.1	Policies for doing business†	69.6	21 ●◆	5.2.2	State of cluster development and depth†	60.3	25 ●◆
1.3.2	Entrepreneurship policies and culture*	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	0.0	97 ○◇
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	115 ○
				5.2.5	Patent families/bn PPP\$ GDP	0.1	66
	Human capital and research	23.8	87	5.3	Knowledge absorption	19.0	116 ◇
2.1	Education	41.6	92	5.3.1	Intellectual property payments, % total trade	0.0	122 ○◇
2.1.1	Expenditure on education, % GDP	2.7	114 ○◇	5.3.2	High-tech imports, % total trade	6.3	104
2.1.2	Government funding/pupil, secondary, % GDP/cap	14.2	84	5.3.3	ICT services imports, % total trade	0.6	108
2.1.3	School life expectancy, years	13.5	78	5.3.4	FDI net inflows, % GDP	2.4	61 ●
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	8.1	9 ●◆				
2.2	Tertiary education	25.8	80		Knowledge and technology outputs	8.6	117 ◇
2.2.1	Tertiary enrolment, % gross	35.2	80	6.1	Knowledge creation	4.6	107
2.2.2	Graduates in science and engineering, %	24.2	42 ●	6.1.1	Patents by origin/bn PPP\$ GDP	0.7	71
2.2.3	Tertiary inbound mobility, %	2.4	74	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	91
2.3	Research and development (R&D)	4.0	76	6.1.3	Utility models by origin/bn PPP\$ GDP	0.2	49
2.3.1	Researchers, FTE/mn pop.	1,734.9	43 ●◆	6.1.4	Scientific and technical articles/bn PPP\$ GDP	5.3	113
2.3.2	Gross expenditure on R&D, % GDP	0.2	86	6.1.5	Citable documents H-index	5.3	93
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○◇	6.2	Knowledge impact	15.7	106 ◇
2.3.4	QS university ranking, top 3*	0.0	72 ○◇	6.2.1	Labor productivity growth, %	0.3	82
				6.2.2	New businesses/th pop. 15-64	1.3	75
	Infrastructure	36.3	90	6.2.3	Software spending, % GDP	0.1	96 ◇
3.1	Information and communication technologies (ICTs)	71.6	71	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	1.8	86
3.1.1	ICT access*	86.2	67	6.2.5	High-tech manufacturing, %	11.4	84
3.1.2	ICT use*	60.7	72	6.3	Knowledge diffusion	5.4	120 ○◇
3.1.3	Government's online service*	70.6	65	6.3.1	Intellectual property receipts, % total trade	0.0	113 ○◇
3.1.4	E-participation*	69.0	73	6.3.2	Production and export complexity	13.7	114 ○◇
3.2	General infrastructure	15.7	120 ○◇	6.3.3	High-tech exports, % total trade	0.2	106 ◇
3.2.1	Electricity output, GWh/mn pop.	2,555.9	71	6.3.4	ICT services exports, % total trade	0.4	106
3.2.2	Logistics performance*	n/a	n/a				
3.2.3	Gross capital formation, % GDP	16.7	112 ○◇		Creative outputs	6.7	105 ◇
3.3	Ecological sustainability	21.5	85	7.1	Intangible assets	10.0	[101]
3.3.1	GDP/unit of energy use	9.1	79	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.2	Environmental performance*	38.6	75	7.1.2	Trademarks by origin/bn PPP\$ GDP	27.1	80
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.5	83	7.1.3	Global brand value, top 5,000, % GDP	n/a	n/a
				7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.2	103
	Market sophistication	28.4	[80]	7.2	Creative goods and services	5.9	97
4.1	Credit	8.1	[118]	7.2.1	Cultural and creative services exports, % total trade	0.1	86
4.1.1	Finance for startups and scaleups*	n/a	n/a	7.2.2	National feature films/mn pop. 15-69	0.5	67
4.1.2	Domestic credit to private sector, % GDP	26.1	104	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	Printing and other media, % manufacturing	0.8	63
4.2	Investment	n/a	[n/a]	7.2.5	Creative goods exports, % total trade	0.1	95
4.2.1	Market capitalization, % GDP	n/a	n/a	7.3	Online creativity	1.1	99
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.9	96
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.2	Country-code TLDs/th pop. 15-69	1.5	76
4.2.4	Venture capital received, value, % GDP	n/a	n/a	7.3.3	GitHub commit pushes received/mn pop. 15-69	1.9	87
4.3	Trade, diversification, and market scale	48.7	83	7.3.4	Mobile app creation/bn PPP\$ GDP	0.1	94
4.3.1	Applied tariff rate, weighted avg., %	5.9	96 ◇				
4.3.2	Domestic industry diversification	81.0	68				
4.3.3	Domestic market scale, bn PPP\$	155.9	75				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Bahrain

72

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
86	50	High	NAWA	1.7	79.0	53,128








	Score/Value	Rank		Score/Value	Rank
 Institutions	71.9	27 ●	 Business sophistication	22.0	93 ◇
1.1 Political environment	64.0	51 ◇	5.1 Knowledge workers	19.8	[96]
1.1.1 Political and operational stability*	69.1	63 ◇	5.1.1 Knowledge-intensive employment, %	21.9	69 ◇
1.1.2 Government effectiveness*	58.9	46 ◇	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	74.3	38	5.1.3 GERD performed by business, % GDP	2.0	80 ◇
1.2.1 Regulatory quality*	60.6	42 ◇	5.1.4 GERD financed by business, %	21.8	65 ◇
1.2.2 Rule of law*	58.8	45 ◇	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	29.3	41
1.3 Business environment	77.5	[9]	5.2.1 University-industry R&D collaboration†	39.0	86 ◇
1.3.1 Policies for doing business†	77.5	8 ● ◆	5.2.2 State of cluster development and depth†	56.2	33
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.0	70 ◇
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.2	16 ●
			5.2.5 Patent families/bn PPP\$ GDP	0.0	74 ◇
 Human capital and research	28.1	78 ◇	5.3 Knowledge absorption	16.9	131 ◇
2.1 Education	48.5	72 ◇	5.3.1 Intellectual property payments, % total trade	n/a	n/a
2.1.1 Expenditure on education, % GDP	2.2	123 ◇	5.3.2 High-tech imports, % total trade	4.9	118 ◇
2.1.2 Government funding/pupil, secondary, % GDP/cap	17.6	67 ◇	5.3.3 ICT services imports, % total trade	0.4	118 ◇
2.1.3 School life expectancy, years	16.3	28 ●	5.3.4 FDI net inflows, % GDP	2.4	64
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	32	 Knowledge and technology outputs	19.4	73 ◇
2.2 Tertiary education	31.1	66 ◇	6.1 Knowledge creation	3.7	114 ◇
2.2.1 Tertiary enrolment, % gross	60.3	51	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	108
2.2.2 Graduates in science and engineering, %	15.5	93 ◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	71
2.2.3 Tertiary inbound mobility, %	12.8	15 ●	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	4.8	72 ◇	6.1.4 Scientific and technical articles/bn PPP\$ GDP	6.4	106 ◇
2.3.1 Researchers, FTE/mn pop.	369.0	77 ◇	6.1.5 Citable documents H-index	4.0	105 ◇
2.3.2 Gross expenditure on R&D, % GDP	0.1	105 ◇	6.2 Knowledge impact	28.8	60
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ◇	6.2.1 Labor productivity growth, %	3.3	15 ● ◆
2.3.4 QS university ranking, top 3*	11.6	60 ◇	6.2.2 New businesses/th pop. 15-64	3.1	42
			6.2.3 Software spending, % GDP	0.3	31 ●
 Infrastructure	55.8	32 ●	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	6.3	44
3.1 Information and communication technologies (ICTs)	81.9	40	6.2.5 High-tech manufacturing, %	9.8	90 ◇
3.1.1 ICT access*	94.2	16 ●	6.3 Knowledge diffusion	25.6	56
3.1.2 ICT use*	77.1	30 ●	6.3.1 Intellectual property receipts, % total trade	n/a	n/a
3.1.3 Government's online service*	78.8	45	6.3.2 Production and export complexity	42.5	58 ◇
3.1.4 E-participation*	77.4	51	6.3.3 High-tech exports, % total trade	0.6	87 ◇
3.2 General infrastructure	64.3	6 ● ◆	6.3.4 ICT services exports, % total trade	3.1	41
3.2.1 Electricity output, GWh/mn pop.	20,390.2	1 ● ◆	 Creative outputs	9.2	98 ◇
3.2.2 Logistics performance*	40.9	58 ◇	7.1 Intangible assets	13.5	93 ◇
3.2.3 Gross capital formation, % GDP	34.2	9 ● ◆	7.1.1 Intangible asset intensity, top 15, %	19.9	70 ◇
3.3 Ecological sustainability	21.1	90 ◇	7.1.2 Trademarks by origin/bn PPP\$ GDP	4.9	119 ◇
3.3.1 GDP/unit of energy use	4.5	124 ◇	7.1.3 Global brand value, top 5,000, % GDP	14.3	53
3.3.2 Environmental performance*	42.0	66 ◇	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.2	106 ◇
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	2.2	42	7.2 Creative goods and services	7.5	[92]
			7.2.1 Cultural and creative services exports, % total trade	n/a	n/a
 Market sophistication	30.4	75 ◇	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	27.0	[66]	7.2.3 Entertainment and media market/th pop. 15-69	4.7	45 ◇
4.1.1 Finance for startups and scaleups*	n/a	n/a	7.2.4 Printing and other media, % manufacturing	n/a	n/a
4.1.2 Domestic credit to private sector, % GDP	73.9	45	7.2.5 Creative goods exports, % total trade	0.9	48
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	2.1	85 ◇
4.2 Investment	13.4	44	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	4.3	57
4.2.1 Market capitalization, % GDP	66.1	27	7.3.2 Country-code TLDs/th pop. 15-69	0.9	89 ◇
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.1	32	7.3.3 GitHub commit pushes received/mn pop. 15-69	3.1	70 ◇
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	50	7.3.4 Mobile app creation/bn PPP\$ GDP	0.1	95
4.2.4 Venture capital received, value, % GDP	0.0	51			
4.3 Trade, diversification, and market scale	50.8	80			
4.3.1 Applied tariff rate, weighted avg., %	2.0	62			
4.3.2 Domestic industry diversification	63.8	95 ◇			
4.3.3 Domestic market scale, bn PPP\$	79.0	91			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Bangladesh

102

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
90	112	Lower middle	CSA	166.3	953.4	5,733

	Score/Value	Rank		Score/Value	Rank
 Institutions	44.1	109	 Business sophistication	16.5	125
1.1 Political environment	45.5	112	5.1 Knowledge workers	11.8	[117]
1.1.1 Political and operational stability*	58.2	103	5.1.1 Knowledge-intensive employment, %	8.3	111
1.1.2 Government effectiveness*	32.7	118	5.1.2 Firms offering formal training, %	21.9	72
1.2 Regulatory environment	40.6	122	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	22.4	121	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	31.2	97	5.1.5 Females employed w/advanced degrees, %	1.3	111
1.2.3 Cost of redundancy dismissal	31.0	122	5.2 Innovation linkages	19.1	99
1.3 Business environment	46.3	[69]	5.2.1 University-industry R&D collaboration†	29.4	118
1.3.1 Policies for doing business†	46.3	76	5.2.2 State of cluster development and depth†	43.1	87
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	92
			5.2.5 Patent families/bn PPP\$ GDP	0.0	100
 Human capital and research	10.8	127	5.3 Knowledge absorption	18.7	118
2.1 Education	18.8	129	5.3.1 Intellectual property payments, % total trade	0.1	102
2.1.1 Expenditure on education, % GDP	1.3	127	5.3.2 High-tech imports, % total trade	8.1	68
2.1.2 Government funding/pupil, secondary, % GDP/cap	7.5	103	5.3.3 ICT services imports, % total trade	0.2	129
2.1.3 School life expectancy, years	12.4	89	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	32.8	120	 Knowledge and technology outputs	12.7	95
2.2 Tertiary education	9.3	110	6.1 Knowledge creation	7.1	[90]
2.2.1 Tertiary enrolment, % gross	22.8	93	6.1.1 Patents by origin/bn PPP\$ GDP	0.0	122
2.2.2 Graduates in science and engineering, %	11.1	106	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	n/a	n/a
2.3 Research and development (R&D)	4.4	[74]	6.1.4 Scientific and technical articles/bn PPP\$ GDP	6.6	105
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index	12.2	63
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	6.2 Knowledge impact	22.9	78
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2.1 Labor productivity growth, %	5.3	5
2.3.4 QS university ranking, top 3*	8.9	65	6.2.2 New businesses/th pop. 15-64	0.0	122
			6.2.3 Software spending, % GDP	0.2	75
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	0.6	117
			6.2.5 High-tech manufacturing, %	6.5	97
 Infrastructure	35.5	94	6.3 Knowledge diffusion	8.2	110
3.1 Information and communication technologies (ICTs)	58.2	95	6.3.1 Intellectual property receipts, % total trade	0.0	94
3.1.1 ICT access*	76.0	90	6.3.2 Production and export complexity	20.9	100
3.1.2 ICT use*	38.6	102	6.3.3 High-tech exports, % total trade	0.2	104
3.1.3 Government's online service*	61.2	86	6.3.4 ICT services exports, % total trade	0.9	88
3.1.4 E-participation*	57.1	90	 Creative outputs	13.0	87
3.2 General infrastructure	23.9	83	7.1 Intangible assets	24.5	68
3.2.1 Electricity output, GWh/mn pop.	518.6	109	7.1.1 Intangible asset intensity, top 15, %	68.6	26
3.2.2 Logistics performance*	24.7	92	7.1.2 Trademarks by origin/bn PPP\$ GDP	11.2	108
3.2.3 Gross capital formation, % GDP	30.4	24	7.1.3 Global brand value, top 5,000, % GDP	4.2	69
3.3 Ecological sustainability	24.3	75	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.3	59
3.3.1 GDP/unit of energy use	17.0	13	7.2 Creative goods and services	2.1	[114]
3.3.2 Environmental performance*	23.1	127	7.2.1 Cultural and creative services exports, % total trade	0.2	76
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.2	108	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 Printing and other media, % manufacturing	0.2	96
			7.2.5 Creative goods exports, % total trade	0.1	106
 Market sophistication	25.4	92	7.3 Online creativity	0.9	103
4.1 Credit	31.4	49	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.4	111
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	45.3	76	7.3.3 GitHub commit pushes received/mn pop. 15-69	1.4	92
4.1.3 Loans from microfinance institutions, % GDP	3.2	11	7.3.4 Mobile app creation/bn PPP\$ GDP	1.9	73
4.2 Investment	3.1	93			
4.2.1 Market capitalization, % GDP	25.8	52			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	95			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	93			
4.2.4 Venture capital received, value, % GDP	0.0	77			
4.3 Trade, diversification, and market scale	41.8	97			
4.3.1 Applied tariff rate, weighted avg., %	11.0	123			
4.3.2 Domestic industry diversification	75.1	77			
4.3.3 Domestic market scale, bn PPP\$	953.4	30			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Belarus

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
63	86	Upper middle	EUR	9.4	200.7	21,467






		Score/Value	Rank			Score/Value	Rank
Institutions		32.2	130	Business sophistication		25.8	72
1.1	Political environment	47.0	105	5.1	Knowledge workers	45.9	39
1.1.1	Political and operational stability*	60.0	97	5.1.1	Knowledge-intensive employment, %	41.0	30
1.1.2	Government effectiveness*	34.0	113	5.1.2	Firms offering formal training, %	31.5	53
1.2	Regulatory environment	48.7	110	5.1.3	GERD performed by business, % GDP	0.4	43
1.2.1	Regulatory quality*	28.7	107	5.1.4	GERD financed by business, %	45.0	35
1.2.2	Rule of law*	20.2	120	5.1.5	Females employed w/advanced degrees, %	20.5	32
1.2.3	Cost of redundancy dismissal	21.7	95	5.2	Innovation linkages	6.8	[129]
1.3	Business environment	0.8	[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 and depth†	n/a	n/a
1.3.2	Entrepreneurship policies and culture*	0.8	73	5.2.3	GERD financed by abroad, % GDP	0.1	41
Human capital and research		42.6	35	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	105
2.1	Education	64.1	16	5.2.5	Patent families/bn PPP\$ GDP	0.1	56
2.1.1	Expenditure on education, % GDP	5.0	41	5.3	Knowledge absorption	24.6	91
2.1.2	Government funding/pupil, secondary, % GDP/cap	35.7	6	5.3.1	Intellectual property payments, % total trade	0.5	70
2.1.3	School life expectancy, years	15.2	47	5.3.2	High-tech imports, % total trade	6.3	103
2.1.4	PISA scales in reading, maths and science	472.3	36	5.3.3	ICT services imports, % total trade	1.2	81
2.1.5	Pupil-teacher ratio, secondary	9.3	22	5.3.4	FDI net inflows, % GDP	2.2	69
2.2	Tertiary education	53.6	8	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	86.6	14	Knowledge and technology outputs		31.4	40
2.2.2	Graduates in science and engineering, %	35.5	8	6.1	Knowledge creation	13.9	60
2.2.3	Tertiary inbound mobility, %	5.9	43	6.1.1	Patents by origin/bn PPP\$ GDP	2.2	32
2.3	Research and development (R&D)	10.0	57	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	63
2.3.1	Researchers, FTE/mn pop.	1,465.7	49	6.1.3	Utility models by origin/bn PPP\$ GDP	1.4	16
2.3.2	Gross expenditure on R&D, % GDP	0.5	56	6.1.4	Scientific and technical articles/bn PPP\$ GDP	6.8	104
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	6.1.5	Citable documents H-index	9.8	75
2.3.4	QS university ranking, top 3*	16.6	56	6.2	Knowledge impact	41.8	19
Infrastructure		43.4	67	6.2.1	Labor productivity growth, %	2.2	30
3.1	Information and communication technologies (ICTs)	78.2	52	6.2.2	New businesses/th pop. 15-64	1.1	78
3.1.1	ICT access*	89.7	48	6.2.3	Software spending, % GDP	0.0	104
3.1.2	ICT use*	77.7	27	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	37.5	3
3.1.3	Government's online service*	70.6	65	6.2.5	High-tech manufacturing, %	29.8	45
3.1.4	E-participation*	75.0	57	6.3	Knowledge diffusion	38.5	31
3.2	General infrastructure	26.5	74	6.3.1	Intellectual property receipts, % total trade	0.2	39
3.2.1	Electricity output, GWh/mn pop.	4,035.1	53	6.3.2	Production and export complexity	61.1	31
3.2.2	Logistics performance*	24.2	97	6.3.3	High-tech exports, % total trade	2.2	56
3.2.3	Gross capital formation, % GDP	25.6	49	6.3.4	ICT services exports, % total trade	7.5	10
3.3	Ecological sustainability	25.4	69	Creative outputs		11.3	91
3.3.1	GDP/unit of energy use	6.9	103	7.1	Intangible assets	7.6	107
3.3.2	Environmental performance*	48.5	44	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	1.9	49	7.1.2	Trademarks by origin/bn PPP\$ GDP	26.2	82
Market sophistication		24.6	96	7.1.3	Global brand value, top 5,000, % GDP	0.0	77
4.1	Credit	11.0	108	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.8	73
4.1.1	Finance for startups and scaleups*	21.9	69	7.2	Creative goods and services	9.7	[83]
4.1.2	Domestic credit to private sector, % GDP	33.1	89	7.2.1	Cultural and creative services exports, % total trade	0.5	55
4.1.3	Loans from microfinance institutions, % GDP	0.0	55	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
4.2	Investment	1.1	109	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	1.4	80	7.2.4	Printing and other media, % manufacturing	0.5	81
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	89	7.2.5	Creative goods exports, % total trade	0.7	53
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	84	7.3	Online creativity	20.2	30
4.2.4	Venture capital received, value, % GDP	0.0	84	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1.7	82
4.3	Trade, diversification, and market scale	61.7	48	7.3.2	Country-code TLDs/th pop. 15-69	6.5	47
4.3.1	Applied tariff rate, weighted avg., %	1.8	56	7.3.3	GitHub commit pushes received/mn pop. 15-69	19.9	33
4.3.2	Domestic industry diversification	92.1	41	7.3.4	Mobile app creation/bn PPP\$ GDP	52.8	2
4.3.3	Domestic market scale, bn PPP\$	200.7	68				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Belgium

26

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
24	26	High	EUR	11.6	645.4	55,919

	Score/Value	Rank		Score/Value	Rank
 Institutions	71.5	29	 Business sophistication	56.7	11
1.1 Political environment	77.0	27	5.1 Knowledge workers	74.4	5 ●◆
1.1.1 Political and operational stability*	80.0	30	5.1.1 Knowledge-intensive employment, %	49.6	9 ●
1.1.2 Government effectiveness*	73.9	26	5.1.2 Firms offering formal training, %	57.8	11
1.2 Regulatory environment	78.5	31	5.1.3 GERD performed by business, % GDP	2.5	6 ●◆
1.2.1 Regulatory quality*	78.7	20	5.1.4 GERD financed by business, %	64.3	9 ●
1.2.2 Rule of law*	81.6	20	5.1.5 Females employed w/advanced degrees, %	28.1	7 ●◆
1.2.3 Cost of redundancy dismissal	19.7	84 ○	5.2 Innovation linkages	55.9	9 ●
1.3 Business environment	59.0	[36]	5.2.1 University-industry R&D collaboration†	68.8	8 ●◆
1.3.1 Policies for doing business†	59.0	42	5.2.2 State of cluster development and depth†	63.7	18
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.5	5 ●◆
			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	56.2	16	5.3 Knowledge absorption	39.7	37
2.1 Education	70.6	5 ●◆	5.3.1 Intellectual property payments, % total trade	0.8	51
2.1.1 Expenditure on education, % GDP	6.4	14 ◆	5.3.2 High-tech imports, % total trade	8.4	65 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap	23.7	27	5.3.3 ICT services imports, % total trade	2.8	21
2.1.3 School life expectancy, years	19.6	4 ●◆	5.3.4 FDI net inflows, % GDP	-5.5	130 ○
2.1.4 PISA scales in reading, maths and science	499.9	19	5.3.5 Research talent, % in businesses	56.8	18
2.1.5 Pupil-teacher ratio, secondary	9.1	19			
2.2 Tertiary education	35.6	46	 Knowledge and technology outputs	44.4	18
2.2.1 Tertiary enrolment, % gross	80.1	22	6.1 Knowledge creation	49.7	13
2.2.2 Graduates in science and engineering, %	17.6	86 ○◆	6.1.1 Patents by origin/bn PPP\$ GDP	5.5	18
2.2.3 Tertiary inbound mobility, %	10.0	26	6.1.2 PCT patents by origin/bn PPP\$ GDP	2.1	16
2.3 Research and development (R&D)	62.3	15	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1 Researchers, FTE/mn pop.	5,750.1	11	6.1.4 Scientific and technical articles/bn PPP\$ GDP	42.2	19
2.3.2 Gross expenditure on R&D, % GDP	3.5	4 ●◆	6.1.5 Citable documents H-index	53.8	14
2.3.3 Global corporate R&D investors, top 3, mn USD	66.9	17	6.2 Knowledge impact	37.9	30
2.3.4 QS university ranking, top 3*	55.1	17	6.2.1 Labor productivity growth, %	-0.0	91 ○
			6.2.2 New businesses/th pop. 15-64	4.7	30
			6.2.3 Software spending, % GDP	0.6	10 ●
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	5.1	57
			6.2.5 High-tech manufacturing, %	44.2	21
 Infrastructure	53.7	37	6.3 Knowledge diffusion	45.4	23
3.1 Information and communication technologies (ICTs)	74.5	64 ◆	6.3.1 Intellectual property receipts, % total trade	0.9	23
3.1.1 ICT access*	89.2	53	6.3.2 Production and export complexity	70.1	21
3.1.2 ICT use*	77.5	28	6.3.3 High-tech exports, % total trade	8.3	22
3.1.3 Government's online service*	65.9	76 ○◆	6.3.4 ICT services exports, % total trade	3.6	31
3.1.4 E-participation*	65.5	77 ○◆			
3.2 General infrastructure	54.6	16	 Creative outputs	32.6	32
3.2.1 Electricity output, GWh/mn pop.	7,614.4	24	7.1 Intangible assets	36.0	46
3.2.2 Logistics performance*	92.6	3 ●◆	7.1.1 Intangible asset intensity, top 15, %	69.4	25
3.2.3 Gross capital formation, % GDP	24.7	56	7.1.2 Trademarks by origin/bn PPP\$ GDP	39.5	64 ○
3.3 Ecological sustainability	32.0	49	7.1.3 Global brand value, top 5,000, % GDP	48.1	34
3.3.1 GDP/unit of energy use	10.3	66 ○	7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.4	42
3.3.2 Environmental performance*	58.2	21	7.2 Creative goods and services	27.5	39
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	1.8	55	7.2.1 Cultural and creative services exports, % total trade	1.4	20
			7.2.2 National feature films/mn pop. 15-69	4.9	25
			7.2.3 Entertainment and media market/th pop. 15-69	48.2	19
			7.2.4 Printing and other media, % manufacturing	1.0	46
			7.2.5 Creative goods exports, % total trade	1.0	43
 Market sophistication	38.2	45	7.3 Online creativity	31.2	23
4.1 Credit	27.7	[64]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	21.4	27
4.1.1 Finance for startups and scaleups*	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	62.1	13
4.1.2 Domestic credit to private sector, % GDP	75.8	43	7.3.3 GitHub commit pushes received/mn pop. 15-69	39.0	15
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	2.1	70 ○
4.2 Investment	22.5	34			
4.2.1 Market capitalization, % GDP	75.2	23			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.2	22			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	31			
4.2.4 Venture capital received, value, % GDP	0.0	32			
4.3 Trade, diversification, and market scale	64.5	30			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	88.6	49			
4.3.3 Domestic market scale, bn PPP\$	645.4	36			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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\$
131	107	Lower middle	SSA	12.5	46.5	3,720

	Score/Value	Rank		Score/Value	Rank
Institutions	57.2	64 ● ◆	Business sophistication	18.9	114
1.1 Political environment	52.9	89	5.1 Knowledge workers	9.7	[122]
1.1.1 Political and operational stability*	61.8	87	5.1.1 Knowledge-intensive employment, %	⊙	6.1 118
1.1.2 Government effectiveness*	44.0	86	5.1.2 Firms offering formal training, %	⊙	20.0 79
1.2 Regulatory environment	62.1	74 ● ◆	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	35.6	94	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	27.2	107	5.1.5 Females employed w/advanced degrees, %	⊙	1.2 112
1.2.3 Cost of redundancy dismissal	11.6	38 ●	5.2 Innovation linkages	19.3	98
1.3 Business environment	56.7	[37]	5.2.1 University-industry R&D collaboration†	37.1	95
1.3.1 Policies for doing business†	56.7	45 ● ◆	5.2.2 State of cluster development and depth†	34.5	119
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 76 ●
			5.2.5 Patent families/bn PPP\$ GDP	0.0	101 ○ ◇
			5.3 Knowledge absorption	27.6	77 ●
			5.3.1 Intellectual property payments, % total trade	⊙	0.0 120 ◇
			5.3.2 High-tech imports, % total trade	4.7	119
			5.3.3 ICT services imports, % total trade	⊙	2.9 19 ● ◆
			5.3.4 FDI net inflows, % GDP	1.3	89
			5.3.5 Research talent, % in businesses	n/a	n/a
			Knowledge and technology outputs	3.0	129 ○ ◇
			6.1 Knowledge creation	4.5	110
			6.1.1 Patents by origin/bn PPP\$ GDP	0.1	117
			6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	101 ○ ◇
			6.1.3 Utility models by origin/bn PPP\$ GDP	⊙	0.0 78 ○ ◇
			6.1.4 Scientific and technical articles/bn PPP\$ GDP	13.1	74 ●
			6.1.5 Citable documents H-index	4.0	105
			6.2 Knowledge impact	3.1	[128]
			6.2.1 Labor productivity growth, %	n/a	n/a
			6.2.2 New businesses/th pop. 15–64	0.6	91
			6.2.3 Software spending, % GDP	0.1	101
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	1.0	104
			6.2.5 High-tech manufacturing, %	n/a	n/a
			6.3 Knowledge diffusion	1.5	131 ○ ◇
			6.3.1 Intellectual property receipts, % total trade	⊙	0.0 104
			6.3.2 Production and export complexity	n/a	n/a
			6.3.3 High-tech exports, % total trade	0.1	123
			6.3.4 ICT services exports, % total trade	⊙	0.4 104
			Creative outputs	0.3	132 ○ ◇
			7.1 Intangible assets	0.4	130 ○ ◇
			7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
			7.1.2 Trademarks by origin/bn PPP\$ GDP	3.7	127 ○
			7.1.3 Global brand value, top 5,000, % GDP	0.0	77 ○ ◇
			7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.1	112
			7.2 Creative goods and services	0.1	[131]
			7.2.1 Cultural and creative services exports, % total trade	0.0	109 ○
			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 Printing and other media, % manufacturing	n/a	n/a
			7.2.5 Creative goods exports, % total trade	0.0	129 ○
			7.3 Online creativity	0.4	114
			7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.6	103
			7.3.2 Country-code TLDs/th pop. 15–69	0.1	119
			7.3.3 GitHub commit pushes received/mn pop. 15–69	0.4	112
			7.3.4 Mobile app creation/bn PPP\$ GDP	n/a	n/a

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Bosnia and Herzegovina

70

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
75	64	Upper middle	EUR	3.3	53.2	16,302








	Score/Value	Rank		Score/Value	Rank
Institutions	48.1	94	Business sophistication	21.5	98
1.1 Political environment	46.2	108	5.1 Knowledge workers	30.1	67
1.1.1 Political and operational stability*	63.6	81	5.1.1 Knowledge-intensive employment, %	18.0	83
1.1.2 Government effectiveness*	28.7	122	5.1.2 Firms offering formal training, %	37.9	38
1.2 Regulatory environment	68.1	57	5.1.3 GERD performed by business, % GDP	0.1	64
1.2.1 Regulatory quality*	39.1	89	5.1.4 GERD financed by business, %	36.1	53
1.2.2 Rule of law*	38.1	78	5.1.5 Females employed w/advanced degrees, %	10.7	70
1.2.3 Cost of redundancy dismissal	9.2	23	5.2 Innovation linkages	15.3	120
1.3 Business environment	29.9	110	5.2.1 University-industry R&D collaboration†	29.1	119
1.3.1 Policies for doing business†	21.8	125	5.2.2 State of cluster development and depth†	39.8	105
1.3.2 Entrepreneurship policies and culture*	38.1	41	5.2.3 GERD financed by abroad, % GDP	0.0	67
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	85
			5.2.5 Patent families/bn PPP\$ GDP	0.0	101
			5.3 Knowledge absorption	19.2	114
			5.3.1 Intellectual property payments, % total trade	0.1	99
			5.3.2 High-tech imports, % total trade	6.3	102
			5.3.3 ICT services imports, % total trade	0.7	96
			5.3.4 FDI net inflows, % GDP	2.4	63
			5.3.5 Research talent, % in businesses	12.0	60
Human capital and research	30.7	67	Knowledge and technology outputs	22.3	63
2.1 Education	61.4	[30]	6.1 Knowledge creation	9.9	75
2.1.1 Expenditure on education, % GDP	n/a	n/a	6.1.1 Patents by origin/bn PPP\$ GDP	1.0	64
2.1.2 Government funding/pupil, secondary, % GDP/cap	32.7	7	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	47
2.1.3 School life expectancy, years	n/a	n/a	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.1.4 PISA scales in reading, maths and science	402.6	63	6.1.4 Scientific and technical articles/bn PPP\$ GDP	16.0	62
2.1.5 Pupil-teacher ratio, secondary	8.5	14	6.1.5 Citable documents H-index	4.7	98
2.2 Tertiary education	29.2	71	6.2 Knowledge impact	28.1	63
2.2.1 Tertiary enrolment, % gross	37.9	77	6.2.1 Labor productivity growth, %	0.5	74
2.2.2 Graduates in science and engineering, %	23.3	46	6.2.2 New businesses/th pop. 15-64	1.0	80
2.2.3 Tertiary inbound mobility, %	6.6	40	6.2.3 Software spending, % GDP	0.1	90
2.3 Research and development (R&D)	1.4	91	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	22.9	6
2.3.1 Researchers, FTE/mn pop.	452.0	72	6.2.5 High-tech manufacturing, %	15.4	74
2.3.2 Gross expenditure on R&D, % GDP	0.2	89	6.3 Knowledge diffusion	28.9	51
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.3.1 Intellectual property receipts, % total trade	0.2	42
2.3.4 QS university ranking, top 3*	0.0	72	6.3.2 Production and export complexity	58.7	35
			6.3.3 High-tech exports, % total trade	2.6	52
			6.3.4 ICT services exports, % total trade	2.2	60
Infrastructure	47.5	55	Creative outputs	14.4	83
3.1 Information and communication technologies (ICTs)	63.1	90	7.1 Intangible assets	20.5	78
3.1.1 ICT access*	82.3	79	7.1.1 Intangible asset intensity, top 15, %	28.9	67
3.1.2 ICT use*	56.0	84	7.1.2 Trademarks by origin/bn PPP\$ GDP	17.3	96
3.1.3 Government's online service*	53.5	97	7.1.3 Global brand value, top 5,000, % GDP	0.0	77
3.1.4 E-participation*	60.7	85	7.1.4 Industrial designs by origin/bn PPP\$ GDP	3.0	37
3.2 General infrastructure	28.3	71	7.2 Creative goods and services	13.7	69
3.2.1 Electricity output, GWh/mn pop.	4,951.2	43	7.2.1 Cultural and creative services exports, % total trade	0.2	71
3.2.2 Logistics performance*	35.3	67	7.2.2 National feature films/mn pop. 15-69	4.1	30
3.2.3 Gross capital formation, % GDP	20.1	91	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
3.3 Ecological sustainability	51.2	7	7.2.4 Printing and other media, % manufacturing	1.1	43
3.3.1 GDP/unit of energy use	6.4	108	7.2.5 Creative goods exports, % total trade	0.4	65
3.3.2 Environmental performance*	39.4	73	7.3 Online creativity	3.0	72
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	16.2	1	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.0	64
			7.3.2 Country-code TLDs/th pop. 15-69	3.1	63
			7.3.3 GitHub commit pushes received/mn pop. 15-69	5.9	52
			7.3.4 Mobile app creation/bn PPP\$ GDP	0.1	99
Market sophistication	45.5	25			
4.1 Credit	31.2	51			
4.1.1 Finance for startups and scaleups*	41.4	37			
4.1.2 Domestic credit to private sector, % GDP	58.5	60			
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 investors, deals/bn PPP\$ GDP	n/a	n/a			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a			
4.2.4 Venture capital received, value, % GDP	n/a	n/a			
4.3 Trade, diversification, and market scale	59.9	53			
4.3.1 Applied tariff rate, weighted avg., %	2.9	72			
4.3.2 Domestic industry diversification	97.2	17			
4.3.3 Domestic market scale, bn PPP\$	53.2	102			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Botswana





86

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
94	74	Upper middle	SSA	2.4	41.1	17,163

	Score/Value	Rank		Score/Value	Rank
 Institutions	65.0	40	 Business sophistication	26.0	70
1.1 Political environment	67.6	43	5.1 Knowledge workers	26.7	74
1.1.1 Political and operational stability*	80.0	30	5.1.1 Knowledge-intensive employment, %	19.9	76
1.1.2 Government effectiveness*	55.2	56	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	66.0	63	5.1.3 GERD performed by business, % GDP	0.1	63
1.2.1 Regulatory quality*	55.3	53	5.1.4 GERD financed by business, %	17.7	69
1.2.2 Rule of law*	57.5	46	5.1.5 Females employed w/advanced degrees, %	16.4	44
1.2.3 Cost of redundancy dismissal	20.3	87	5.2 Innovation linkages	25.4	54
1.3 Business environment	61.4	[32]	5.2.1 University-industry R&D collaboration†	49.2	50
1.3.1 Policies for doing business†	61.4	35	5.2.2 State of cluster development and depth†	48.4	64
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.1	33
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	58
			5.2.5 Patent families/bn PPP\$ GDP	0.0	101
 Human capital and research	35.6	51	5.3 Knowledge absorption	25.8	87
2.1 Education	87.6	[1]	5.3.1 Intellectual property payments, % total trade	1.6	22
2.1.1 Expenditure on education, % GDP	8.7	2	5.3.2 High-tech imports, % total trade	8.0	73
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	1.2	82
2.1.3 School life expectancy, years	n/a	n/a	5.3.4 FDI net inflows, % GDP	0.9	103
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	1.0	78
2.1.5 Pupil-teacher ratio, secondary	11.5	44	 Knowledge and technology outputs	14.5	88
2.2 Tertiary education	17.2	97	6.1 Knowledge creation	6.8	95
2.2.1 Tertiary enrolment, % gross	26.1	89	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	115
2.2.2 Graduates in science and engineering, %	18.5	83	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	70
2.2.3 Tertiary inbound mobility, %	2.2	75	6.1.3 Utility models by origin/bn PPP\$ GDP	0.4	38
2.3 Research and development (R&D)	1.9	87	6.1.4 Scientific and technical articles/bn PPP\$ GDP	13.9	69
2.3.1 Researchers, FTE/mn pop.	185.2	83	6.1.5 Citable documents H-index	4.6	100
2.3.2 Gross expenditure on R&D, % GDP	0.5	57	6.2 Knowledge impact	28.7	61
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2.1 Labor productivity growth, %	-2.0	111
2.3.4 QS university ranking, top 3*	0.0	72	6.2.2 New businesses/th pop. 15-64	18.0	4
			6.2.3 Software spending, % GDP	0.1	84
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	0.4	123
			6.2.5 High-tech manufacturing, %	n/a	n/a
			6.3 Knowledge diffusion	7.9	111
			6.3.1 Intellectual property receipts, % total trade	0.0	98
			6.3.2 Production and export complexity	23.1	95
			6.3.3 High-tech exports, % total trade	0.3	99
			6.3.4 ICT services exports, % total trade	0.3	114
 Infrastructure	36.5	88	 Creative outputs	8.0	100
3.1 Information and communication technologies (ICTs)	53.7	97	7.1 Intangible assets	14.5	91
3.1.1 ICT access*	83.4	75	7.1.1 Intangible asset intensity, top 15, %	16.8	72
3.1.2 ICT use*	58.2	77	7.1.2 Trademarks by origin/bn PPP\$ GDP	18.2	95
3.1.3 Government's online service*	36.5	116	7.1.3 Global brand value, top 5,000, % GDP	0.0	77
3.1.4 E-participation*	36.9	114	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.4	91
3.2 General infrastructure	23.6	85	7.2 Creative goods and services	2.2	[113]
3.2.1 Electricity output, GWh/mn pop.	927.7	99	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	29.4	26	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
3.3 Ecological sustainability	32.0	50	7.2.4 Printing and other media, % manufacturing	n/a	n/a
3.3.1 GDP/unit of energy use	14.4	27	7.2.5 Creative goods exports, % total trade	0.2	80
3.3.2 Environmental performance*	54.0	33	7.3 Online creativity	1.0	102
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.3	98	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.0	93
			7.3.2 Country-code TLDs/th pop. 15-69	2.0	71
			7.3.3 GitHub commit pushes received/mn pop. 15-69	0.9	106
			7.3.4 Mobile app creation/bn PPP\$ GDP	0.0	114
 Market sophistication	19.6	112			
4.1 Credit	23.4	77			
4.1.1 Finance for startups and scaleups*	n/a	n/a			
4.1.2 Domestic credit to private sector, % GDP	39.5	80			
4.1.3 Loans from microfinance institutions, % GDP	2.3	15			
4.2 Investment	3.6	91			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	63			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	59			
4.2.4 Venture capital received, value, % GDP	0.0	90			
4.3 Trade, diversification, and market scale	31.8	113			
4.3.1 Applied tariff rate, weighted avg., %	0.8	8			
4.3.2 Domestic industry diversification	0.0	109			
4.3.3 Domestic market scale, bn PPP\$	41.1	111			

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
53	58	Upper middle	LCN	214.0	3,437.6	16,169

	Score/ Value	Rank		Score/ Value	Rank	
 Institutions	46.7	102 ○	 Business sophistication	37.9	35 ◆	
1.1 Political environment	52.8	91	5.1 Knowledge workers	45.9	[40]	
1.1.1 Political and operational stability*	65.5	74	5.1.1 Knowledge-intensive employment, %	24.5	59	
1.1.2 Government effectiveness*	40.1	94	5.1.2 Firms offering formal training, %	n/a	n/a	
1.2 Regulatory environment	63.2	70	5.1.3 GERD performed by business, % GDP	n/a	n/a	
1.2.1 Regulatory quality*	40.9	84	5.1.4 GERD financed by business, %	⊙	43.5	
1.2.2 Rule of law*	41.5	71	5.1.5 Females employed w/advanced degrees, %	14.4	53	
1.2.3 Cost of redundancy dismissal	15.4	62	5.2 Innovation linkages	24.7	58	
1.3 Business environment	24.1	121 ○ ◇	5.2.1 University-industry R&D collaboration†	40.4	78	
1.3.1 Policies for doing business†	35.4	103 ○	5.2.2 State of cluster development and depth†	49.8	51	
1.3.2 Entrepreneurship policies and culture*	12.8	66 ○ ◇	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	0.1	53	
 Human capital and research	36.2	50	5.3 Knowledge absorption	43.3	30 ◆	
2.1 Education	51.4	67	5.3.1 Intellectual property payments, % total trade	1.9	14 ● ◆	
2.1.1 Expenditure on education, % GDP	⊙	6.1	20 ●	5.3.2 High-tech imports, % total trade	13.2	19 ●
2.1.2 Government funding/pupil, secondary, % GDP/cap	21.4	43	5.3.3 ICT services imports, % total trade	2.6	25 ● ◆	
2.1.3 School life expectancy, years	15.6	44	5.3.4 FDI net inflows, % GDP	3.5	37	
2.1.4 PISA scales in reading, maths and science	400.0	68 ○	5.3.5 Research talent, % in businesses	⊙	26.6	
2.1.5 Pupil-teacher ratio, secondary	16.3	79				
2.2 Tertiary education	22.2	86	 Knowledge and technology outputs	24.8	55	
2.2.1 Tertiary enrolment, % gross	55.1	58	6.1 Knowledge creation	20.0	48	
2.2.2 Graduates in science and engineering, %	⊙	18.5	82 ○	6.1.1 Patents by origin/bn PPP\$ GDP	1.7	43
2.2.3 Tertiary inbound mobility, %	0.2	105 ○ ◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	54	
2.3 Research and development (R&D)	35.0	33 ◆	6.1.3 Utility models by origin/bn PPP\$ GDP	0.8	26	
2.3.1 Researchers, FTE/mn pop.	⊙	887.7	53	6.1.4 Scientific and technical articles/bn PPP\$ GDP	18.9	51
2.3.2 Gross expenditure on R&D, % GDP	⊙	1.2	34 ◆	6.1.5 Citable documents H-index	38.6	23 ● ◆
2.3.3 Global corporate R&D investors, top 3, mn USD	46.5	32 ◆	6.2 Knowledge impact	30.8	54	
2.3.4 QS university ranking, top 3*	42.5	30 ◆	6.2.1 Labor productivity growth, %	0.8	66	
			6.2.2 New businesses/th pop. 15-64	2.7	48	
			6.2.3 Software spending, % GDP	0.3	40	
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	5.7	50	
			6.2.5 High-tech manufacturing, %	37.5	32 ◆	
			6.3 Knowledge diffusion	23.7	64	
			6.3.1 Intellectual property receipts, % total trade	0.3	36 ◆	
			6.3.2 Production and export complexity	44.0	53	
			6.3.3 High-tech exports, % total trade	2.6	53	
			6.3.4 ICT services exports, % total trade	1.1	85	
			 Creative outputs	24.5	51	
			7.1 Intangible assets	41.8	33	
			7.1.1 Intangible asset intensity, top 15, %	72.1	17 ●	
			7.1.2 Trademarks by origin/bn PPP\$ GDP	82.7	19 ●	
			7.1.3 Global brand value, top 5,000, % GDP	34.7	41	
			7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.4	58	
			7.2 Creative goods and services	6.8	93	
			7.2.1 Cultural and creative services exports, % total trade	0.5	51	
			7.2.2 National feature films/mn pop. 15-69	1.1	56 ○	
			7.2.3 Entertainment and media market/th pop. 15-69	6.0	44	
			7.2.4 Printing and other media, % manufacturing	0.5	83 ○	
			7.2.5 Creative goods exports, % total trade	0.2	83	
			7.3 Online creativity	7.6	51	
			7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.6	85	
			7.3.2 Country-code TLDs/th pop. 15-69	8.9	42	
			7.3.3 GitHub commit pushes received/mn pop. 15-69	8.3	47	
			7.3.4 Mobile app creation/bn PPP\$ GDP	11.5	34	
 Infrastructure	43.9	65				
3.1 Information and communication technologies (ICTs)	80.4	45				
3.1.1 ICT access*	81.4	81				
3.1.2 ICT use*	62.9	63				
3.1.3 Government's online service*	87.1	20 ● ◆				
3.1.4 E-participation*	90.5	18 ● ◆				
3.2 General infrastructure	26.0	75				
3.2.1 Electricity output, GWh/mn pop.	2,922.5	64				
3.2.2 Logistics performance*	43.7	55				
3.2.3 Gross capital formation, % GDP	17.3	108 ○				
3.3 Ecological sustainability	25.3	71				
3.3.1 GDP/unit of energy use	10.2	67				
3.3.2 Environmental performance*	43.6	60				
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	1.0	69				
 Market sophistication	37.2	49				
4.1 Credit	22.1	82				
4.1.1 Finance for startups and scaleups*	40.7	38				
4.1.2 Domestic credit to private sector, % GDP	70.2	48				
4.1.3 Loans from microfinance institutions, % GDP	0.0	57 ○				
4.2 Investment	17.2	38				
4.2.1 Market capitalization, % GDP	59.8	32				
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	53				
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	44				
4.2.4 Venture capital received, value, % GDP	0.0	22				
4.3 Trade, diversification, and market scale	72.4	18 ● ◆				
4.3.1 Applied tariff rate, weighted avg., %	8.4	107 ○ ◇				
4.3.2 Domestic industry diversification	94.2	27				
4.3.3 Domestic market scale, bn PPP\$	3,437.6	8 ● ◆				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Brunei Darussalam

92

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
129	53	High	SEAO	0.4	30.3	65,675








		Score/Value	Rank			Score/Value	Rank
Institutions		74.5	23 ●	Business sophistication		27.4	66 ◇
1.1	Political environment	87.6	8 ●◆	5.1	Knowledge workers	30.6	[66]
1.1.1	Political and operational stability*	94.5	3 ●◆	5.1.1	Knowledge-intensive employment, %	34.3	44
1.1.2	Government effectiveness*	80.7	17 ●	5.1.2	Firms offering formal training, %	n/a	n/a
1.2	Regulatory environment	84.5	22 ●	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	67.8	35	5.1.4	GERD financed by business, %	0.0	100 ○◇
1.2.2	Rule of law*	70.2	32	5.1.5	Females employed w/advanced degrees, %	12.1	63 ◇
1.2.3	Cost of redundancy dismissal	8.0	1 ●◆	5.2	Innovation linkages	22.9	67 ◇
1.3	Business environment	51.5	[54]	5.2.1	University-industry R&D collaboration†	51.0	40
1.3.1	Policies for doing business†	51.5	59	5.2.2	State of cluster development and depth†	48.4	63
1.3.2	Entrepreneurship policies and culture*	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	0.0	92 ◇
Human capital and research		35.2	53 ◇	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	37
2.1	Education	52.8	63 ◇	5.2.5	Patent families/bn PPP\$ GDP	0.0	70 ◇
2.1.1	Expenditure on education, % GDP	4.4	62 ◇	5.3	Knowledge absorption	28.6	72 ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.6	29	5.3.1	Intellectual property payments, % total trade	0.3	86 ◇
2.1.3	School life expectancy, years	14.0	72 ◇	5.3.2	High-tech imports, % total trade	5.2	116
2.1.4	PISA scales in reading, maths and science	423.1	53 ◇	5.3.3	ICT services imports, % total trade	2.4	27 ●
2.1.5	Pupil-teacher ratio, secondary	7.2	4 ●◆	5.3.4	FDI net inflows, % GDP	3.8	27 ●
2.2	Tertiary education	42.3	31	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	32.0	83 ◇	Knowledge and technology outputs		4.2	127 ○◇
2.2.2	Graduates in science and engineering, %	38.4	4 ●◆	6.1	Knowledge creation	6.0	98 ◇
2.2.3	Tertiary inbound mobility, %	3.7	59	6.1.1	Patents by origin/bn PPP\$ GDP	0.2	102
2.3	Research and development (R&D)	10.4	55 ◇	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	0.3	81 ◇	6.1.4	Scientific and technical articles/bn PPP\$ GDP	14.1	68 ◇
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○◇	6.1.5	Citable documents H-index	3.3	114 ◇
2.3.4	QS university ranking, top 3*	23.4	44	6.2	Knowledge impact	4.5	[124]
Infrastructure		45.5	61 ◇	6.2.1	Labor productivity growth, %	n/a	n/a
3.1	Information and communication technologies (ICTs)	68.9	78 ◇	6.2.2	New businesses/th pop. 15-64	1.0	81
3.1.1	ICT access*	83.3	76 ◇	6.2.3	Software spending, % GDP	n/a	n/a
3.1.2	ICT use*	74.0	43	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	2.7	77
3.1.3	Government's online service*	63.5	80 ◇	6.2.5	High-tech manufacturing, %	3.3	106 ○◇
3.1.4	E-participation*	54.8	93 ◇	6.3	Knowledge diffusion	2.0	129 ○◇
3.2	General infrastructure	46.1	26 ●	6.3.1	Intellectual property receipts, % total trade	0.0	113 ○◇
3.2.1	Electricity output, GWh/mn pop.	11,465.1	11 ●	6.3.2	Production and export complexity	n/a	n/a
3.2.2	Logistics performance*	30.7	78 ◇	6.3.3	High-tech exports, % total trade	0.2	103 ◇
3.2.3	Gross capital formation, % GDP	33.9	11 ●◆	6.3.4	ICT services exports, % total trade	0.1	129 ○◇
3.3	Ecological sustainability	21.4	87 ◇	Creative outputs		2.0	[125]
3.3.1	GDP/unit of energy use	6.5	106	7.1	Intangible assets	2.1	[122]
3.3.2	Environmental performance*	45.7	55	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.7	77 ◇	7.1.2	Trademarks by origin/bn PPP\$ GDP	8.2	114 ◇
Market sophistication		23.5	[101]	7.1.3	Global brand value, top 5,000, % GDP	n/a	n/a
4.1	Credit	13.5	[104]	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.0	118 ○◇
4.1.1	Finance for startups and scaleups*	n/a	n/a	7.2	Creative goods and services	0.9	[123]
4.1.2	Domestic credit to private sector, % GDP	39.7	79 ◇	7.2.1	Cultural and creative services exports, % total trade	0.0	106 ○◇
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	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	Printing and other media, % manufacturing	n/a	n/a
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.2.5	Creative goods exports, % total trade	0.1	89
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3	Online creativity	3.0	73 ◇
4.2.4	Venture capital received, value, % GDP	n/a	n/a	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	6.8	47
4.3	Trade, diversification, and market scale	33.4	111 ◇	7.3.2	Country-code TLDs/th pop. 15-69	1.1	83 ◇
4.3.1	Applied tariff rate, weighted avg., %	0.0	2 ●◆	7.3.3	GitHub commit pushes received/mn pop. 15-69	3.8	65 ◇
4.3.2	Domestic industry diversification	0.0	109 ○◇	7.3.4	Mobile app creation/bn PPP\$ GDP	0.0	102
4.3.3	Domestic market scale, bn PPP\$	30.3	123 ○				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Bulgaria

35

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
30	47	Upper middle	EUR	6.9	177.7	25,847

	Score/ Value	Rank		Score/ Value	Rank
 Institutions	55.9	67	 Business sophistication	36.4	40
1.1 Political environment	58.6	68	5.1 Knowledge workers	38.9	50
1.1.1 Political and operational stability*	69.1	63	5.1.1 Knowledge-intensive employment, %	33.4	45
1.1.2 Government effectiveness*	48.1	75	5.1.2 Firms offering formal training, %	20.0	79
1.2 Regulatory environment	74.8	37	5.1.3 GERD performed by business, % GDP	0.6	38
1.2.1 Regulatory quality*	57.9	46	5.1.4 GERD financed by business, %	37.6	49
1.2.2 Rule of law*	43.8	66	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	35.3	32
1.3 Business environment	34.3	98	5.2.1 University-industry R&D collaboration†	50.3	45
1.3.1 Policies for doing business†	41.5	91	5.2.2 State of cluster development and depth†	54.0	40
1.3.2 Entrepreneurship policies and culture*	27.1	52	5.2.3 GERD financed by abroad, % GDP	0.3	7
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	51
			5.2.5 Patent families/bn PPP\$ GDP	0.2	43
 Human capital and research	30.5	68	5.3 Knowledge absorption	34.9	51
2.1 Education	48.6	71	5.3.1 Intellectual property payments, % total trade	0.6	65
2.1.1 Expenditure on education, % GDP	4.1	74	5.3.2 High-tech imports, % total trade	7.9	75
2.1.2 Government funding/pupil, secondary, % GDP/cap	21.6	42	5.3.3 ICT services imports, % total trade	1.5	63
2.1.3 School life expectancy, years	13.9	73	5.3.4 FDI net inflows, % GDP	3.3	39
2.1.4 PISA scales in reading, maths and science	426.7	50	5.3.5 Research talent, % in businesses	49.3	26
2.1.5 Pupil-teacher ratio, secondary	12.3	52			
2.2 Tertiary education	33.7	57	 Knowledge and technology outputs	35.4	30
2.2.1 Tertiary enrolment, % gross	73.4	30	6.1 Knowledge creation	26.0	36
2.2.2 Graduates in science and engineering, %	19.5	71	6.1.1 Patents by origin/bn PPP\$ GDP	1.8	38
2.2.3 Tertiary inbound mobility, %	7.2	34	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	45
2.3 Research and development (R&D)	9.4	60	6.1.3 Utility models by origin/bn PPP\$ GDP	3.2	6
2.3.1 Researchers, FTE/mn pop.	2,402.3	35	6.1.4 Scientific and technical articles/bn PPP\$ GDP	16.5	61
2.3.2 Gross expenditure on R&D, % GDP	0.9	46	6.1.5 Citable documents H-index	15.4	54
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2 Knowledge impact	43.1	16
2.3.4 QS university ranking, top 3*	6.8	67	6.2.1 Labor productivity growth, %	1.9	36
			6.2.2 New businesses/th pop. 15-64	1.4	72
			6.2.3 Software spending, % GDP	0.2	62
 Infrastructure	54.7	34	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	37.6	2
3.1 Information and communication technologies (ICTs)	82.3	37	6.2.5 High-tech manufacturing, %	23.6	55
3.1.1 ICT access*	91.7	31	6.3 Knowledge diffusion	37.2	37
3.1.2 ICT use*	71.0	56	6.3.1 Intellectual property receipts, % total trade	0.3	34
3.1.3 Government's online service*	77.1	47	6.3.2 Production and export complexity	54.0	42
3.1.4 E-participation*	89.3	23	6.3.3 High-tech exports, % total trade	5.6	35
3.2 General infrastructure	32.1	58	6.3.4 ICT services exports, % total trade	4.9	19
3.2.1 Electricity output, GWh/mn pop.	5,808.1	32			
3.2.2 Logistics performance*	45.6	51	 Creative outputs	38.3	23
3.2.3 Gross capital formation, % GDP	18.4	105	7.1 Intangible assets	59.0	12
3.3 Ecological sustainability	49.8	13	7.1.1 Intangible asset intensity, top 15, %	71.0	20
3.3.1 GDP/unit of energy use	8.2	89	7.1.2 Trademarks by origin/bn PPP\$ GDP	81.0	21
3.3.2 Environmental performance*	51.9	35	7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	12.5	3	7.1.4 Industrial designs by origin/bn PPP\$ GDP	5.5	21
			7.2 Creative goods and services	22.0	54
 Market sophistication	33.4	62	7.2.1 Cultural and creative services exports, % total trade	1.7	16
4.1 Credit	31.2	50	7.2.2 National feature films/mn pop. 15-69	2.0	47
4.1.1 Finance for startups and scaleups*	44.1	29	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.2 Domestic credit to private sector, % GDP	51.7	69	7.2.4 Printing and other media, % manufacturing	1.2	37
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.2.5 Creative goods exports, % total trade	1.2	40
4.2 Investment	4.9	80	7.3 Online creativity	13.2	39
4.2.1 Market capitalization, % GDP	24.3	55	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	24.4	24
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	51	7.3.2 Country-code TLDs/th pop. 15-69	4.1	57
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	72	7.3.3 GitHub commit pushes received/mn pop. 15-69	16.4	35
4.2.4 Venture capital received, value, % GDP	0.0	85	7.3.4 Mobile app creation/bn PPP\$ GDP	7.9	48
4.3 Trade, diversification, and market scale	64.2	32			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	98.5	10			
4.3.3 Domestic market scale, bn PPP\$	177.7	72			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Burkina Faso

120

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
124	114	Low	SSA	21.5	52.6	2,444

Institutions		Score/Value	Rank
46.3			105
1.1 Political environment		43.1	121
1.1.1 Political and operational stability*		50.9	121
1.1.2 Government effectiveness*		35.3	107
1.2 Regulatory environment		65.0	66 ●
1.2.1 Regulatory quality*		34.5	96
1.2.2 Rule of law*		35.2	89
1.2.3 Cost of redundancy dismissal		10.5	32 ●
1.3 Business environment		30.8	108
1.3.1 Policies for doing business [†]	⊙	47.3	73 ●
1.3.2 Entrepreneurship policies and culture*	⊙	14.2	65

Human capital and research		Score/Value	Rank
18.1			104 ◆
2.1 Education		38.4	101
2.1.1 Expenditure on education, % GDP		5.5	25 ● ◆
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊙	15.7	78
2.1.3 School life expectancy, years		9.1	109
2.1.4 PISA scales in reading, maths and science		n/a	n/a
2.1.5 Pupil-teacher ratio, secondary		20.9	97
2.2 Tertiary education		14.9	102
2.2.1 Tertiary enrolment, % gross		7.8	117
2.2.2 Graduates in science and engineering, %		20.3	66 ●
2.2.3 Tertiary inbound mobility, %		2.1	77
2.3 Research and development (R&D)		0.9	98
2.3.1 Researchers, FTE/mn pop.		n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP		0.2	84
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	38 ○ ◆
2.3.4 QS university ranking, top 3*		0.0	72 ○ ◆

Infrastructure		Score/Value	Rank
27.3			115
3.1 Information and communication technologies (ICTs)		43.4	116
3.1.1 ICT access*		54.6	117
3.1.2 ICT use*		21.3	124
3.1.3 Government's online service*		46.5	110
3.1.4 E-participation*		51.2	99
3.2 General infrastructure		19.9	109
3.2.1 Electricity output, GWh/mn pop.	⊙	91.5	125 ○
3.2.2 Logistics performance*		26.5	86
3.2.3 Gross capital formation, % GDP		24.1	62 ●
3.3 Ecological sustainability		18.5	101
3.3.1 GDP/unit of energy use		8.0	92
3.3.2 Environmental performance*		35.5	89 ◆
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP		0.1	124

Market sophistication		Score/Value	Rank
17.5			118
4.1 Credit		19.1	87 ◆
4.1.1 Finance for startups and scaleups*	⊙	19.1	72 ○
4.1.2 Domestic credit to private sector, % GDP		28.3	98 ◆
4.1.3 Loans from microfinance institutions, % GDP		2.0	17 ●
4.2 Investment		6.1	[69]
4.2.1 Market capitalization, % GDP		n/a	n/a
4.2.2 Venture capital investors, deals/bn PPP\$ GDP		n/a	n/a
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP		0.0	43 ●
4.2.4 Venture capital received, value, % GDP		0.0	101 ○ ◆
4.3 Trade, diversification, and market scale		27.4	116
4.3.1 Applied tariff rate, weighted avg., %		7.2	102
4.3.2 Domestic industry diversification		n/a	n/a
4.3.3 Domestic market scale, bn PPP\$		52.6	103

Business sophistication		Score/Value	Rank
16.7			123
5.1 Knowledge workers		10.1	[120]
5.1.1 Knowledge-intensive employment, %	⊙	13.3	96 ◆
5.1.2 Firms offering formal training, %		n/a	n/a
5.1.3 GERD performed by business, % GDP		n/a	n/a
5.1.4 GERD financed by business, %		n/a	n/a
5.1.5 Females employed w/advanced degrees, %	⊙	0.8	119
5.2 Innovation linkages		16.5	114
5.2.1 University-industry R&D collaboration [†]	⊙	30.2	115
5.2.2 State of cluster development and depth [†]	⊙	28.7	127 ○ ◆
5.2.3 GERD financed by abroad, % GDP	⊙	0.0	55 ●
5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	⊙	0.0	117
5.2.5 Patent families/bn PPP\$ GDP		n/a	n/a
5.3 Knowledge absorption		23.4	96
5.3.1 Intellectual property payments, % total trade	⊙	0.0	117
5.3.2 High-tech imports, % total trade		4.1	122
5.3.3 ICT services imports, % total trade	⊙	2.1	36 ●
5.3.4 FDI net inflows, % GDP		1.2	95
5.3.5 Research talent, % in businesses		n/a	n/a

Knowledge and technology outputs		Score/Value	Rank
9.6			112
6.1 Knowledge creation		4.5	111
6.1.1 Patents by origin/bn PPP\$ GDP		0.2	101
6.1.2 PCT patents by origin/bn PPP\$ GDP		0.0	101 ○ ◆
6.1.3 Utility models by origin/bn PPP\$ GDP	⊙	0.1	59
6.1.4 Scientific and technical articles/bn PPP\$ GDP		10.5	83
6.1.5 Citable documents H-index		4.6	101
6.2 Knowledge impact		16.5	104
6.2.1 Labor productivity growth, %		1.8	40 ●
6.2.2 New businesses/th pop. 15-64	⊙	0.3	106
6.2.3 Software spending, % GDP		0.0	110
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP		0.6	116
6.2.5 High-tech manufacturing, %		n/a	n/a
6.3 Knowledge diffusion		7.7	112
6.3.1 Intellectual property receipts, % total trade	⊙	0.0	87
6.3.2 Production and export complexity		19.7	104
6.3.3 High-tech exports, % total trade		0.1	120
6.3.4 ICT services exports, % total trade	⊙	1.2	82








Creative outputs		Score/Value	Rank
1.3			127 ○
7.1 Intangible assets		1.5	126 ○
7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
7.1.2 Trademarks by origin/bn PPP\$ GDP		6.5	115
7.1.3 Global brand value, top 5,000, % GDP		0.0	77 ○ ◆
7.1.4 Industrial designs by origin/bn PPP\$ GDP		0.3	98
7.2 Creative goods and services		2.2	[112]
7.2.1 Cultural and creative services exports, % total trade		0.2	73
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 Printing and other media, % manufacturing		n/a	n/a
7.2.5 Creative goods exports, % total trade		0.0	123
7.3 Online creativity		0.0	131 ○
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		0.1	125 ○
7.3.2 Country-code TLDs/th pop. 15-69		0.0	125 ○
7.3.3 GitHub commit pushes received/mn pop. 15-69		0.0	129 ○
7.3.4 Mobile app creation/bn PPP\$ GDP		n/a	n/a

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Burundi

130

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
130	127	Low	SSA	12.3	9.5	779







	Score/ Value	Rank		Score/ Value	Rank
 Institutions	45.3	106	 Business sophistication	16.9	119
1.1 Political environment	35.8	128	5.1 Knowledge workers	9.5	125
1.1.1 Political and operational stability*	49.1	123	5.1.1 Knowledge-intensive employment, %	2.3	126 ○ ◇
1.1.2 Government effectiveness*	22.6	130	5.1.2 Firms offering formal training, %	32.0	49 ●
1.2 Regulatory environment	50.0	108	5.1.3 GERD performed by business, % GDP	0.0	81
1.2.1 Regulatory quality*	19.5	127	5.1.4 GERD financed by business, %	8.8	77 ◆
1.2.2 Rule of law*	11.9	130 ○ ◇	5.1.5 Females employed w/advanced degrees, %	0.2	125
1.2.3 Cost of redundancy dismissal	15.9	66 ●	5.2 Innovation linkages	19.9	93
1.3 Business environment	50.0	[59]	5.2.1 University-industry R&D collaboration†	38.6	87
1.3.1 Policies for doing business†	50.0	63 ●	5.2.2 State of cluster development and depth†	41.0	100
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.0	97 ○ ◇
			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	101 ○ ◇
 Human capital and research	20.7	95 ◆	5.3 Knowledge absorption	21.2	104
2.1 Education	45.7	78 ● ◆	5.3.1 Intellectual property payments, % total trade	0.0	114
2.1.1 Expenditure on education, % GDP	5.0	39 ●	5.3.2 High-tech imports, % total trade	10.6	34 ●
2.1.2 Government funding/pupil, secondary, % GDP/cap	30.8	10 ● ◆	5.3.3 ICT services imports, % total trade	1.6	59 ●
2.1.3 School life expectancy, years	10.8	96	5.3.4 FDI net inflows, % GDP	0.1	120
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	1.5	76
2.1.5 Pupil-teacher ratio, secondary	24.9	105	 Knowledge and technology outputs	3.8	128 ○ ◇
2.2 Tertiary education	15.9	100 ◆	6.1 Knowledge creation	5.8	102
2.2.1 Tertiary enrolment, % gross	5.0	126	6.1.1 Patents by origin/bn PPP\$ GDP	0.2	97
2.2.2 Graduates in science and engineering, %	19.7	69	6.1.2 PCT patents by origin/bn PPP\$ GDP	n/a	n/a
2.2.3 Tertiary inbound mobility, %	4.8	51 ●	6.1.3 Utility models by origin/bn PPP\$ GDP	0.3	39 ●
2.3 Research and development (R&D)	0.6	102	6.1.4 Scientific and technical articles/bn PPP\$ GDP	10.0	87
2.3.1 Researchers, FTE/mn pop.	23.4	105 ○ ◇	6.1.5 Citable documents H-index	0.3	131 ○ ◇
2.3.2 Gross expenditure on R&D, % GDP	0.2	87	6.2 Knowledge impact	3.9	[126]
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2.1 Labor productivity growth, %	n/a	n/a
2.3.4 QS university ranking, top 3*	0.0	72 ○ ◇	6.2.2 New businesses/th pop. 15-64	n/a	n/a
			6.2.3 Software spending, % GDP	0.1	95 ◆
 Infrastructure	20.7	130	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	0.8	113
3.1 Information and communication technologies (ICTs)	30.8	126	6.2.5 High-tech manufacturing, %	3.9	103
3.1.1 ICT access*	38.1	129 ○ ◇	6.3 Knowledge diffusion	1.8	130 ○ ◇
3.1.2 ICT use*	16.6	128	6.3.1 Intellectual property receipts, % total trade	0.0	105
3.1.3 Government's online service*	35.3	119	6.3.2 Production and export complexity	n/a	n/a
3.1.4 E-participation*	33.3	118	6.3.3 High-tech exports, % total trade	0.0	131 ○ ◇
3.2 General infrastructure	14.6	122	6.3.4 ICT services exports, % total trade	0.8	91
3.2.1 Electricity output, GWh/mn pop.	n/a	n/a	 Creative outputs	1.2	128
3.2.2 Logistics performance*	0.5	124 ○ ◇	7.1 Intangible assets	0.9	127
3.2.3 Gross capital formation, % GDP	21.9	81	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	16.5	116	7.1.2 Trademarks by origin/bn PPP\$ GDP	4.6	121
3.3.1 GDP/unit of energy use	n/a	n/a	7.1.3 Global brand value, top 5,000, % GDP	0.0	77 ○ ◇
3.3.2 Environmental performance*	30.5	106	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.2	101
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.4	86 ◆	7.2 Creative goods and services	2.7	[110]
			7.2.1 Cultural and creative services exports, % total trade	0.2	69 ●
 Market sophistication	7.4	130 ○ ◇	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	5.8	123	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 Printing and other media, % manufacturing	n/a	n/a
4.1.2 Domestic credit to private sector, % GDP	22.4	111	7.2.5 Creative goods exports, % total trade	0.0	124
4.1.3 Loans from microfinance institutions, % GDP	0.3	43	7.3 Online creativity	0.1	129
4.2 Investment	n/a	[n/a]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.1	126
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	0.1	116
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.3 GitHub commit pushes received/mn pop. 15-69	0.1	127
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	n/a	n/a
4.2.4 Venture capital received, value, % GDP	n/a	n/a			
4.3 Trade, diversification, and market scale	8.9	131 ○ ◇			
4.3.1 Applied tariff rate, weighted avg., %	11.3	124			
4.3.2 Domestic industry diversification	0.0	109 ○ ◇			
4.3.3 Domestic market scale, bn PPP\$	9.5	132 ○ ◇			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Cambodia

97

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
102	92	Lower middle	SEAO	16.9	78.1	4,930







	Score/Value	Rank		Score/Value	Rank
 Institutions	50.4	87	 Business sophistication	17.6	117
1.1 Political environment	55.8	80	5.1 Knowledge workers	12.8	114
1.1.1 Political and operational stability*	70.9	53	5.1.1 Knowledge-intensive employment, %	8.6	110
1.1.2 Government effectiveness*	40.7	92	5.1.2 Firms offering formal training, %	22.2	69
1.2 Regulatory environment	51.5	102	5.1.3 GERD performed by business, % GDP	0.0	83
1.2.1 Regulatory quality*	29.5	104	5.1.4 GERD financed by business, %	19.4	66
1.2.2 Rule of law*	21.5	117	5.1.5 Females employed w/advanced degrees, %	2.2	105
1.2.3 Cost of redundancy dismissal	19.4	83	5.2 Innovation linkages	20.9	84
1.3 Business environment	43.8	[78]	5.2.1 University-industry R&D collaboration†	39.1	85
1.3.1 Policies for doing business†	43.8	84	5.2.2 State of cluster development and depth†	48.4	65
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	54
			5.2.5 Patent families/bn PPP\$ GDP	0.0	101
 Human capital and research	20.0	99	5.3 Knowledge absorption	19.1	115
2.1 Education	32.7	[114]	5.3.1 Intellectual property payments, % total trade	0.1	101
2.1.1 Expenditure on education, % GDP	2.2	122	5.3.2 High-tech imports, % total trade	3.1	126
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	22.9	100			
2.2 Tertiary education	26.9	76	 Knowledge and technology outputs	11.9	101
2.2.1 Tertiary enrolment, % gross	14.7	103	6.1 Knowledge creation	3.0	118
2.2.2 Graduates in science and engineering, %	23.2	47	6.1.1 Patents by origin/bn PPP\$ GDP	0.0	128
2.2.3 Tertiary inbound mobility, %	n/a	n/a	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	87
2.3 Research and development (R&D)	0.4	108	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1 Researchers, FTE/mn pop.	30.4	102	6.1.4 Scientific and technical articles/bn PPP\$ GDP	5.1	114
2.3.2 Gross expenditure on R&D, % GDP	0.1	103	6.1.5 Citable documents H-index	4.7	98
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2 Knowledge impact	18.3	98
2.3.4 QS university ranking, top 3*	0.0	72	6.2.1 Labor productivity growth, %	2.4	27
			6.2.2 New businesses/th pop. 15-64	0.5	94
			6.2.3 Software spending, % GDP	0.0	109
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	1.1	103
			6.2.5 High-tech manufacturing, %	n/a	n/a
			6.3 Knowledge diffusion	14.3	91
			6.3.1 Intellectual property receipts, % total trade	0.0	76
			6.3.2 Production and export complexity	29.9	86
			6.3.3 High-tech exports, % total trade	1.5	68
			6.3.4 ICT services exports, % total trade	0.4	109
 Infrastructure	30.9	103	 Creative outputs	7.3	104
3.1 Information and communication technologies (ICTs)	53.1	99	7.1 Intangible assets	9.9	102
3.1.1 ICT access*	71.1	96	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.1.2 ICT use*	54.1	87	7.1.2 Trademarks by origin/bn PPP\$ GDP	39.5	65
3.1.3 Government's online service*	45.3	112	7.1.3 Global brand value, top 5,000, % GDP	0.0	77
3.1.4 E-participation*	41.7	111	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.3	99
3.2 General infrastructure	21.8	97	7.2 Creative goods and services	7.5	[91]
3.2.1 Electricity output, GWh/mn pop.	526.4	108	7.2.1 Cultural and creative services exports, % total trade	n/a	n/a
3.2.2 Logistics performance*	24.7	92	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
3.2.3 Gross capital formation, % GDP	27.0	36	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
3.3 Ecological sustainability	17.8	107	7.2.4 Printing and other media, % manufacturing	n/a	n/a
3.3.1 GDP/unit of energy use	8.6	86	7.2.5 Creative goods exports, % total trade	0.6	57
3.3.2 Environmental performance*	30.1	109	7.3 Online creativity	1.8	88
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.4	96	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.1	92
			7.3.2 Country-code TLDs/th pop. 15-69	0.1	121
			7.3.3 GitHub commit pushes received/mn pop. 15-69	1.2	96
			7.3.4 Mobile app creation/bn PPP\$ GDP	4.8	56
 Market sophistication	38.2	44			
4.1 Credit	76.6	2			
4.1.1 Finance for startups and scaleups*	n/a	n/a			
4.1.2 Domestic credit to private sector, % GDP	139.9	14			
4.1.3 Loans from microfinance institutions, % GDP	26.6	1			
4.2 Investment	7.5	63			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.1	41			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	37			
4.2.4 Venture capital received, value, % GDP	0.0	82			
4.3 Trade, diversification, and market scale	30.7	115			
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\$	78.1	92			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Cameroon

121

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
114	124	Lower middle	SSA	27.2	105.1	3,860








	Score/Value	Rank		Score/Value	Rank
 Institutions	46.5	104	 Business sophistication	21.3	99
1.1 Political environment	42.6	124 ○	5.1 Knowledge workers	21.2	[92]
1.1.1 Political and operational stability*	54.5	116	5.1.1 Knowledge-intensive employment, %	⊙	10.9 105
1.1.2 Government effectiveness*	30.7	119	5.1.2 Firms offering formal training, %	⊙	37.6 39 ●
1.2 Regulatory environment	48.5	111	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	24.5	118	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	16.3	124 ○ ◇	5.1.5 Females employed w/advanced degrees, %	⊙	2.0 106
1.2.3 Cost of redundancy dismissal	19.9	85	5.2 Innovation linkages	21.3	79
1.3 Business environment	48.3	[64]	5.2.1 University-industry R&D collaboration†	41.4	76
1.3.1 Policies for doing business†	48.3	68 ●	5.2.2 State of cluster development and depth†	41.4	99
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	119 ○
			5.2.5 Patent families/bn PPP\$ GDP	0.0	92
 Human capital and research	15.2	116	5.3 Knowledge absorption	21.5	102
2.1 Education	38.3	102	5.3.1 Intellectual property payments, % total trade	⊙	0.0 110
2.1.1 Expenditure on education, % GDP	3.2	104	5.3.2 High-tech imports, % total trade	⊙	6.1 107
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊙	17.2 71	5.3.3 ICT services imports, % total trade	⊙	1.2 83
2.1.3 School life expectancy, years	⊙	12.1 90	5.3.4 FDI net inflows, % GDP	2.1	71 ●
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	⊙	19.3 92			
2.2 Tertiary education	7.2	115	 Knowledge and technology outputs	12.4	98
2.2.1 Tertiary enrolment, % gross	⊙	14.3 104	6.1 Knowledge creation	7.2	89
2.2.2 Graduates in science and engineering, %	n/a	n/a	6.1.1 Patents by origin/bn PPP\$ GDP	0.4	78
2.2.3 Tertiary inbound mobility, %	⊙	2.8 71	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	81
2.3 Research and development (R&D)	0.0	[120]	6.1.3 Utility models by origin/bn PPP\$ GDP	⊙	0.0 66
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.4 Scientific and technical articles/bn PPP\$ GDP	17.4	57 ●
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	6.1.5 Citable documents H-index	7.1	86
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2 Knowledge impact	23.7	[76]
2.3.4 QS university ranking, top 3*	0.0	72 ○ ◇	6.2.1 Labor productivity growth, %	1.2	57 ●
			6.2.2 New businesses/th pop. 15-64	n/a	n/a
			6.2.3 Software spending, % GDP	0.1	79
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	0.9	110
			6.2.5 High-tech manufacturing, %	n/a	n/a
			6.3 Knowledge diffusion	6.1	117
			6.3.1 Intellectual property receipts, % total trade	⊙	0.0 73 ●
			6.3.2 Production and export complexity	5.8	118 ○ ◇
			6.3.3 High-tech exports, % total trade	⊙	0.2 108
			6.3.4 ICT services exports, % total trade	⊙	1.7 73 ●
			 Creative outputs	2.1	124 ○ ◇
			7.1 Intangible assets	1.5	125 ○ ◇
			7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
			7.1.2 Trademarks by origin/bn PPP\$ GDP	6.5	116
			7.1.3 Global brand value, top 5,000, % GDP	0.0	77 ○ ◇
			7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.3	96
			7.2 Creative goods and services	4.9	[101]
			7.2.1 Cultural and creative services exports, % total trade	0.4	57 ●
			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 Printing and other media, % manufacturing	n/a	n/a
			7.2.5 Creative goods exports, % total trade	⊙	0.0 120 ○
			7.3 Online creativity	0.4	112
			7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.2	116
			7.3.2 Country-code TLDs/th pop. 15-69	0.9	88
			7.3.3 GitHub commit pushes received/mn pop. 15-69	0.6	110
			7.3.4 Mobile app creation/bn PPP\$ GDP	⊙	0.0 115 ○
 Market sophistication	4.4	132 ○ ◇			
4.1 Credit	9.6	111			
4.1.1 Finance for startups and scaleups*	n/a	n/a			
4.1.2 Domestic credit to private sector, % GDP	⊙	14.7 118			
4.1.3 Loans from microfinance institutions, % GDP	1.1	26 ●			
4.2 Investment	2.6	99			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	61			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	78			
4.2.4 Venture capital received, value, % GDP	0.0	93			
4.3 Trade, diversification, and market scale	1.1	132 ○ ◇			
4.3.1 Applied tariff rate, weighted avg., %	⊙	15.5 131 ○ ◇			
4.3.2 Domestic industry diversification	n/a	n/a			
4.3.3 Domestic market scale, bn PPP\$	105.1	86			

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Canada

15

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
23	9	High	NAC	38.1	2,027.4	53,089

	Score/Value	Rank		Score/Value	Rank
 Institutions	80.4	15	 Business sophistication	52.3	20
1.1 Political environment	84.4	14	5.1 Knowledge workers	50.3	28
1.1.1 Political and operational stability*	83.6	16	5.1.1 Knowledge-intensive employment, %	43.7	24
1.1.2 Government effectiveness*	85.1	11	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	91.5	8	5.1.3 GERD performed by business, % GDP	0.9	28
1.2.1 Regulatory quality*	84.8	11	5.1.4 GERD financed by business, %	41.9	40
1.2.2 Rule of law*	89.0	12	5.1.5 Females employed w/advanced degrees, %	19.5	35
1.2.3 Cost of redundancy dismissal	10.0	28	5.2 Innovation linkages	59.8	6
1.3 Business environment	65.4	24	5.2.1 University-industry R&D collaboration†	67.9	9
1.3.1 Policies for doing business†	66.5	24	5.2.2 State of cluster development and depth†	63.0	19
1.3.2 Entrepreneurship policies and culture*	64.3	18	5.2.3 GERD financed by abroad, % GDP	0.2	27
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.3	1
			5.2.5 Patent families/bn PPP\$ GDP	2.1	16
 Human capital and research	57.7	12	5.3 Knowledge absorption	46.9	20
2.1 Education	62.0	23	5.3.1 Intellectual property payments, % total trade	2.3	11
2.1.1 Expenditure on education, % GDP	5.3	34	5.3.2 High-tech imports, % total trade	11.0	25
2.1.2 Government funding/pupil, secondary, % GDP/cap	18.3	62	5.3.3 ICT services imports, % total trade	1.4	72
2.1.3 School life expectancy, years	16.4	27	5.3.4 FDI net inflows, % GDP	2.3	67
2.1.4 PISA scales in reading, maths and science	516.7	7	5.3.5 Research talent, % in businesses	58.4	16
2.1.5 Pupil-teacher ratio, secondary	9.8	29			
2.2 Tertiary education	48.5	14	 Knowledge and technology outputs	39.3	24
2.2.1 Tertiary enrolment, % gross	75.7	26	6.1 Knowledge creation	45.7	16
2.2.2 Graduates in science and engineering, %	25.1	40	6.1.1 Patents by origin/bn PPP\$ GDP	2.4	31
2.2.3 Tertiary inbound mobility, %	16.2	11	6.1.2 PCT patents by origin/bn PPP\$ GDP	1.3	25
2.3 Research and development (R&D)	62.6	14	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1 Researchers, FTE/mn pop.	4,516.3	22	6.1.4 Scientific and technical articles/bn PPP\$ GDP	41.0	21
2.3.2 Gross expenditure on R&D, % GDP	1.7	23	6.1.5 Citable documents H-index	80.3	4
2.3.3 Global corporate R&D investors, top 3, mn USD	64.4	20	6.2 Knowledge impact	33.5	44
2.3.4 QS university ranking, top 3*	82.1	6	6.2.1 Labor productivity growth, %	0.4	76
			6.2.2 New businesses/th pop. 15-64	0.2	110
			6.2.3 Software spending, % GDP	0.7	3
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	2.5	79
			6.2.5 High-tech manufacturing, %	36.8	34
 Infrastructure	57.0	30	6.3 Knowledge diffusion	38.8	30
3.1 Information and communication technologies (ICTs)	84.7	29	6.3.1 Intellectual property receipts, % total trade	1.1	20
3.1.1 ICT access*	85.5	69	6.3.2 Production and export complexity	57.9	36
3.1.2 ICT use*	75.3	40	6.3.3 High-tech exports, % total trade	6.2	32
3.1.3 Government's online service*	84.1	31	6.3.4 ICT services exports, % total trade	2.0	64
3.1.4 E-participation*	94.0	16			
3.2 General infrastructure	64.6	5	 Creative outputs	38.7	20
3.2.1 Electricity output, GWh/mn pop.	16,857.7	6	7.1 Intangible assets	39.9	36
3.2.2 Logistics performance*	78.1	20	7.1.1 Intangible asset intensity, top 15, %	71.0	19
3.2.3 Gross capital formation, % GDP	24.1	61	7.1.2 Trademarks by origin/bn PPP\$ GDP	33.8	68
3.3 Ecological sustainability	21.6	84	7.1.3 Global brand value, top 5,000, % GDP	131.1	13
3.3.1 GDP/unit of energy use	5.7	115	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.4	89
3.3.2 Environmental performance*	50.0	42	7.2 Creative goods and services	31.1	25
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.5	85	7.2.1 Cultural and creative services exports, % total trade	1.7	17
			7.2.2 National feature films/mn pop. 15-69	4.3	27
			7.2.3 Entertainment and media market/th pop. 15-69	57.1	9
			7.2.4 Printing and other media, % manufacturing	1.3	30
			7.2.5 Creative goods exports, % total trade	0.8	49
 Market sophistication	65.1	6	7.3 Online creativity	44.0	13
4.1 Credit	49.4	[20]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	86.6	4
4.1.1 Finance for startups and scaleups*	49.4	15	7.3.2 Country-code TLDs/th pop. 15-69	34.0	21
4.1.2 Domestic credit to private sector, % GDP	n/a	n/a	7.3.3 GitHub commit pushes received/mn pop. 15-69	44.0	12
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	11.2	36
4.2 Investment	68.0	6			
4.2.1 Market capitalization, % GDP	137.0	8			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.5	11			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.4	1			
4.2.4 Venture capital received, value, % GDP	0.0	10			
4.3 Trade, diversification, and market scale	77.8	13			
4.3.1 Applied tariff rate, weighted avg., %	1.5	47			
4.3.2 Domestic industry diversification	97.6	15			
4.3.3 Domestic market scale, bn PPP\$	2,027.4	15			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Chile

50

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
57	43	High	LCN	19.2	522.8	26,513

Institutions		Score/Value	Rank
66.5			39
1.1 Political environment		71.9	40
1.1.1 Political and operational stability*		72.7	46
1.1.2 Government effectiveness*		71.0	32
1.2 Regulatory environment		67.0	61 ◊
1.2.1 Regulatory quality*		71.2	31
1.2.2 Rule of law*		73.8	25 ●
1.2.3 Cost of redundancy dismissal		27.4	111 ◊
1.3 Business environment		60.6	34
1.3.1 Policies for doing business [†]		63.4	30
1.3.2 Entrepreneurship policies and culture*		57.9	26

Human capital and research		Score/Value	Rank
33.9			57 ◊
2.1 Education		52.6	65 ◊
2.1.1 Expenditure on education, % GDP	⊙	5.4	28
2.1.2 Government funding/pupil, secondary, % GDP/cap		18.9	58
2.1.3 School life expectancy, years		16.7	22 ●
2.1.4 PISA scales in reading, maths and science		437.8	46 ◊
2.1.5 Pupil-teacher ratio, secondary		17.6	85 ◊
2.2 Tertiary education		33.5	58
2.2.1 Tertiary enrolment, % gross		93.1	7 ●
2.2.2 Graduates in science and engineering, %	⊙	20.6	63
2.2.3 Tertiary inbound mobility, %		0.6	97 ◊
2.3 Research and development (R&D)		15.7	46 ◊
2.3.1 Researchers, FTE/mn pop.	⊙	510.3	68 ◊
2.3.2 Gross expenditure on R&D, % GDP	⊙	0.3	74 ◊
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	38 ◊
2.3.4 QS university ranking, top 3*		41.3	31

Infrastructure		Score/Value	Rank
50.3			47 ◊
3.1 Information and communication technologies (ICTs)		84.8	28
3.1.1 ICT access*		92.1	28
3.1.2 ICT use*		76.2	34
3.1.3 Government's online service*		85.3	24
3.1.4 E-participation*		85.7	29
3.2 General infrastructure		36.4	45
3.2.1 Electricity output, GWh/mn pop.	4,210.4	50	
3.2.2 Logistics performance*		59.1	33
3.2.3 Gross capital formation, % GDP		22.3	77
3.3 Ecological sustainability		29.6	53
3.3.1 GDP/unit of energy use		10.9	61
3.3.2 Environmental performance*		46.7	51
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP		2.2	41

Market sophistication		Score/Value	Rank
37.7			46
4.1 Credit		39.4	32
4.1.1 Finance for startups and scaleups*		31.9	52 ◊
4.1.2 Domestic credit to private sector, % GDP		124.5	19 ●
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a
4.2 Investment		12.6	48
4.2.1 Market capitalization, % GDP		76.7	22
4.2.2 Venture capital investors, deals/bn PPP\$ GDP		0.0	47
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP		0.0	57
4.2.4 Venture capital received, value, % GDP		0.0	49
4.3 Trade, diversification, and market scale		61.2	50
4.3.1 Applied tariff rate, weighted avg., %		0.4	5 ●
4.3.2 Domestic industry diversification	⊙	74.9	78 ◊
4.3.3 Domestic market scale, bn PPP\$		522.8	44

Business sophistication		Score/Value	Rank
29.9			57 ◊
5.1 Knowledge workers		32.2	64 ◊
5.1.1 Knowledge-intensive employment, %		31.7	47 ◊
5.1.2 Firms offering formal training, %		n/a	n/a
5.1.3 GERD performed by business, % GDP	⊙	0.1	60 ◊
5.1.4 GERD financed by business, %		31.0	58
5.1.5 Females employed w/advanced degrees, %		12.3	62 ◊
5.2 Innovation linkages		21.3	77 ◊
5.2.1 University-industry R&D collaboration [†]		41.4	75 ◊
5.2.2 State of cluster development and depth [†]		45.4	77 ◊
5.2.3 GERD financed by abroad, % GDP		0.0	65 ◊
5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	56
5.2.5 Patent families/bn PPP\$ GDP		0.2	41
5.3 Knowledge absorption		36.0	46
5.3.1 Intellectual property payments, % total trade		2.1	12 ●
5.3.2 High-tech imports, % total trade		9.2	52
5.3.3 ICT services imports, % total trade		1.0	86
5.3.4 FDI net inflows, % GDP		3.5	34
5.3.5 Research talent, % in businesses	⊙	27.7	44

Knowledge and technology outputs		Score/Value	Rank
25.1			54
6.1 Knowledge creation		15.3	57
6.1.1 Patents by origin/bn PPP\$ GDP		0.8	69
6.1.2 PCT patents by origin/bn PPP\$ GDP		0.3	37
6.1.3 Utility models by origin/bn PPP\$ GDP		0.3	42
6.1.4 Scientific and technical articles/bn PPP\$ GDP		23.5	38
6.1.5 Citable documents H-index		24.2	38
6.2 Knowledge impact		42.3	17 ●
6.2.1 Labor productivity growth, %		3.3	16 ● ◆
6.2.2 New businesses/th pop. 15-64		12.1	10 ●
6.2.3 Software spending, % GDP		0.4	21 ●
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP		6.4	42
6.2.5 High-tech manufacturing, %	⊙	23.9	54
6.3 Knowledge diffusion		17.6	79 ◊
6.3.1 Intellectual property receipts, % total trade		0.1	70 ◊
6.3.2 Production and export complexity		36.8	69 ◊
6.3.3 High-tech exports, % total trade		1.9	65
6.3.4 ICT services exports, % total trade		0.6	96 ◊

Creative outputs		Score/Value	Rank
23.6			55
7.1 Intangible assets		39.3	38
7.1.1 Intangible asset intensity, top 15, %		47.9	53
7.1.2 Trademarks by origin/bn PPP\$ GDP		102.8	12 ● ◆
7.1.3 Global brand value, top 5,000, % GDP		33.1	42
7.1.4 Industrial designs by origin/bn PPP\$ GDP		0.2	108 ◊
7.2 Creative goods and services		9.6	85 ◊
7.2.1 Cultural and creative services exports, % total trade		0.3	67
7.2.2 National feature films/mn pop. 15-69		3.0	38
7.2.3 Entertainment and media market/th pop. 15-69		11.9	30 ◊
7.2.4 Printing and other media, % manufacturing	⊙	0.7	75 ◊
7.2.5 Creative goods exports, % total trade		0.1	91 ◊
7.3 Online creativity		6.2	57 ◊
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		2.1	75 ◊
7.3.2 Country-code TLDs/th pop. 15-69		15.0	33
7.3.3 GitHub commit pushes received/mn pop. 15-69		5.4	54 ◊
7.3.4 Mobile app creation/bn PPP\$ GDP		2.2	68

NOTES: ● indicates a strength; ◊ a weakness; ◆ an income group strength; ◊ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

China

11

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
8	21	Upper middle	SEAO	1,444.2	27,072.0	19,090

Institutions		Score/Value	Rank	
1.1 Political environment		67.3	44	◆
1.1.1	Political and operational stability*	70.9	53	
1.1.2	Government effectiveness*	63.7	41	◆
1.2 Regulatory environment		52.7	101	○
1.2.1	Regulatory quality*	42.9	77	
1.2.2	Rule of law*	44.5	63	
1.2.3	Cost of redundancy dismissal	27.4	111	○◇
1.3 Business environment		74.6	13	◆
1.3.1	Policies for doing business [†]	71.9	16	◆
1.3.2	Entrepreneurship policies and culture*	77.3	9	◆

Human capital and research		Score/Value	Rank	
2.1 Education		69.3	[7]	
2.1.1	Expenditure on education, % GDP	3.6	95	○
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths and science	579.0	1	◆
2.1.5	Pupil-teacher ratio, secondary	13.4	61	
2.2 Tertiary education		19.4	92	○
2.2.1	Tertiary enrolment, % gross	58.4	52	
2.2.2	Graduates in science and engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.4	100	○◇
2.3 Research and development (R&D)		70.5	8	◆
2.3.1	Researchers, FTE/mn pop.	1,584.9	48	
2.3.2	Gross expenditure on R&D, % GDP	2.4	13	◆
2.3.3	Global corporate R&D investors, top 3, mn USD	93.8	3	◆
2.3.4	QS university ranking, top 3*	86.8	3	◆

Infrastructure		Score/Value	Rank	
3.1 Information and communication technologies (ICTs)		87.6	20	◆
3.1.1	ICT access*	88.1	61	
3.1.2	ICT use*	75.3	39	◆
3.1.3	Government's online service*	90.6	12	◆
3.1.4	E-participation*	96.4	9	◆
3.2 General infrastructure		56.0	13	◆
3.2.1	Electricity output, GWh/mn pop.	5,537.7	35	◆
3.2.2	Logistics performance*	72.6	25	◆
3.2.3	Gross capital formation, % GDP	42.9	3	◆
3.3 Ecological sustainability		29.0	54	
3.3.1	GDP/unit of energy use	6.8	104	○◇
3.3.2	Environmental performance*	28.4	115	○◇
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	7.0	15	

Market sophistication		Score/Value	Rank	
4.1 Credit		44.7	25	◆
4.1.1	Finance for startups and scaleups*	51.5	9	◆
4.1.2	Domestic credit to private sector, % GDP	182.4	4	◆
4.1.3	Loans from microfinance institutions, % GDP	0.9	29	
4.2 Investment		28.7	26	◆
4.2.1	Market capitalization, % GDP	62.7	29	
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.1	31	
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.1	19	◆
4.2.4	Venture capital received, value, % GDP	0.0	16	◆
4.3 Trade, diversification, and market scale		94.6	3	◆
4.3.1	Applied tariff rate, weighted avg., %	2.5	67	
4.3.2	Domestic industry diversification	99.9	2	◆
4.3.3	Domestic market scale, bn PPP\$	27,072.0	1	◆

Business sophistication		Score/Value	Rank	
5.1 Knowledge workers		77.8	[1]	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, %	79.2	1	◆
5.1.3	GERD performed by business, % GDP	1.8	12	◆
5.1.4	GERD financed by business, %	77.5	3	◆
5.1.5	Females employed w/advanced degrees, %	n/a	n/a	
5.2 Innovation linkages		36.8	30	◆
5.2.1	University-industry R&D collaboration [†]	70.1	5	◆
5.2.2	State of cluster development and depth [†]	72.6	2	◆
5.2.3	GERD financed by abroad, % GDP	0.0	77	○
5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	67	
5.2.5	Patent families/bn PPP\$ GDP	1.5	23	◆
5.3 Knowledge absorption		53.0	8	◆
5.3.1	Intellectual property payments, % total trade	1.4	25	
5.3.2	High-tech imports, % total trade	26.9	5	◆
5.3.3	ICT services imports, % total trade	1.4	68	
5.3.4	FDI net inflows, % GDP	1.5	86	○
5.3.5	Research talent, % in businesses	58.5	15	◆

Knowledge and technology outputs		Score/Value	Rank	
6.1 Knowledge creation		69.5	4	◆
6.1.1	Patents by origin/bn PPP\$ GDP	55.6	1	◆
6.1.2	PCT patents by origin/bn PPP\$ GDP	2.6	14	◆
6.1.3	Utility models by origin/bn PPP\$ GDP	120.7	1	◆
6.1.4	Scientific and technical articles/bn PPP\$ GDP	23.1	39	◆
6.1.5	Citable documents H-index	64.1	11	◆
6.2 Knowledge impact		52.8	4	◆
6.2.1	Labor productivity growth, %	6.4	1	◆
6.2.2	New businesses/th pop. 15-64	8.6	17	◆
6.2.3	Software spending, % GDP	0.3	32	◆
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	13.4	23	
6.2.5	High-tech manufacturing, %	48.5	14	◆
6.3 Knowledge diffusion		48.2	19	◆
6.3.1	Intellectual property receipts, % total trade	0.3	35	◆
6.3.2	Production and export complexity	73.2	16	◆
6.3.3	High-tech exports, % total trade	32.4	4	◆
6.3.4	ICT services exports, % total trade	2.5	53	





Creative outputs		Score/Value	Rank	
7.1 Intangible assets		82.9	2	◆
7.1.1	Intangible asset intensity, top 15, %	78.4	11	◆
7.1.2	Trademarks by origin/bn PPP\$ GDP	376.9	1	◆
7.1.3	Global brand value, top 5,000, % GDP	111.4	18	◆
7.1.4	Industrial designs by origin/bn PPP\$ GDP	31.1	1	◆
7.2 Creative goods and services		28.8	33	◆
7.2.1	Cultural and creative services exports, % total trade	0.6	47	
7.2.2	National feature films/mn pop. 15-69	1.0	61	○
7.2.3	Entertainment and media market/th pop. 15-69	10.5	34	◆
7.2.4	Printing and other media, % manufacturing	0.7	72	○
7.2.5	Creative goods exports, % total trade	13.1	1	◆
7.3 Online creativity		2.8	77	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	2.5	72	
7.3.2	Country-code TLDs/th pop. 15-69	4.0	58	
7.3.3	GitHub commit pushes received/mn pop. 15-69	1.7	89	○
7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	n/a	

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Colombia

63

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
70	63	Upper middle	LCN	51.3	812.8	15,922








	Score/Value	Rank		Score/Value	Rank
 Institutions	54.6	72	 Business sophistication	35.6	42
1.1 Political environment	56.2	78	5.1 Knowledge workers	51.0	27
1.1.1 Political and operational stability*	61.8	87	5.1.1 Knowledge-intensive employment, %	38.2	34
1.1.2 Government effectiveness*	50.6	67	5.1.2 Firms offering formal training, %	63.0	7
1.2 Regulatory environment	63.0	71	5.1.3 GERD performed by business, % GDP	0.1	57
1.2.1 Regulatory quality*	52.9	57	5.1.4 GERD financed by business, %	53.4	24
1.2.2 Rule of law*	33.3	92	5.1.5 Females employed w/advanced degrees, %	14.9	50
1.2.3 Cost of redundancy dismissal	16.7	68	5.2 Innovation linkages	21.2	82
1.3 Business environment	44.6	74	5.2.1 University-industry R&D collaboration†	46.7	55
1.3.1 Policies for doing business†	46.1	79	5.2.2 State of cluster development and depth†	50.3	48
1.3.2 Entrepreneurship policies and culture*	43.1	38	5.2.3 GERD financed by abroad, % GDP	0.0	68
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	89
			5.2.5 Patent families/bn PPP\$ GDP	0.1	65
 Human capital and research	27.4	79	5.3 Knowledge absorption	34.7	52
2.1 Education	42.2	90	5.3.1 Intellectual property payments, % total trade	1.2	30
2.1.1 Expenditure on education, % GDP	4.9	44	5.3.2 High-tech imports, % total trade	15.8	14
2.1.2 Government funding/pupil, secondary, % GDP/cap	21.4	45	5.3.3 ICT services imports, % total trade	2.3	31
2.1.3 School life expectancy, years	14.4	63	5.3.4 FDI net inflows, % GDP	3.5	35
2.1.4 PISA scales in reading, maths and science	405.5	62	5.3.5 Research talent, % in businesses	2.5	74
2.1.5 Pupil-teacher ratio, secondary	26.1	108	 Knowledge and technology outputs	20.5	67
2.2 Tertiary education	27.6	75	6.1 Knowledge creation	8.9	80
2.2.1 Tertiary enrolment, % gross	54.2	59	6.1.1 Patents by origin/bn PPP\$ GDP	0.5	76
2.2.2 Graduates in science and engineering, %	23.5	44	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	60
2.2.3 Tertiary inbound mobility, %	0.2	108	6.1.3 Utility models by origin/bn PPP\$ GDP	0.3	44
2.3 Research and development (R&D)	12.6	52	6.1.4 Scientific and technical articles/bn PPP\$ GDP	10.1	86
2.3.1 Researchers, FTE/mn pop.	88.0	92	6.1.5 Citable documents H-index	18.5	45
2.3.2 Gross expenditure on R&D, % GDP	0.3	79	6.2 Knowledge impact	32.5	49
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2.1 Labor productivity growth, %	3.6	8
2.3.4 QS university ranking, top 3*	34.9	35	6.2.2 New businesses/th pop. 15-64	2.0	62
			6.2.3 Software spending, % GDP	0.2	70
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	14.0	21
			6.2.5 High-tech manufacturing, %	19.9	65
 Infrastructure	46.0	59	6.3 Knowledge diffusion	20.1	74
3.1 Information and communication technologies (ICTs)	75.7	58	6.3.1 Intellectual property receipts, % total trade	0.2	45
3.1.1 ICT access*	85.3	70	6.3.2 Production and export complexity	43.7	55
3.1.2 ICT use*	54.0	88	6.3.3 High-tech exports, % total trade	1.6	67
3.1.3 Government's online service*	76.5	49	6.3.4 ICT services exports, % total trade	0.8	89
3.1.4 E-participation*	86.9	27	 Creative outputs	17.9	75
3.2 General infrastructure	24.2	81	7.1 Intangible assets	26.4	66
3.2.1 Electricity output, GWh/mn pop.	1,454.2	92	7.1.1 Intangible asset intensity, top 15, %	38.7	63
3.2.2 Logistics performance*	41.4	57	7.1.2 Trademarks by origin/bn PPP\$ GDP	43.0	55
3.2.3 Gross capital formation, % GDP	19.4	97	7.1.3 Global brand value, top 5,000, % GDP	31.1	44
3.3 Ecological sustainability	38.2	33	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.5	85
3.3.1 GDP/unit of energy use	16.7	15	7.2 Creative goods and services	10.2	81
3.3.2 Environmental performance*	42.4	63	7.2.1 Cultural and creative services exports, % total trade	0.2	70
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	4.0	23	7.2.2 National feature films/mn pop. 15-69	1.3	54
			7.2.3 Entertainment and media market/th pop. 15-69	6.0	43
			7.2.4 Printing and other media, % manufacturing	1.2	32
			7.2.5 Creative goods exports, % total trade	0.3	70
 Market sophistication	32.5	66	7.3 Online creativity	8.6	47
4.1 Credit	24.3	74	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	2.9	66
4.1.1 Finance for startups and scaleups*	29.4	63	7.3.2 Country-code TLDs/th pop. 15-69	24.6	28
4.1.2 Domestic credit to private sector, % GDP	54.1	65	7.3.3 GitHub commit pushes received/mn pop. 15-69	4.9	60
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	2.1	72
4.2 Investment	10.5	56			
4.2.1 Market capitalization, % GDP	37.0	43			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	86			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	71			
4.2.4 Venture capital received, value, % GDP	0.0	30			
4.3 Trade, diversification, and market scale	62.6	40			
4.3.1 Applied tariff rate, weighted avg., %	2.4	66			
4.3.2 Domestic industry diversification	85.3	61			
4.3.3 Domestic market scale, bn PPP\$	812.8	32			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Costa Rica

68

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
71	67	Upper middle	LCN	5.1	111.9	21,592








		Score/ Value	Rank			Score/ Value	Rank
 Institutions		64.3	44	 Business sophistication		29.0	60
1.1	Political environment	63.3	54	5.1	Knowledge workers	19.1	98
1.1.1	Political and operational stability*	69.1	63	5.1.1	Knowledge-intensive employment, %	22.0	68
1.1.2	Government effectiveness*	57.5	52	5.1.2	Firms offering formal training, %	n/a	n/a
1.2	Regulatory environment	68.7	55	5.1.3	GERD performed by business, % GDP	⊙	0.1
1.2.1	Regulatory quality*	56.2	51	5.1.4	GERD financed by business, %	⊙	2.3
1.2.2	Rule of law*	60.9	42	5.1.5	Females employed w/advanced degrees, %	11.7	66
1.2.3	Cost of redundancy dismissal	18.7	78	5.2	Innovation linkages	21.2	80
1.3	Business environment	60.9	[33]	5.2.1	University-industry R&D collaboration†	45.3	59
1.3.1	Policies for doing business†	60.9	36	5.2.2	State of cluster development and depth†	52.5	43
1.3.2	Entrepreneurship policies and culture*	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	⊙	0.0
 Human capital and research		28.3	77	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	90
2.1	Education	58.2	45	5.2.5	Patent families/bn PPP\$ GDP	0.1	62
2.1.1	Expenditure on education, % GDP	6.7	10	5.3	Knowledge absorption	46.9	21
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.5	31	5.3.1	Intellectual property payments, % total trade	3.1	6
2.1.3	School life expectancy, years	16.5	23	5.3.2	High-tech imports, % total trade	10.8	29
2.1.4	PISA scales in reading, maths and science	414.8	59	5.3.3	ICT services imports, % total trade	1.5	60
2.1.5	Pupil-teacher ratio, secondary	12.8	54	5.3.4	FDI net inflows, % GDP	4.2	23
2.2	Tertiary education	21.0	89	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	57.7	56	 Knowledge and technology outputs		23.1	61
2.2.2	Graduates in science and engineering, %	16.2	90	6.1	Knowledge creation	5.3	106
2.2.3	Tertiary inbound mobility, %	1.2	87	6.1.1	Patents by origin/bn PPP\$ GDP	0.1	109
2.3	Research and development (R&D)	5.7	69	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	78
2.3.1	Researchers, FTE/mn pop.	⊙	345.1	6.1.3	Utility models by origin/bn PPP\$ GDP	0.1	61
2.3.2	Gross expenditure on R&D, % GDP	⊙	0.4	6.1.4	Scientific and technical articles/bn PPP\$ GDP	9.7	91
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	6.1.5	Citable documents H-index	9.9	73
2.3.4	QS university ranking, top 3*	11.6	59	6.2	Knowledge impact	25.0	73
 Infrastructure		43.4	66	6.2.1	Labor productivity growth, %	1.4	51
3.1	Information and communication technologies (ICTs)	73.0	65	6.2.2	New businesses/th pop. 15-64	3.6	38
3.1.1	ICT access*	91.3	36	6.2.3	Software spending, % GDP	0.3	38
3.1.2	ICT use*	67.0	59	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	3.3	72
3.1.3	Government's online service*	68.2	72	6.2.5	High-tech manufacturing, %	13.8	78
3.1.4	E-participation*	65.5	77	6.3	Knowledge diffusion	39.1	29
3.2	General infrastructure	22.8	92	6.3.1	Intellectual property receipts, % total trade	0.0	78
3.2.1	Electricity output, GWh/mn pop.	2,169.0	78	6.3.2	Production and export complexity	50.6	44
3.2.2	Logistics performance*	34.4	72	6.3.3	High-tech exports, % total trade	5.8	33
3.2.3	Gross capital formation, % GDP	19.0	99	6.3.4	ICT services exports, % total trade	7.7	8
3.3	Ecological sustainability	34.6	43	 Creative outputs		15.2	81
3.3.1	GDP/unit of energy use	17.2	12	7.1	Intangible assets	20.4	79
3.3.2	Environmental performance*	46.3	53	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	1.3	63	7.1.2	Trademarks by origin/bn PPP\$ GDP	82.0	20
 Market sophistication		25.9	88	7.1.3	Global brand value, top 5,000, % GDP	0.0	77
4.1	Credit	21.8	[83]	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.1	113
4.1.1	Finance for startups and scaleups*	n/a	n/a	7.2	Creative goods and services	13.7	70
4.1.2	Domestic credit to private sector, % GDP	60.7	56	7.2.1	Cultural and creative services exports, % total trade	0.7	40
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.2	National feature films/mn pop. 15-69	1.4	53
4.2	Investment	1.5	106	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	3.5	79	7.2.4	Printing and other media, % manufacturing	1.2	33
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	74	7.2.5	Creative goods exports, % total trade	0.2	81
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	85	7.3	Online creativity	6.1	58
4.2.4	Venture capital received, value, % GDP	0.0	92	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	11.5	36
4.3	Trade, diversification, and market scale	54.5	73	7.3.2	Country-code TLDs/th pop. 15-69	1.4	77
4.3.1	Applied tariff rate, weighted avg., %	1.5	48	7.3.3	GitHub commit pushes received/mn pop. 15-69	9.3	46
4.3.2	Domestic industry diversification	71.0	84	7.3.4	Mobile app creation/bn PPP\$ GDP	2.1	71
4.3.3	Domestic market scale, bn PPP\$	111.9	84				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Côte d'Ivoire








109

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
106	109	Lower middle	SSA	27.1	158.3	5,724

	Score/Value	Rank		Score/Value	Rank
 Institutions	54.6	73	 Business sophistication	21.8	95
1.1 Political environment	53.3	86	5.1 Knowledge workers	17.2	[107]
1.1.1 Political and operational stability*	67.3	71	5.1.1 Knowledge-intensive employment, %	7.1	115 ○
1.1.2 Government effectiveness*	39.4	97	5.1.2 Firms offering formal training, %	35.5	45 ●
1.2 Regulatory environment	62.1	73	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	38.0	90	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	30.5	99	5.1.5 Females employed w/advanced degrees, %	1.2	113
1.2.3 Cost of redundancy dismissal	13.1	47 ●	5.2 Innovation linkages	21.2	81
1.3 Business environment	48.3	[63]	5.2.1 University-industry R&D collaboration†	38.5	88
1.3.1 Policies for doing business†	48.3	67 ●	5.2.2 State of cluster development and depth†	44.1	83
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	120 ○
			5.2.5 Patent families/bn PPP\$ GDP	0.0	94
 Human capital and research	11.8	122 ○ ◇	5.3 Knowledge absorption	26.9	82
2.1 Education	29.9	121 ○	5.3.1 Intellectual property payments, % total trade	0.1	106
2.1.1 Expenditure on education, % GDP	3.4	96	5.3.2 High-tech imports, % total trade	5.9	110
2.1.2 Government funding/pupil, secondary, % GDP/cap	13.6	85	5.3.3 ICT services imports, % total trade	2.4	26 ● ◇
2.1.3 School life expectancy, years	10.7	98	5.3.4 FDI net inflows, % GDP	1.1	98
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	26.4	110 ◇	 Knowledge and technology outputs	11.0	104
2.2 Tertiary education	5.2	120 ○ ◇	6.1 Knowledge creation	2.1	123 ○
2.2.1 Tertiary enrolment, % gross	9.9	114	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	111
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, %	2.4	73	6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	74
2.3 Research and development (R&D)	0.2	112	6.1.4 Scientific and technical articles/bn PPP\$ GDP	3.4	118
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index	5.1	96
2.3.2 Gross expenditure on R&D, % GDP	0.1	108 ○	6.2 Knowledge impact	20.4	90
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2.1 Labor productivity growth, %	3.2	17 ●
2.3.4 QS university ranking, top 3*	0.0	72 ○ ◇	6.2.2 New businesses/th pop. 15-64	0.8	87
			6.2.3 Software spending, % GDP	0.0	117 ○ ◇
 Infrastructure	32.8	98	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	1.6	90
3.1 Information and communication technologies (ICTs)	47.9	108	6.2.5 High-tech manufacturing, %	n/a	n/a
3.1.1 ICT access*	65.2	105	6.3 Knowledge diffusion	10.7	102
3.1.2 ICT use*	40.5	101	6.3.1 Intellectual property receipts, % total trade	0.0	97
3.1.3 Government's online service*	45.3	112	6.3.2 Production and export complexity	15.5	112 ○
3.1.4 E-participation*	40.5	113	6.3.3 High-tech exports, % total trade	1.1	71
3.2 General infrastructure	26.9	73	6.3.4 ICT services exports, % total trade	1.2	83
3.2.1 Electricity output, GWh/mn pop.	421.2	112	 Creative outputs	6.0	108
3.2.2 Logistics performance*	47.9	49 ● ◇	7.1 Intangible assets	11.3	96
3.2.3 Gross capital formation, % GDP	22.9	69	7.1.1 Intangible asset intensity, top 15, %	3.6	73 ○ ◇
3.3 Ecological sustainability	23.7	78	7.1.2 Trademarks by origin/bn PPP\$ GDP	8.9	113
3.3.1 GDP/unit of energy use	13.4	36 ●	7.1.3 Global brand value, top 5,000, % GDP	6.6	65
3.3.2 Environmental performance*	32.8	98	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.7	79
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.2	102	7.2 Creative goods and services	1.2	[121]
			7.2.1 Cultural and creative services exports, % total trade	0.1	87
 Market sophistication	14.8	122 ○ ◇	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	11.0	109	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 Printing and other media, % manufacturing	n/a	n/a
4.1.2 Domestic credit to private sector, % GDP	21.1	112	7.2.5 Creative goods exports, % total trade	0.0	114
4.1.3 Loans from microfinance institutions, % GDP	1.1	25 ●	7.3 Online creativity	0.2	118
4.2 Investment	6.4	67	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.4	110
4.2.1 Market capitalization, % GDP	13.5	70	7.3.2 Country-code TLDs/th pop. 15-69	0.3	107
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.1	44 ● ◇	7.3.3 GitHub commit pushes received/mn pop. 15-69	0.3	117
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	39 ●	7.3.4 Mobile app creation/bn PPP\$ GDP	0.0	109 ○
4.2.4 Venture capital received, value, % GDP	0.0	89			
4.3 Trade, diversification, and market scale	27.0	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\$	158.3	74			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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	45	High	EUR	4.1	124.8	31,112

		Score/Value	Rank			Score/Value	Rank
	Institutions	52.6	77		Business sophistication	32.6	46
1.1	Political environment	69.6	42	5.1	Knowledge workers	40.0	47
1.1.1	Political and operational stability*	80.0	30	5.1.1	Knowledge-intensive employment, %	36.4	41
1.1.2	Government effectiveness*	59.1	45	5.1.2	Firms offering formal training, %	26.2	63
1.2	Regulatory environment	70.3	50	5.1.3	GERD performed by business, % GDP	0.6	37
1.2.1	Regulatory quality*	55.8	52	5.1.4	GERD financed by business, %	37.6	49
1.2.2	Rule of law*	53.7	51	5.1.5	Females employed w/advanced degrees, %	17.6	41
1.2.3	Cost of redundancy dismissal	15.1	61	5.2	Innovation linkages	24.7	57
1.3	Business environment	17.9	127	5.2.1	University-industry R&D collaboration†	33.2	108
1.3.1	Policies for doing business†	32.1	115	5.2.2	State of cluster development and depth†	32.6	122
1.3.2	Entrepreneurship policies and culture*	3.6	72	5.2.3	GERD financed by abroad, % GDP	0.3	11
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	60
				5.2.5	Patent families/bn PPP\$ GDP	0.1	60
	Human capital and research	36.9	46	5.3	Knowledge absorption	33.2	54
2.1	Education	61.7	28	5.3.1	Intellectual property payments, % total trade	1.1	35
2.1.1	Expenditure on education, % GDP	3.9	79	5.3.2	High-tech imports, % total trade	8.1	69
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3	ICT services imports, % total trade	2.0	40
2.1.3	School life expectancy, years	15.1	50	5.3.4	FDI net inflows, % GDP	3.5	36
2.1.4	PISA scales in reading, maths and science	471.9	37	5.3.5	Research talent, % in businesses	24.6	49
2.1.5	Pupil-teacher ratio, secondary	6.2	1		Knowledge and technology outputs	29.0	45
2.2	Tertiary education	39.2	38	6.1	Knowledge creation	18.7	49
2.2.1	Tertiary enrolment, % gross	67.7	40	6.1.1	Patents by origin/bn PPP\$ GDP	1.2	59
2.2.2	Graduates in science and engineering, %	28.5	24	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.3	39
2.2.3	Tertiary inbound mobility, %	3.5	64	6.1.3	Utility models by origin/bn PPP\$ GDP	0.2	55
2.3	Research and development (R&D)	9.7	58	6.1.4	Scientific and technical articles/bn PPP\$ GDP	40.5	23
2.3.1	Researchers, FTE/mn pop.	2,220.0	37	6.1.5	Citable documents H-index	17.3	49
2.3.2	Gross expenditure on R&D, % GDP	1.2	32	6.2	Knowledge impact	33.0	45
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	6.2.1	Labor productivity growth, %	0.8	68
2.3.4	QS university ranking, top 3*	5.0	68	6.2.2	New businesses/th pop. 15-64	4.4	33
				6.2.3	Software spending, % GDP	0.1	98
	Infrastructure	56.2	31	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	22.4	8
3.1	Information and communication technologies (ICTs)	82.6	35	6.2.5	High-tech manufacturing, %	24.5	50
3.1.1	ICT access*	90.0	46	6.3	Knowledge diffusion	35.3	43
3.1.2	ICT use*	75.8	37	6.3.1	Intellectual property receipts, % total trade	0.2	41
3.1.3	Government's online service*	75.3	52	6.3.2	Production and export complexity	62.0	30
3.1.4	E-participation*	89.3	23	6.3.3	High-tech exports, % total trade	4.2	42
3.2	General infrastructure	33.6	53	6.3.4	ICT services exports, % total trade	3.9	28
3.2.1	Electricity output, GWh/mn pop.	3,269.1	59		Creative outputs	28.0	39
3.2.2	Logistics performance*	48.8	48	7.1	Intangible assets	30.2	60
3.2.3	Gross capital formation, % GDP	25.7	46	7.1.1	Intangible asset intensity, top 15, %	47.5	54
3.3	Ecological sustainability	52.4	5	7.1.2	Trademarks by origin/bn PPP\$ GDP	48.3	49
3.3.1	GDP/unit of energy use	12.7	41	7.1.3	Global brand value, top 5,000, % GDP	2.5	75
3.3.2	Environmental performance*	60.2	16	7.1.4	Industrial designs by origin/bn PPP\$ GDP	3.1	36
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	10.1	8	7.2	Creative goods and services	36.4	14
				7.2.1	Cultural and creative services exports, % total trade	2.0	11
	Market sophistication	35.1	56	7.2.2	National feature films/mn pop. 15-69	2.4	45
4.1	Credit	29.3	56	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.1	Finance for startups and scaleups*	37.1	46	7.2.4	Printing and other media, % manufacturing	3.0	5
4.1.2	Domestic credit to private sector, % GDP	59.8	59	7.2.5	Creative goods exports, % total trade	1.0	42
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.3	Online creativity	15.3	36
4.2	Investment	13.2	46	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	14.9	32
4.2.1	Market capitalization, % GDP	36.0	44	7.3.2	Country-code TLDs/th pop. 15-69	11.8	38
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	81	7.3.3	GitHub commit pushes received/mn pop. 15-69	26.5	26
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	41	7.3.4	Mobile app creation/bn PPP\$ GDP	8.2	45
4.2.4	Venture capital received, value, % GDP	0.0	28				
4.3	Trade, diversification, and market scale	62.7	38				
4.3.1	Applied tariff rate, weighted avg., %	1.5	20				
4.3.2	Domestic industry diversification	95.2	24				
4.3.3	Domestic market scale, bn PPP\$	124.8	80				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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\$
20	29	High	NAWA	1.2	38.6	42,832

	Score/Value	Rank
Institutions	67.5	36
1.1 Political environment	73.5	35
1.1.1 Political and operational stability*	78.2	35
1.1.2 Government effectiveness*	68.7	36
1.2 Regulatory environment	82.8	24
1.2.1 Regulatory quality*	70.0	33
1.2.2 Rule of law*	61.1	41
1.2.3 Cost of redundancy dismissal	8.0	1
1.3 Business environment	46.3	70
1.3.1 Policies for doing business [†]	59.9	39
1.3.2 Entrepreneurship policies and culture*	32.8	49

	Score/Value	Rank
Human capital and research	39.3	39
2.1 Education	65.4	12
2.1.1 Expenditure on education, % GDP	5.7	23
2.1.2 Government funding/pupil, secondary, % GDP/cap	37.3	4
2.1.3 School life expectancy, years	15.6	43
2.1.4 PISA scales in reading, maths and science	438.0	45
2.1.5 Pupil-teacher ratio, secondary	7.7	7
2.2 Tertiary education	46.7	20
2.2.1 Tertiary enrolment, % gross	88.5	11
2.2.2 Graduates in science and engineering, %	13.1	99
2.2.3 Tertiary inbound mobility, %	26.1	4
2.3 Research and development (R&D)	5.7	67
2.3.1 Researchers, FTE/mn pop.	1,706.1	45
2.3.2 Gross expenditure on R&D, % GDP	0.8	47
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38
2.3.4 QS university ranking, top 3*	0.0	72

	Score/Value	Rank
Infrastructure	57.2	28
3.1 Information and communication technologies (ICTs)	89.7	15
3.1.1 ICT access*	98.1	4
3.1.2 ICT use*	78.3	26
3.1.3 Government's online service*	87.1	20
3.1.4 E-participation*	95.2	14
3.2 General infrastructure	35.9	46
3.2.1 Electricity output, GWh/mn pop.	5,545.5	34
3.2.2 Logistics performance*	51.2	44
3.2.3 Gross capital formation, % GDP	22.2	78
3.3 Ecological sustainability	45.9	21
3.3.1 GDP/unit of energy use	14.2	29
3.3.2 Environmental performance*	58.0	22
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	6.5	16

	Score/Value	Rank
Market sophistication	43.5	29
4.1 Credit	36.5	36
4.1.1 Finance for startups and scaleups*	31.5	53
4.1.2 Domestic credit to private sector, % GDP	110.6	21
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a
4.2 Investment	38.2	19
4.2.1 Market capitalization, % GDP	16.2	64
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	1.3	1
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	15
4.2.4 Venture capital received, value, % GDP	0.0	44
4.3 Trade, diversification, and market scale	56.0	70
4.3.1 Applied tariff rate, weighted avg., %	1.5	20
4.3.2 Domestic industry diversification	76.8	71
4.3.3 Domestic market scale, bn PPP\$	38.6	114

	Score/Value	Rank
Business sophistication	48.9	23
5.1 Knowledge workers	48.9	33
5.1.1 Knowledge-intensive employment, %	38.0	36
5.1.2 Firms offering formal training, %	39.7	34
5.1.3 GERD performed by business, % GDP	0.4	46
5.1.4 GERD financed by business, %	36.4	52
5.1.5 Females employed w/advanced degrees, %	26.5	14
5.2 Innovation linkages	41.0	26
5.2.1 University-industry R&D collaboration [†]	44.2	65
5.2.2 State of cluster development and depth [†]	51.5	46
5.2.3 GERD financed by abroad, % GDP	0.2	26
5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.2	10
5.2.5 Patent families/bn PPP\$ GDP	0.9	27
5.3 Knowledge absorption	56.9	6
5.3.1 Intellectual property payments, % total trade	1.3	29
5.3.2 High-tech imports, % total trade	3.9	124
5.3.3 ICT services imports, % total trade	14.1	1
5.3.4 FDI net inflows, % GDP	52.5	1
5.3.5 Research talent, % in businesses	36.3	37

	Score/Value	Rank
Knowledge and technology outputs	41.9	20
6.1 Knowledge creation	34.5	28
6.1.1 Patents by origin/bn PPP\$ GDP	1.9	37
6.1.2 PCT patents by origin/bn PPP\$ GDP	1.4	22
6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
6.1.4 Scientific and technical articles/bn PPP\$ GDP	58.2	4
6.1.5 Citable documents H-index	12.3	62
6.2 Knowledge impact	38.9	28
6.2.1 Labor productivity growth, %	0.4	79
6.2.2 New businesses/th pop. 15-64	13.3	8
6.2.3 Software spending, % GDP	0.2	73
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	21.1	13
6.2.5 High-tech manufacturing, %	15.9	72
6.3 Knowledge diffusion	52.3	13
6.3.1 Intellectual property receipts, % total trade	1.6	14
6.3.2 Production and export complexity	49.1	46
6.3.3 High-tech exports, % total trade	0.9	75
6.3.4 ICT services exports, % total trade	17.7	1

	Score/Value	Rank
Creative outputs	40.2	17
7.1 Intangible assets	46.7	25
7.1.1 Intangible asset intensity, top 15, %	54.4	48
7.1.2 Trademarks by origin/bn PPP\$ GDP	102.9	11
7.1.3 Global brand value, top 5,000, % GDP	0.0	77
7.1.4 Industrial designs by origin/bn PPP\$ GDP	6.3	17
7.2 Creative goods and services	19.6	58
7.2.1 Cultural and creative services exports, % total trade	0.6	44
7.2.2 National feature films/mn pop. 15-69	3.4	35
7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
7.2.4 Printing and other media, % manufacturing	1.8	17
7.2.5 Creative goods exports, % total trade	0.2	78
7.3 Online creativity	47.9	7
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	73.3	8
7.3.2 Country-code TLDs/th pop. 15-69	7.1	45
7.3.3 GitHub commit pushes received/mn pop. 15-69	11.2	41
7.3.4 Mobile app creation/bn PPP\$ GDP	100.0	1

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Czech Republic

30

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
27	33	High	EUR	10.7	469.1	43,714

Institutions		Score/Value	Rank
1.1 Political environment		64.5	43
1.1.1	Political and operational stability*	76.1	30
1.1.2	Government effectiveness*	81.8	24
1.2	Regulatory environment	75.3	36
1.2.1	Regulatory quality*	75.9	23
1.2.2	Rule of law*	73.6	27
1.2.3	Cost of redundancy dismissal	20.2	86 ○
1.3 Business environment		42.1	[82]
1.3.1	Policies for doing business†	42.1	89 ○ ◇
1.3.2	Entrepreneurship policies and culture*	n/a	n/a

Human capital and research		Score/Value	Rank
2.1 Education		43.3	33
2.1.1	Expenditure on education, % GDP	60.0	37
2.1.2	Government funding/pupil, secondary, % GDP/cap	4.3	66
2.1.3	School life expectancy, years	25.5	20
2.1.4	PISA scales in reading, maths and science	16.2	32
2.1.5	Pupil-teacher ratio, secondary	495.5	23
2.2	Tertiary education	11.5	46
2.2.1	Tertiary enrolment, % gross	45.4	24
2.2.2	Graduates in science and engineering, %	65.6	44
2.2.3	Tertiary inbound mobility, %	25.9	36
2.3	Research and development (R&D)	14.4	14
2.3.1	Researchers, FTE/mn pop.	24.5	39
2.3.2	Gross expenditure on R&D, % GDP	4,127.9	25
2.3.3	Global corporate R&D investors, top 3, mn USD	2.0	18
2.3.4	QS university ranking, top 3*	0.0	38 ○ ◇
		31.5	38

Infrastructure		Score/Value	Rank
3.1 Information and communication technologies (ICTs)		58.3	20
3.1.1	ICT access*	77.1	54 ◇
3.1.2	ICT use*	89.7	49
3.1.3	Government's online service*	73.8	45
3.1.4	E-participation*	72.4	61
3.2	General infrastructure	72.6	65
3.2.1	Electricity output, GWh/mn pop.	50.4	24
3.2.2	Logistics performance*	7,490.7	26
3.2.3	Gross capital formation, % GDP	75.8	22
3.3	Ecological sustainability	27.1	35
3.3.1	GDP/unit of energy use	47.3	18
3.3.2	Environmental performance*	9.6	74 ○
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	59.9	19
		9.3	9 ● ◆

Market sophistication		Score/Value	Rank
4.1 Credit		29.6	76 ○ ◇
4.1.1	Finance for startups and scaleups*	18.8	[88]
4.1.2	Domestic credit to private sector, % GDP	n/a	n/a
4.1.3	Loans from microfinance institutions, % GDP	53.2	67
4.2	Investment	n/a	n/a
4.2.1	Market capitalization, % GDP	5.3	72 ○ ◇
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	10.6	72 ○ ◇
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.1	40
4.2.4	Venture capital received, value, % GDP	0.0	77 ○
4.3	Trade, diversification, and market scale	0.0	58 ○
4.3.1	Applied tariff rate, weighted avg., %	64.6	29
4.3.2	Domestic industry diversification	1.5	20
4.3.3	Domestic market scale, bn PPP\$	93.1	35
		469.1	46

Business sophistication		Score/Value	Rank
5.1 Knowledge workers		46.2	28
5.1.1	Knowledge-intensive employment, %	45.6	41
5.1.2	Firms offering formal training, %	40.6	31
5.1.3	GERD performed by business, % GDP	43.6	26
5.1.4	GERD financed by business, %	1.2	20
5.1.5	Females employed w/advanced degrees, %	35.6	54 ○
5.2	Innovation linkages	13.8	55 ◇
5.2.1	University-industry R&D collaboration†	45.4	23
5.2.2	State of cluster development and depth†	59.1	24
5.2.3	GERD financed by abroad, % GDP	48.2	67
5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.6	1 ● ◆
5.2.5	Patent families/bn PPP\$ GDP	0.0	83 ○ ◇
5.3	Knowledge absorption	0.5	32
5.3.1	Intellectual property payments, % total trade	47.7	19
5.3.2	High-tech imports, % total trade	0.8	52
5.3.3	ICT services imports, % total trade	23.7	7 ● ◆
5.3.4	FDI net inflows, % GDP	1.7	53
5.3.5	Research talent, % in businesses	3.4	38
		51.0	24

Knowledge and technology outputs		Score/Value	Rank
6.1 Knowledge creation		44.7	17
6.1.1	Patents by origin/bn PPP\$ GDP	35.4	27
6.1.2	PCT patents by origin/bn PPP\$ GDP	2.0	36
6.1.3	Utility models by origin/bn PPP\$ GDP	0.6	32
6.1.4	Scientific and technical articles/bn PPP\$ GDP	2.9	7 ● ◆
6.1.5	Citable documents H-index	37.6	25
6.2	Knowledge impact	30.4	32
6.2.1	Labor productivity growth, %	48.0	11 ◆
6.2.2	New businesses/th pop. 15-64	1.4	50
6.2.3	Software spending, % GDP	3.8	37
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	0.3	43
6.2.5	High-tech manufacturing, %	23.6	5 ● ◆
6.3	Knowledge diffusion	60.1	4 ● ◆
6.3.1	Intellectual property receipts, % total trade	50.6	16
6.3.2	Production and export complexity	0.4	30
6.3.3	High-tech exports, % total trade	83.9	6 ● ◆
6.3.4	ICT services exports, % total trade	23.8	7 ● ◆
		3.1	38








Creative outputs		Score/Value	Rank
7.1 Intangible assets		29.9	37
7.1.1	Intangible asset intensity, top 15, %	24.1	70 ○
7.1.2	Trademarks by origin/bn PPP\$ GDP	n/a	n/a
7.1.3	Global brand value, top 5,000, % GDP	59.2	39
7.1.4	Industrial designs by origin/bn PPP\$ GDP	23.0	45
7.2	Creative goods and services	3.4	33
7.2.1	Cultural and creative services exports, % total trade	40.6	7 ● ◆
7.2.2	National feature films/mn pop. 15-69	0.7	42
7.2.3	Entertainment and media market/th pop. 15-69	9.1	5 ●
7.2.4	Printing and other media, % manufacturing	24.2	25
7.2.5	Creative goods exports, % total trade	0.9	57 ○
7.3	Online creativity	12.5	1 ● ◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	30.9	24
7.3.2	Country-code TLDs/th pop. 15-69	17.1	30
7.3.3	GitHub commit pushes received/mn pop. 15-69	54.5	16
7.3.4	Mobile app creation/bn PPP\$ GDP	38.5	16
		13.3	28

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Denmark

10

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
10	8	High	EUR	5.8	370.3	63,405

		Score/ Value	Rank			Score/ Value	Rank
 Institutions		82.8	9	 Business sophistication		54.3	15
1.1	Political environment	90.7	2 ●◆	5.1	Knowledge workers	63.1	16
1.1.1	Political and operational stability*	90.9	4 ●	5.1.1	Knowledge-intensive employment, %	48.7	10
1.1.2	Government effectiveness*	90.4	5 ●	5.1.2	Firms offering formal training, %	40.6	31
1.2	Regulatory environment	85.3	20	5.1.3	GERD performed by business, % GDP	1.8	11
1.2.1	Regulatory quality*	89.6	6 ●	5.1.4	GERD financed by business, %	59.6	14
1.2.2	Rule of law*	94.3	5 ●	5.1.5	Females employed w/advanced degrees, %	24.6	20
1.2.3	Cost of redundancy dismissal	18.8	80 ○	5.2	Innovation linkages	53.1	12
1.3	Business environment	72.4	[14]	5.2.1	University-industry R&D collaboration†	65.4	15
1.3.1	Policies for doing business†	72.4	13	5.2.2	State of cluster development and depth†	60.3	26
1.3.2	Entrepreneurship policies and culture*	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	0.2	25
 Human capital and research		59.4	10	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.2	17
2.1	Education	68.9	8 ●◆	5.2.5	Patent families/bn PPP\$ GDP	4.7	8
2.1.1	Expenditure on education, % GDP	6.8	8 ●◆	5.3	Knowledge absorption	46.6	23
2.1.2	Government funding/pupil, secondary, % GDP/cap	21.0	47	5.3.1	Intellectual property payments, % total trade	0.8	50
2.1.3	School life expectancy, years	18.7	9	5.3.2	High-tech imports, % total trade	6.6	99 ○
2.1.4	PISA scales in reading, maths and science	501.1	17	5.3.3	ICT services imports, % total trade	4.3	10
2.1.5	Pupil-teacher ratio, secondary	9.7	26	5.3.4	FDI net inflows, % GDP	0.6	113 ○
2.2	Tertiary education	42.5	30	5.3.5	Research talent, % in businesses	58.2	17
2.2.1	Tertiary enrolment, % gross	81.8	20	 Knowledge and technology outputs		51.9	12
2.2.2	Graduates in science and engineering, %	23.0	50 ○	6.1	Knowledge creation	63.3	9
2.2.3	Tertiary inbound mobility, %	10.5	23	6.1.1	Patents by origin/bn PPP\$ GDP	10.6	9
2.3	Research and development (R&D)	67.0	11	6.1.2	PCT patents by origin/bn PPP\$ GDP	4.2	8
2.3.1	Researchers, FTE/mn pop.	7,692.2	3 ●◆	6.1.3	Utility models by origin/bn PPP\$ GDP	0.3	41 ○
2.3.2	Gross expenditure on R&D, % GDP	3.0	10	6.1.4	Scientific and technical articles/bn PPP\$ GDP	65.6	2 ●◆
2.3.3	Global corporate R&D investors, top 3, mn USD	70.4	14	6.1.5	Citable documents H-index	51.3	15
2.3.4	QS university ranking, top 3*	58.5	15	6.2	Knowledge impact	44.5	12
 Infrastructure		64.3	5 ●◆	6.2.1	Labor productivity growth, %	0.6	73 ○
3.1	Information and communication technologies (ICTs)	93.8	3 ●◆	6.2.2	New businesses/th pop. 15-64	10.0	13
3.1.1	ICT access*	93.2	22	6.2.3	Software spending, % GDP	0.5	16
3.1.2	ICT use*	88.5	2 ●◆	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	6.4	41
3.1.3	Government's online service*	97.1	3 ●◆	6.2.5	High-tech manufacturing, %	48.3	15
3.1.4	E-participation*	96.4	9	6.3	Knowledge diffusion	47.9	20
3.2	General infrastructure	48.5	25	6.3.1	Intellectual property receipts, % total trade	2.1	12
3.2.1	Electricity output, GWh/mn pop.	4,931.4	44	6.3.2	Production and export complexity	67.4	26
3.2.2	Logistics performance*	90.2	8	6.3.3	High-tech exports, % total trade	5.8	34
3.2.3	Gross capital formation, % GDP	23.2	67 ○	6.3.4	ICT services exports, % total trade	3.4	36
3.3	Ecological sustainability	50.7	10 ●◆	 Creative outputs		46.2	14
3.3.1	GDP/unit of energy use	19.7	8	7.1	Intangible assets	50.9	20
3.3.2	Environmental performance*	77.9	1 ●◆	7.1.1	Intangible asset intensity, top 15, %	85.0	7
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	2.8	31	7.1.2	Trademarks by origin/bn PPP\$ GDP	31.4	73 ○◇
 Market sophistication		53.1	15	7.1.3	Global brand value, top 5,000, % GDP	128.2	14
4.1	Credit	62.4	[5]	7.1.4	Industrial designs by origin/bn PPP\$ GDP	6.5	16
4.1.1	Finance for startups and scaleups*	n/a	n/a	7.2	Creative goods and services	32.2	21
4.1.2	Domestic credit to private sector, % GDP	163.3	8	7.2.1	Cultural and creative services exports, % total trade	1.2	23
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.2	National feature films/mn pop. 15-69	5.0	24
4.2	Investment	34.7	22	7.2.3	Entertainment and media market/th pop. 15-69	72.9	4
4.2.1	Market capitalization, % GDP	n/a	n/a	7.2.4	Printing and other media, % manufacturing	0.8	62 ○
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.3	15	7.2.5	Creative goods exports, % total trade	1.6	33
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.1	14	7.3	Online creativity	50.9	6 ●
4.2.4	Venture capital received, value, % GDP	0.0	24	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	49.8	14
4.3	Trade, diversification, and market scale	62.2	46	7.3.2	Country-code TLDs/th pop. 15-69	100.0	1 ●◆
4.3.1	Applied tariff rate, weighted avg., %	1.5	20	7.3.3	GitHub commit pushes received/mn pop. 15-69	37.2	17
4.3.2	Domestic industry diversification	87.9	51 ○	7.3.4	Mobile app creation/bn PPP\$ GDP	16.7	19
4.3.3	Domestic market scale, bn PPP\$	370.3	52				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Dominican Republic

90

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
92	90	Upper middle	LCN	11.0	220.7	20,944

Institutions		Score/Value	Rank
1.1 Political environment		56.7	75
1.1.1	Political and operational stability*	70.9	53
1.1.2	Government effectiveness*	42.6	87
1.2 Regulatory environment		53.0	100
1.2.1	Regulatory quality*	44.6	75
1.2.2	Rule of law*	39.2	76
1.2.3	Cost of redundancy dismissal	26.2	107 ◊
1.3 Business environment		46.1	71
1.3.1	Policies for doing business†	53.2	55 ●
1.3.2	Entrepreneurship policies and culture*	39.1	40

Human capital and research		Score/Value	Rank
2.1 Education		35.5	108 ◊
2.1.1	Expenditure on education, % GDP	4.6	57
2.1.2	Government funding/pupil, secondary, % GDP/cap	13.1	88
2.1.3	School life expectancy, years	⊙ 14.2	69
2.1.4	PISA scales in reading, maths and science	334.1	78 ◊
2.1.5	Pupil-teacher ratio, secondary	⊙ 18.6	90
2.2 Tertiary education		17.0	98 ◊
2.2.1	Tertiary enrolment, % gross	61.2	48 ●
2.2.2	Graduates in science and engineering, %	⊙ 11.6	104 ◊
2.2.3	Tertiary inbound mobility, %	⊙ 1.7	81
2.3 Research and development (R&D)		0.0	[120]
2.3.1	Researchers, FTE/mn pop.	n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ◊
2.3.4	QS university ranking, top 3*	0.0	72 ◊

Infrastructure		Score/Value	Rank
3.1 Information and communication technologies (ICTs)		71.4	73
3.1.1	ICT access*	70.6	97 ◊
3.1.2	ICT use*	61.1	71
3.1.3	Government's online service*	76.5	49 ●
3.1.4	E-participation*	77.4	51 ●
3.2 General infrastructure		25.4	78
3.2.1	Electricity output, GWh/mn pop.	⊙ 1,849.2	87
3.2.2	Logistics performance*	28.4	84
3.2.3	Gross capital formation, % GDP	27.2	34 ●
3.3 Ecological sustainability		33.1	45 ●
3.3.1	GDP/unit of energy use	19.4	9 ● ◆
3.3.2	Environmental performance*	42.2	65
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.2	118

Market sophistication		Score/Value	Rank
4.1 Credit		14.7	101
4.1.1	Finance for startups and scaleups*	19.5	71 ◊
4.1.2	Domestic credit to private sector, % GDP	30.5	92
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 investors, deals/bn PPP\$ GDP	n/a	n/a
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a
4.2.4	Venture capital received, value, % GDP	n/a	n/a
4.3 Trade, diversification, and market scale		39.8	100 ◊
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\$	220.7	64

Business sophistication		Score/Value	Rank
5.1 Knowledge workers		25.6	[76]
5.1.1	Knowledge-intensive employment, %	⊙ 15.6	88 ◊
5.1.2	Firms offering formal training, %	⊙ 23.4	68
5.1.3	GERD performed by business, % GDP	n/a	n/a
5.1.4	GERD financed by business, %	n/a	n/a
5.1.5	Females employed w/advanced degrees, %	⊙ 9.6	75
5.2 Innovation linkages		22.1	72
5.2.1	University-industry R&D collaboration†	37.2	93
5.2.2	State of cluster development and depth†	49.0	55 ●
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	76
5.3 Knowledge absorption		22.9	99
5.3.1	Intellectual property payments, % total trade	0.2	89
5.3.2	High-tech imports, % total trade	8.5	64
5.3.3	ICT services imports, % total trade	0.7	101
5.3.4	FDI net inflows, % GDP	3.2	42 ●
5.3.5	Research talent, % in businesses	n/a	n/a

Knowledge and technology outputs		Score/Value	Rank
6.1 Knowledge creation		1.0	130 ◊
6.1.1	Patents by origin/bn PPP\$ GDP	0.1	120
6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	98
6.1.3	Utility models by origin/bn PPP\$ GDP	0.1	64
6.1.4	Scientific and technical articles/bn PPP\$ GDP	1.2	130 ◊
6.1.5	Citable documents H-index	1.9	123 ◊
6.2 Knowledge impact		19.1	96
6.2.1	Labor productivity growth, %	2.4	28 ●
6.2.2	New businesses/th pop. 15-64	⊙ 1.5	71
6.2.3	Software spending, % GDP	0.0	115 ◊
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	1.1	102
6.2.5	High-tech manufacturing, %	n/a	n/a
6.3 Knowledge diffusion		18.9	76
6.3.1	Intellectual property receipts, % total trade	0.0	113 ◊
6.3.2	Production and export complexity	37.3	67
6.3.3	High-tech exports, % total trade	2.9	50 ●
6.3.4	ICT services exports, % total trade	0.5	98

Creative outputs		Score/Value	Rank
7.1 Intangible assets		10.3	99
7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
7.1.2	Trademarks by origin/bn PPP\$ GDP	41.5	58
7.1.3	Global brand value, top 5,000, % GDP	2.9	73
7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.0	120 ◊
7.2 Creative goods and services		27.6	[37]
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	Printing and other media, % manufacturing	n/a	n/a
7.2.5	Creative goods exports, % total trade	2.3	24 ●
7.3 Online creativity		1.6	91
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	2.5	74
7.3.2	Country-code TLDs/th pop. 15-69	1.3	78
7.3.3	GitHub commit pushes received/mn pop. 15-69	2.5	78
7.3.4	Mobile app creation/bn PPP\$ GDP	0.2	92

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◊ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Ecuador

98

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
98	96	Upper middle	LCN	17.9	204.7	11,529

Institutions		Score/Value	Rank
1.1 Political environment		48.3	101
1.1.1	Political and operational stability*	56.4	108 ◇
1.1.2	Government effectiveness*	40.3	93
1.2 Regulatory environment		40.1	123 ○ ◇
1.2.1	Regulatory quality*	22.8	120 ○ ◇
1.2.2	Rule of law*	31.9	94
1.2.3	Cost of redundancy dismissal	31.8	123 ○ ◇
1.3 Business environment		29.9	111
1.3.1	Policies for doing business [†]	32.8	110
1.3.2	Entrepreneurship policies and culture*	27.0	53

Human capital and research		Score/Value	Rank
2.1 Education		38.6	100 ◇
2.1.1	Expenditure on education, % GDP	4.1	72
2.1.2	Government funding/pupil, secondary, % GDP/cap	6.7	106 ○ ◇
2.1.3	School life expectancy, years	14.6	58
2.1.4	PISA scales in reading, maths and science	n/a	n/a
2.1.5	Pupil-teacher ratio, secondary	20.8	96 ◇
2.2 Tertiary education		18.4	94
2.2.1	Tertiary enrolment, % gross	47.9	66
2.2.2	Graduates in science and engineering, %	16.2	89
2.2.3	Tertiary inbound mobility, %	0.8	93 ◇
2.3 Research and development (R&D)		3.7	77
2.3.1	Researchers, FTE/mn pop.	399.5	74
2.3.2	Gross expenditure on R&D, % GDP	0.4	66
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇
2.3.4	QS university ranking, top 3*	5.0	68

Infrastructure		Score/Value	Rank
3.1 Information and communication technologies (ICTs)		71.0	74
3.1.1	ICT access*	71.2	94 ◇
3.1.2	ICT use*	51.7	90
3.1.3	Government's online service*	81.2	40 ●
3.1.4	E-participation*	79.8	49 ●
3.2 General infrastructure		28.2	72
3.2.1	Electricity output, GWh/mn pop.	1,767.0	88
3.2.2	Logistics performance*	38.6	61
3.2.3	Gross capital formation, % GDP	26.4	42 ●
3.3 Ecological sustainability		28.1	57
3.3.1	GDP/unit of energy use	11.9	51 ●
3.3.2	Environmental performance*	46.5	52 ●
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.9	72

Market sophistication		Score/Value	Rank
4.1 Credit		22.3	80
4.1.1	Finance for startups and scaleups*	25.9	65
4.1.2	Domestic credit to private sector, % GDP	47.6	73
4.1.3	Loans from microfinance institutions, % GDP	1.7	18 ●
4.2 Investment		3.0	[96]
4.2.1	Market capitalization, % GDP	n/a	n/a
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	96 ○
4.2.4	Venture capital received, value, % GDP	0.0	60
4.3 Trade, diversification, and market scale		44.7	92
4.3.1	Applied tariff rate, weighted avg., %	6.2	98 ◇
4.3.2	Domestic industry diversification	69.9	87
4.3.3	Domestic market scale, bn PPP\$	204.7	67

Business sophistication		Score/Value	Rank
5.1 Knowledge workers		28.3	72
5.1.1	Knowledge-intensive employment, %	12.3	100 ◇
5.1.2	Firms offering formal training, %	73.7	2 ● ◆
5.1.3	GERD performed by business, % GDP	0.2	55
5.1.4	GERD financed by business, %	0.2	99 ○ ◇
5.1.5	Females employed w/advanced degrees, %	8.8	79
5.2 Innovation linkages		15.3	121 ○
5.2.1	University-industry R&D collaboration [†]	34.5	103
5.2.2	State of cluster development and depth [†]	37.6	110 ◇
5.2.3	GERD financed by abroad, % GDP	0.0	73
5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	118 ○
5.2.5	Patent families/bn PPP\$ GDP	0.0	88
5.3 Knowledge absorption		26.1	86
5.3.1	Intellectual property payments, % total trade	0.6	63
5.3.2	High-tech imports, % total trade	10.1	41 ●
5.3.3	ICT services imports, % total trade	0.7	95
5.3.4	FDI net inflows, % GDP	1.1	97
5.3.5	Research talent, % in businesses	n/a	n/a

Knowledge and technology outputs		Score/Value	Rank
6.1 Knowledge creation		6.8	93
6.1.1	Patents by origin/bn PPP\$ GDP	0.2	103
6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	69
6.1.3	Utility models by origin/bn PPP\$ GDP	0.2	47
6.1.4	Scientific and technical articles/bn PPP\$ GDP	12.4	76
6.1.5	Citable documents H-index	8.9	80
6.2 Knowledge impact		21.1	87
6.2.1	Labor productivity growth, %	-1.3	107 ○ ◇
6.2.2	New businesses/th pop. 15-64	n/a	n/a
6.2.3	Software spending, % GDP	0.2	64
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	6.3	43 ●
6.2.5	High-tech manufacturing, %	11.0	85
6.3 Knowledge diffusion		6.0	118 ◇
6.3.1	Intellectual property receipts, % total trade	0.0	92
6.3.2	Production and export complexity	15.6	111 ○ ◇
6.3.3	High-tech exports, % total trade	0.3	101 ◇
6.3.4	ICT services exports, % total trade	0.4	111

Creative outputs		Score/Value	Rank
7.1 Intangible assets		16.3	88
7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
7.1.2	Trademarks by origin/bn PPP\$ GDP	64.3	37 ●
7.1.3	Global brand value, top 5,000, % GDP	0.0	77 ○ ◇
7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.3	97
7.2 Creative goods and services		7.6	[90]
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	n/a	n/a
7.2.4	Printing and other media, % manufacturing	0.9	52
7.2.5	Creative goods exports, % total trade	0.0	111
7.3 Online creativity		1.5	94
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	2.0	77
7.3.2	Country-code TLDs/th pop. 15-69	1.0	85
7.3.3	GitHub commit pushes received/mn pop. 15-69	2.5	77
7.3.4	Mobile app creation/bn PPP\$ GDP	0.3	88

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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\$
83	97	Lower middle	NAWA	104.3	1,381.1	13,422

Institutions		Score/Value	Rank
1.1 Political environment		49.0	99
1.1.1	Political and operational stability*	60.0	97
1.1.2	Government effectiveness*	38.0	101
1.2 Regulatory environment		37.6	125 ○
1.2.1	Regulatory quality*	27.7	110
1.2.2	Rule of law*	36.7	84
1.2.3	Cost of redundancy dismissal	36.8	126 ○ ◇
1.3 Business environment		45.0	73
1.3.1	Policies for doing business [†]	60.4	37 ● ◆
1.3.2	Entrepreneurship policies and culture*	29.6	51

Human capital and research		Score/Value	Rank
2.1 Education		38.1	104
2.1.1	Expenditure on education, % GDP	2.5	118 ○
2.1.2	Government funding/pupil, secondary, % GDP/cap	11.8	91
2.1.3	School life expectancy, years	⊙ 13.6	76
2.1.4	PISA scales in reading, maths and science	n/a	n/a
2.1.5	Pupil-teacher ratio, secondary	15.8	78
2.2 Tertiary education		11.6	107
2.2.1	Tertiary enrolment, % gross	⊙ 38.9	76
2.2.2	Graduates in science and engineering, %	⊙ 11.2	105 ○ ◇
2.2.3	Tertiary inbound mobility, %	⊙ 1.8	80
2.3 Research and development (R&D)		11.1	54
2.3.1	Researchers, FTE/mn pop.	838.0	55
2.3.2	Gross expenditure on R&D, % GDP	1.0	42 ● ◆
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇
2.3.4	QS university ranking, top 3*	19.8	51 ◆

Infrastructure		Score/Value	Rank
3.1 Information and communication technologies (ICTs)		60.1	93
3.1.1	ICT access*	81.1	83
3.1.2	ICT use*	51.1	91
3.1.3	Government's online service*	57.1	93
3.1.4	E-participation*	51.2	99
3.2 General infrastructure		21.0	103
3.2.1	Electricity output, GWh/mn pop.	⊙ 1,935.3	82
3.2.2	Logistics performance*	35.8	66
3.2.3	Gross capital formation, % GDP	16.0	116 ○ ◇
3.3 Ecological sustainability		25.4	70 ◆
3.3.1	GDP/unit of energy use	13.4	35 ●
3.3.2	Environmental performance*	35.5	89
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.6	79

Market sophistication		Score/Value	Rank
4.1 Credit		17.6	92
4.1.1	Finance for startups and scaleups*	39.6	41
4.1.2	Domestic credit to private sector, % GDP	27.1	102
4.1.3	Loans from microfinance institutions, % GDP	0.3	45
4.2 Investment		8.1	59
4.2.1	Market capitalization, % GDP	14.2	67
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	65
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	49
4.2.4	Venture capital received, value, % GDP	0.0	34 ●
4.3 Trade, diversification, and market scale		52.9	77
4.3.1	Applied tariff rate, weighted avg., %	⊙ 10.4	120 ○
4.3.2	Domestic industry diversification	⊙ 95.1	25 ●
4.3.3	Domestic market scale, bn PPP\$	1,381.1	20 ●


Business sophistication		Score/Value	Rank
5.1 Knowledge workers		13.8	112
5.1.1	Knowledge-intensive employment, %	⊙ 26.8	54 ◆
5.1.2	Firms offering formal training, %	7.9	96 ○ ◇
5.1.3	GERD performed by business, % GDP	⊙ 0.0	77
5.1.4	GERD financed by business, %	⊙ 3.9	84
5.1.5	Females employed w/advanced degrees, %	⊙ 6.4	89
5.2 Innovation linkages		24.3	62
5.2.1	University-industry R&D collaboration [†]	47.0	52
5.2.2	State of cluster development and depth [†]	69.9	6 ● ◆
5.2.3	GERD financed by abroad, % GDP	⊙ 0.0	85
5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	95
5.2.5	Patent families/bn PPP\$ GDP	0.0	93
5.3 Knowledge absorption		23.2	98
5.3.1	Intellectual property payments, % total trade	0.5	69
5.3.2	High-tech imports, % total trade	7.2	89
5.3.3	ICT services imports, % total trade	1.5	61
5.3.4	FDI net inflows, % GDP	2.6	55
5.3.5	Research talent, % in businesses	⊙ 6.3	66

Knowledge and technology outputs		Score/Value	Rank
6.1 Knowledge creation		12.9	64
6.1.1	Patents by origin/bn PPP\$ GDP	0.8	70
6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	80
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
6.1.4	Scientific and technical articles/bn PPP\$ GDP	19.4	48
6.1.5	Citable documents H-index	18.0	47 ● ◆
6.2 Knowledge impact		25.7	72
6.2.1	Labor productivity growth, %	3.5	11 ●
6.2.2	New businesses/th pop. 15-64	0.2	108
6.2.3	Software spending, % GDP	0.2	67
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	1.5	91
6.2.5	High-tech manufacturing, %	⊙ 22.6	57
6.3 Knowledge diffusion		16.0	85
6.3.1	Intellectual property receipts, % total trade	0.0	111 ○
6.3.2	Production and export complexity	38.2	65
6.3.3	High-tech exports, % total trade	0.6	86
6.3.4	ICT services exports, % total trade	1.9	65

Creative outputs		Score/Value	Rank
7.1 Intangible assets		23.3	72
7.1.1	Intangible asset intensity, top 15, %	51.9	50
7.1.2	Trademarks by origin/bn PPP\$ GDP	⊙ 18.7	94
7.1.3	Global brand value, top 5,000, % GDP	7.0	64
7.1.4	Industrial designs by origin/bn PPP\$ GDP	⊙ 1.4	56
7.2 Creative goods and services		9.1	86
7.2.1	Cultural and creative services exports, % total trade	n/a	n/a
7.2.2	National feature films/mn pop. 15-69	0.5	71 ○
7.2.3	Entertainment and media market/th pop. 15-69	1.7	55
7.2.4	Printing and other media, % manufacturing	⊙ 0.7	69
7.2.5	Creative goods exports, % total trade	1.4	37 ●
7.3 Online creativity		0.8	104
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1.2	91
7.3.2	Country-code TLDs/th pop. 15-69	0.0	126 ○
7.3.3	GitHub commit pushes received/mn pop. 15-69	1.3	93
7.3.4	Mobile app creation/bn PPP\$ GDP	0.6	80

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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	101	Lower middle	LCN	6.5	62.3	9,551








	Score/Value	Rank		Score/Value	Rank
 Institutions	45.3	107	 Business sophistication	23.1	87
1.1 Political environment	53.7	85	5.1 Knowledge workers	27.1	73
1.1.1 Political and operational stability*	65.5	74	5.1.1 Knowledge-intensive employment, %	⊙ 12.4	98
1.1.2 Government effectiveness*	42.0	91	5.1.2 Firms offering formal training, %	⊙ 53.8	16 ● ◆
1.2 Regulatory environment	53.0	99	5.1.3 GERD performed by business, % GDP	⊙ 0.1	70
1.2.1 Regulatory quality*	44.5	76 ◆	5.1.4 GERD financed by business, %	⊙ 31.5	57
1.2.2 Rule of law*	26.3	109	5.1.5 Females employed w/advanced degrees, %	⊙ 4.2	95
1.2.3 Cost of redundancy dismissal	22.9	98	5.2 Innovation linkages	13.7	126 ○ ◇
1.3 Business environment	29.0	[113]	5.2.1 University-industry R&D collaboration†	29.8	116
1.3.1 Policies for doing business†	29.0	119 ○ ◇	5.2.2 State of cluster development and depth†	34.8	116
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	⊙ 0.0	76
Human capital and research	17.6	107	5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	⊙ 0.0	121 ○
2.1 Education	32.1	115	5.2.5 Patent families/bn PPP\$ GDP	0.0	84
2.1.1 Expenditure on education, % GDP	⊙ 3.4	98	5.3 Knowledge absorption	28.5	74
2.1.2 Government funding/pupil, secondary, % GDP/cap	13.5	86	5.3.1 Intellectual property payments, % total trade	1.0	40 ● ◆
2.1.3 School life expectancy, years	⊙ 12.5	87	5.3.2 High-tech imports, % total trade	10.1	39 ●
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.3 ICT services imports, % total trade	0.7	100
2.1.5 Pupil-teacher ratio, secondary	⊙ 27.6	114 ○ ◇	5.3.4 FDI net inflows, % GDP	1.8	82
2.2 Tertiary education	20.2	91	5.3.5 Research talent, % in businesses	n/a	n/a
2.2.1 Tertiary enrolment, % gross	29.9	85	Knowledge and technology outputs	10.3	108
2.2.2 Graduates in science and engineering, %	⊙ 21.8	57	6.1 Knowledge creation	1.1	128 ○
2.2.3 Tertiary inbound mobility, %	0.4	102 ○	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	116
2.3 Research and development (R&D)	0.6	103	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	62
2.3.2 Gross expenditure on R&D, % GDP	⊙ 0.2	92	6.1.4 Scientific and technical articles/bn PPP\$ GDP	1.6	129 ○
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.1.5 Citable documents H-index	1.6	126 ○
2.3.4 QS university ranking, top 3*	0.0	72 ○ ◇	6.2 Knowledge impact	4.9	[121]
Infrastructure	33.6	97	6.2.1 Labor productivity growth, %	n/a	n/a
3.1 Information and communication technologies (ICTs)	60.3	92	6.2.2 New businesses/th pop. 15-64	0.4	101
3.1.1 ICT access*	71.1	95	6.2.3 Software spending, % GDP	0.1	100
3.1.2 ICT use*	44.5	98	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	3.4	71
3.1.3 Government's online service*	57.6	92	6.2.5 High-tech manufacturing, %	n/a	n/a
3.1.4 E-participation*	67.9	75	6.3 Knowledge diffusion	24.8	60
3.2 General infrastructure	15.8	119	6.3.1 Intellectual property receipts, % total trade	0.0	75
3.2.1 Electricity output, GWh/mn pop.	⊙ 942.6	98	6.3.2 Production and export complexity	43.8	54 ● ◆
3.2.2 Logistics performance*	24.7	92	6.3.3 High-tech exports, % total trade	2.8	51 ●
3.2.3 Gross capital formation, % GDP	16.3	113 ○ ◇	6.3.4 ICT services exports, % total trade	2.8	50 ●
3.3 Ecological sustainability	24.7	74	Creative outputs	12.0	[90]
3.3.1 GDP/unit of energy use	11.6	53 ●	7.1 Intangible assets	21.3	[75]
3.3.2 Environmental performance*	40.8	70 ◆	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.4	90	7.1.2 Trademarks by origin/bn PPP\$ GDP	57.0	40 ●
Market sophistication	23.6	[99]	7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a
4.1 Credit	22.3	[78]	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	4.0	[105]
4.1.2 Domestic credit to private sector, % GDP	62.1	55 ●	7.2.1 Cultural and creative services exports, % total trade	⊙ 0.0	108 ○
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	4.2	[85]	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 Printing and other media, % manufacturing	n/a	n/a
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	⊙ 0.0	56	7.2.5 Creative goods exports, % total trade	0.7	56 ●
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3 Online creativity	1.4	95
4.2.4 Venture capital received, value, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	2.5	73 ◆
4.3 Trade, diversification, and market scale	44.4	93	7.3.2 Country-code TLDs/th pop. 15-69	0.6	97
4.3.1 Applied tariff rate, weighted avg., %	1.9	60 ◆	7.3.3 GitHub commit pushes received/mn pop. 15-69	2.4	79
4.3.2 Domestic industry diversification	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	0.2	91
4.3.3 Domestic market scale, bn PPP\$	62.3	97			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Estonia

18

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
22	15	High	EUR	1.3	55.7	41,892







	Score/Value	Rank		Score/Value	Rank
 Institutions	82.2	12	 Business sophistication	48.3	25
1.1 Political environment	82.0	17	5.1 Knowledge workers	58.7	22
1.1.1 Political and operational stability*	85.5	10	5.1.1 Knowledge-intensive employment, %	48.2	12
1.1.2 Government effectiveness*	78.6	21	5.1.2 Firms offering formal training, %	40.7	30
1.2 Regulatory environment	86.4	16	5.1.3 GERD performed by business, % GDP	1.0	22
1.2.1 Regulatory quality*	83.3	14	5.1.4 GERD financed by business, %	49.1	32
1.2.2 Rule of law*	81.9	19	5.1.5 Females employed w/advanced degrees, %	27.4	10
1.2.3 Cost of redundancy dismissal	12.9	40	5.2 Innovation linkages	37.7	29
1.3 Business environment	78.0	8	5.2.1 University-industry R&D collaboration†	50.0	47
1.3.1 Policies for doing business†	57.9	44	5.2.2 State of cluster development and depth†	48.7	61
1.3.2 Entrepreneurship policies and culture*	98.1	3	5.2.3 GERD financed by abroad, % GDP	0.2	18
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	19
			5.2.5 Patent families/bn PPP\$ GDP	0.6	29
 Human capital and research	42.7	34	5.3 Knowledge absorption	48.5	18
2.1 Education	63.3	19	5.3.1 Intellectual property payments, % total trade	0.3	82
2.1.1 Expenditure on education, % GDP	5.3	33	5.3.2 High-tech imports, % total trade	8.9	56
2.1.2 Government funding/pupil, secondary, % GDP/cap	20.7	50	5.3.3 ICT services imports, % total trade	11.7	1
2.1.3 School life expectancy, years	15.9	38	5.3.4 FDI net inflows, % GDP	8.5	11
2.1.4 PISA scales in reading, maths and science	525.5	4	5.3.5 Research talent, % in businesses	41.3	34
2.1.5 Pupil-teacher ratio, secondary	9.7	28			
2.2 Tertiary education	46.3	22	 Knowledge and technology outputs	41.2	21
2.2.1 Tertiary enrolment, % gross	74.2	28	6.1 Knowledge creation	26.7	34
2.2.2 Graduates in science and engineering, %	27.5	29	6.1.1 Patents by origin/bn PPP\$ GDP	1.6	48
2.2.3 Tertiary inbound mobility, %	11.1	20	6.1.2 PCT patents by origin/bn PPP\$ GDP	1.0	28
2.3 Research and development (R&D)	18.5	42	6.1.3 Utility models by origin/bn PPP\$ GDP	0.7	28
2.3.1 Researchers, FTE/mn pop.	3,846.1	27	6.1.4 Scientific and technical articles/bn PPP\$ GDP	46.9	13
2.3.2 Gross expenditure on R&D, % GDP	1.8	21	6.1.5 Citable documents H-index	17.9	48
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2 Knowledge impact	55.5	1
2.3.4 QS university ranking, top 3*	16.9	54	6.2.1 Labor productivity growth, %	3.4	13
			6.2.2 New businesses/th pop. 15-64	24.2	1
			6.2.3 Software spending, % GDP	0.2	77
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	19.1	14
			6.2.5 High-tech manufacturing, %	30.6	41
 Infrastructure	61.6	10	6.3 Knowledge diffusion	41.4	26
3.1 Information and communication technologies (ICTs)	93.6	4	6.3.1 Intellectual property receipts, % total trade	0.1	62
3.1.1 ICT access*	93.0	24	6.3.2 Production and export complexity	63.1	29
3.1.2 ICT use*	82.1	16	6.3.3 High-tech exports, % total trade	10.5	17
3.1.3 Government's online service*	99.4	2	6.3.4 ICT services exports, % total trade	5.0	18
3.1.4 E-participation*	100.0	1			
3.2 General infrastructure	41.9	35	 Creative outputs	38.2	24
3.2.1 Electricity output, GWh/mn pop.	4,233.1	49	7.1 Intangible assets	39.6	37
3.2.2 Logistics performance*	58.6	34	7.1.1 Intangible asset intensity, top 15, %	39.9	62
3.2.3 Gross capital formation, % GDP	31.3	21	7.1.2 Trademarks by origin/bn PPP\$ GDP	93.5	16
3.3 Ecological sustainability	49.2	14	7.1.3 Global brand value, top 5,000, % GDP	0.0	77
3.3.1 GDP/unit of energy use	8.9	83	7.1.4 Industrial designs by origin/bn PPP\$ GDP	4.6	26
3.3.2 Environmental performance*	61.4	14	7.2 Creative goods and services	40.0	9
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	10.4	6	7.2.1 Cultural and creative services exports, % total trade	2.2	9
			7.2.2 National feature films/mn pop. 15-69	10.8	2
			7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
			7.2.4 Printing and other media, % manufacturing	1.8	16
			7.2.5 Creative goods exports, % total trade	1.1	41
 Market sophistication	68.8	3	7.3 Online creativity	33.4	21
4.1 Credit	47.4	23	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	11.1	39
4.1.1 Finance for startups and scaleups*	55.5	7	7.3.2 Country-code TLDs/th pop. 15-69	46.3	17
4.1.2 Domestic credit to private sector, % GDP	64.8	54	7.3.3 GitHub commit pushes received/mn pop. 15-69	40.2	14
4.1.3 Loans from microfinance institutions, % GDP	4.4	6	7.3.4 Mobile app creation/bn PPP\$ GDP	36.1	6
4.2 Investment	96.2	2			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.7	7			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.4	1			
4.2.4 Venture capital received, value, % GDP	0.0	1			
4.3 Trade, diversification, and market scale	62.7	39			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	96.6	22			
4.3.3 Domestic market scale, bn PPP\$	55.7	101			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Ethiopia

117

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
100	126	Low	SSA	117.9	298.6	3,024




	Score/Value	Rank		Score/Value	Rank
 Institutions	44.0	110	 Business sophistication	16.8	122
1.1 Political environment	43.5	120	5.1 Knowledge workers	5.3	129 ◊
1.1.1 Political and operational stability*	49.1	123	5.1.1 Knowledge-intensive employment, %	⊙ 4.5	121
1.1.2 Government effectiveness*	37.8	103	5.1.2 Firms offering formal training, %	⊙ 20.8	76
1.2 Regulatory environment	53.2	98	5.1.3 GERD performed by business, % GDP	⊙ 0.0	86
1.2.1 Regulatory quality*	21.0	124	5.1.4 GERD financed by business, %	⊙ 1.5	93
1.2.2 Rule of law*	35.8	86	5.1.5 Females employed w/advanced degrees, %	⊙ 0.3	124
1.2.3 Cost of redundancy dismissal	19.1	82	5.2 Innovation linkages	17.9	109
1.3 Business environment	35.3	[94]	5.2.1 University-industry R&D collaboration†	⊙ 39.6	81
1.3.1 Policies for doing business†	⊙ 35.3	104	5.2.2 State of cluster development and depth†	⊙ 37.7	109
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	⊙ 0.1	45 ●
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	107
			5.2.5 Patent families/bn PPP\$ GDP	0.0	101 ◊
 Human capital and research	8.8	131 ◊	5.3 Knowledge absorption	27.1	80
2.1 Education	21.2	127	5.3.1 Intellectual property payments, % total trade	0.1	104
2.1.1 Expenditure on education, % GDP	⊙ 5.1	38 ●	5.3.2 High-tech imports, % total trade	10.4	37 ●
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊙ 16.8	72	5.3.3 ICT services imports, % total trade	2.8	22 ●◆
2.1.3 School life expectancy, years	⊙ 8.4	115	5.3.4 FDI net inflows, % GDP	3.0	44 ●
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	⊙ 2.2	75
2.1.5 Pupil-teacher ratio, secondary	⊙ 43.7	123 ◊	 Knowledge and technology outputs	15.3	83 ◆
2.2 Tertiary education	4.4	[122]	6.1 Knowledge creation	15.2	58 ●◆
2.2.1 Tertiary enrolment, % gross	⊙ 10.4	111	6.1.1 Patents by origin/bn PPP\$ GDP	0.0	126
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)	1.0	97	6.1.4 Scientific and technical articles/bn PPP\$ GDP	17.1	59 ◆
2.3.1 Researchers, FTE/mn pop.	⊙ 90.5	90 ◆	6.1.5 Citable documents H-index	8.6	82 ◆
2.3.2 Gross expenditure on R&D, % GDP	⊙ 0.3	82	6.2 Knowledge impact	21.6	84 ◆
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ◊	6.2.1 Labor productivity growth, %	5.1	6 ●◆
2.3.4 QS university ranking, top 3*	0.0	72 ◊	6.2.2 New businesses/th pop. 15-64	⊙ 0.5	96
			6.2.3 Software spending, % GDP	0.0	124 ◊
 Infrastructure	23.9	123	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	0.2	131 ◊
3.1 Information and communication technologies (ICTs)	34.2	124	6.2.5 High-tech manufacturing, %	⊙ 13.5	79
3.1.1 ICT access*	36.8	130 ◊	6.3 Knowledge diffusion	9.0	105
3.1.2 ICT use*	30.0	113 ◆	6.3.1 Intellectual property receipts, % total trade	0.0	85
3.1.3 Government's online service*	36.5	116	6.3.2 Production and export complexity	20.1	103
3.1.4 E-participation*	33.3	118	6.3.3 High-tech exports, % total trade	0.3	95 ◆
3.2 General infrastructure	23.5	86	6.3.4 ICT services exports, % total trade	1.1	86
3.2.1 Electricity output, GWh/mn pop.	⊙ 134.9	122	 Creative outputs	4.8	[115]
3.2.2 Logistics performance*	n/a	n/a	7.1 Intangible assets	1.5	[124]
3.2.3 Gross capital formation, % GDP	31.4	20 ●	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	14.0	130	7.1.2 Trademarks by origin/bn PPP\$ GDP	5.5	117
3.3.1 GDP/unit of energy use	5.2	119	7.1.3 Global brand value, top 5,000, % GDP	3.0	72 ◆
3.3.2 Environmental performance*	31.8	100	7.1.4 Industrial designs by origin/bn PPP\$ GDP	n/a	n/a
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.0	132 ◊	7.2 Creative goods and services	16.2	[64]
			7.2.1 Cultural and creative services exports, % total trade	0.0	107
 Market sophistication	19.4	113	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	n/a	[n/a]	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 Printing and other media, % manufacturing	⊙ 1.8	18 ●
4.1.2 Domestic credit to private sector, % GDP	n/a	n/a	7.2.5 Creative goods exports, % total trade	0.2	77 ◆
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	0.1	130
4.2 Investment	0.5	111 ◊	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.0	131 ◊
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	0.0	132 ◊
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	94	7.3.3 GitHub commit pushes received/mn pop. 15-69	0.2	120
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	95 ◊	7.3.4 Mobile app creation/bn PPP\$ GDP	0.0	106
4.2.4 Venture capital received, value, % GDP	0.0	98			
4.3 Trade, diversification, and market scale	38.3	103 ◆			
4.3.1 Applied tariff rate, weighted avg., %	⊙ 12.1	127 ◊			
4.3.2 Domestic industry diversification	⊙ 86.8	55 ◆			
4.3.3 Domestic market scale, bn PPP\$	298.6	57 ●◆			

NOTES: ● indicates a strength; ◊ a weakness; ◆ an income group strength; ◊ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Finland

9

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
9	6	High	EUR	5.5	293.6	53,084







	Score/ Value	Rank		Score/ Value	Rank
 Institutions	82.5	11	 Business sophistication	61.6	5 ●
1.1 Political environment	88.6	7	5.1 Knowledge workers	65.7	13
1.1.1 Political and operational stability*	85.5	10	5.1.1 Knowledge-intensive employment, %	47.2	17
1.1.2 Government effectiveness*	91.7	3 ●◆	5.1.2 Firms offering formal training, %	50.2	20
1.2 Regulatory environment	95.7	3 ●	5.1.3 GERD performed by business, % GDP	2.0	10
1.2.1 Regulatory quality*	91.2	3 ●	5.1.4 GERD financed by business, %	54.3	22
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	30	5.2 Innovation linkages	66.4	3 ●◆
1.3 Business environment	63.1	28	5.2.1 University-industry R&D collaboration†	67.0	11
1.3.1 Policies for doing business†	71.5	17	5.2.2 State of cluster development and depth†	61.2	24
1.3.2 Entrepreneurship policies and culture*	54.7	28	5.2.3 GERD financed by abroad, % GDP	0.4	6 ◆
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.2	12
			5.2.5 Patent families/bn PPP\$ GDP	6.0	5 ●
 Human capital and research	60.6	8	5.3 Knowledge absorption	52.7	9
2.1 Education	68.4	9 ◆	5.3.1 Intellectual property payments, % total trade	1.0	36
2.1.1 Expenditure on education, % GDP	6.3	15	5.3.2 High-tech imports, % total trade	7.5	80 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.8	34	5.3.3 ICT services imports, % total trade	5.5	1 ●◆
2.1.3 School life expectancy, years	19.1	7	5.3.4 FDI net inflows, % GDP	0.4	118 ○
2.1.4 PISA scales in reading, maths and science	516.4	8	5.3.5 Research talent, % in businesses	59.1	13
2.1.5 Pupil-teacher ratio, secondary	12.9	55 ○			
2.2 Tertiary education	48.5	15	 Knowledge and technology outputs	59.6	4 ●◆
2.2.1 Tertiary enrolment, % gross	93.0	8	6.1 Knowledge creation	68.7	5 ●
2.2.2 Graduates in science and engineering, %	27.9	26	6.1.1 Patents by origin/bn PPP\$ GDP	12.7	7 ◆
2.2.3 Tertiary inbound mobility, %	8.1	32	6.1.2 PCT patents by origin/bn PPP\$ GDP	6.5	1 ●◆
2.3 Research and development (R&D)	64.8	13	6.1.3 Utility models by origin/bn PPP\$ GDP	1.1	20
2.3.1 Researchers, FTE/mn pop.	7,527.4	4 ●◆	6.1.4 Scientific and technical articles/bn PPP\$ GDP	55.5	8
2.3.2 Gross expenditure on R&D, % GDP	2.9	11	6.1.5 Citable documents H-index	42.6	19
2.3.3 Global corporate R&D investors, top 3, mn USD	74.3	11	6.2 Knowledge impact	40.3	22
2.3.4 QS university ranking, top 3*	50.1	18	6.2.1 Labor productivity growth, %	0.2	84 ○
			6.2.2 New businesses/th pop. 15-64	5.9	26
			6.2.3 Software spending, % GDP	0.5	19
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	10.5	28
			6.2.5 High-tech manufacturing, %	44.6	19
 Infrastructure	65.9	3 ●◆	6.3 Knowledge diffusion	70.0	2 ●◆
3.1 Information and communication technologies (ICTs)	92.7	5 ●	6.3.1 Intellectual property receipts, % total trade	3.2	8
3.1.1 ICT access*	92.3	26	6.3.2 Production and export complexity	76.3	13
3.1.2 ICT use*	86.2	7	6.3.3 High-tech exports, % total trade	4.6	38
3.1.3 Government's online service*	97.1	3 ●◆	6.3.4 ICT services exports, % total trade	13.1	5 ●◆
3.1.4 E-participation*	95.2	14			
3.2 General infrastructure	61.2	8	 Creative outputs	39.0	18
3.2.1 Electricity output, GWh/mn pop.	12,468.4	10	7.1 Intangible assets	46.0	26
3.2.2 Logistics performance*	89.3	10	7.1.1 Intangible asset intensity, top 15, %	71.2	18
3.2.3 Gross capital formation, % GDP	24.2	59 ○	7.1.2 Trademarks by origin/bn PPP\$ GDP	43.1	54
3.3 Ecological sustainability	43.7	25	7.1.3 Global brand value, top 5,000, % GDP	112.8	16
3.3.1 GDP/unit of energy use	7.9	94 ○	7.1.4 Industrial designs by origin/bn PPP\$ GDP	4.4	28
3.3.2 Environmental performance*	76.5	3 ●◆	7.2 Creative goods and services	27.0	40 ◆
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	5.8	18 ◆	7.2.1 Cultural and creative services exports, % total trade	0.6	49 ○
			7.2.2 National feature films/mn pop. 15-69	8.5	7
			7.2.3 Entertainment and media market/th pop. 15-69	56.5	10
			7.2.4 Printing and other media, % manufacturing	0.9	58 ○
			7.2.5 Creative goods exports, % total trade	0.5	62 ○
 Market sophistication	51.7	17	7.3 Online creativity	36.8	18
4.1 Credit	51.6	13	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	29.7	21
4.1.1 Finance for startups and scaleups*	65.5	1 ●◆	7.3.2 Country-code TLDs/th pop. 15-69	40.2	18
4.1.2 Domestic credit to private sector, % GDP	101.0	27	7.3.3 GitHub commit pushes received/mn pop. 15-69	48.2	11
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	28.9	9
4.2 Investment	38.5	18			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.2	21			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	10			
4.2.4 Venture capital received, value, % GDP	0.0	19			
4.3 Trade, diversification, and market scale	65.1	28			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	98.3	12			
4.3.3 Domestic market scale, bn PPP\$	293.6	58 ○			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

France

12

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
11	13	High	EUR	65.4	3,322.3	50,876

		Score/ Value	Rank			Score/ Value	Rank
 Institutions		77.0	18	 Business sophistication		53.2	17
1.1	Political environment	76.5	29	5.1	Knowledge workers	68.4	8 ●
1.1.1	Political and operational stability*	76.4	37	5.1.1	Knowledge-intensive employment, %	47.4	15
1.1.2	Government effectiveness*	76.6	24	5.1.2	Firms offering formal training, %	67.9	3 ●
1.2	Regulatory environment	83.9	23	5.1.3	GERD performed by business, % GDP	1.6	15
1.2.1	Regulatory quality*	74.8	25	5.1.4	GERD financed by business, %	56.7	18
1.2.2	Rule of law*	80.5	22	5.1.5	Females employed w/advanced degrees, %	24.8	19
1.2.3	Cost of redundancy dismissal	13.0	41	5.2	Innovation linkages	41.8	25 ◇
1.3	Business environment	70.7	16	5.2.1	University-industry R&D collaboration†	49.8	48 ○ ◇
1.3.1	Policies for doing business†	62.0	34	5.2.2	State of cluster development and depth†	57.7	32
1.3.2	Entrepreneurship policies and culture*	79.5	8	5.2.3	GERD financed by abroad, % GDP	0.2	22
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	26 ◇
				5.2.5	Patent families/bn PPP\$ GDP	3.0	13
				5.3	Knowledge absorption	49.3	17
				5.3.1	Intellectual property payments, % total trade	1.5	24
				5.3.2	High-tech imports, % total trade	10.0	42
				5.3.3	ICT services imports, % total trade	3.0	16
				5.3.4	FDI net inflows, % GDP	1.8	81 ○
				5.3.5	Research talent, % in businesses	62.9	9
 Human capital and research		57.3	15	 Knowledge and technology outputs		45.5	15
2.1	Education	61.0	33	6.1	Knowledge creation	44.9	17
2.1.1	Expenditure on education, % GDP	5.4	30	6.1.1	Patents by origin/bn PPP\$ GDP	7.7	13
2.1.2	Government funding/pupil, secondary, % GDP/cap	25.5	21	6.1.2	PCT patents by origin/bn PPP\$ GDP	2.2	15
2.1.3	School life expectancy, years	15.8	39	6.1.3	Utility models by origin/bn PPP\$ GDP	0.3	45 ○
2.1.4	PISA scales in reading, maths and science	493.7	25	6.1.4	Scientific and technical articles/bn PPP\$ GDP	25.5	36
2.1.5	Pupil-teacher ratio, secondary	13.4	60 ○	6.1.5	Citable documents H-index	78.6	5 ● ◆
2.2	Tertiary education	41.5	33	6.2	Knowledge impact	41.3	21
2.2.1	Tertiary enrolment, % gross	68.4	37	6.2.1	Labor productivity growth, %	0.1	85 ○
2.2.2	Graduates in science and engineering, %	25.9	35	6.2.2	New businesses/th pop. 15-64	5.3	28
2.2.3	Tertiary inbound mobility, %	9.2	28	6.2.3	Software spending, % GDP	0.5	14
2.3	Research and development (R&D)	69.3	9 ●	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	7.3	38
2.3.1	Researchers, FTE/mn pop.	4,926.2	17	6.2.5	High-tech manufacturing, %	52.1	10
2.3.2	Gross expenditure on R&D, % GDP	2.4	14	6.3	Knowledge diffusion	50.4	18
2.3.3	Global corporate R&D investors, top 3, mn USD	84.7	7 ●	6.3.1	Intellectual property receipts, % total trade	1.9	13
2.3.4	QS university ranking, top 3*	73.5	10 ●	6.3.2	Production and export complexity	72.4	19
				6.3.3	High-tech exports, % total trade	11.2	15
				6.3.4	ICT services exports, % total trade	2.5	54 ○
 Infrastructure		59.0	17	 Creative outputs		52.5	6 ●
3.1	Information and communication technologies (ICTs)	88.1	18	7.1	Intangible assets	76.9	3 ● ◆
3.1.1	ICT access*	88.7	58 ○ ◇	7.1.1	Intangible asset intensity, top 15, %	91.6	3 ● ◆
3.1.2	ICT use*	85.1	9 ●	7.1.2	Trademarks by origin/bn PPP\$ GDP	99.0	13 ● ◆
3.1.3	Government's online service*	88.2	18	7.1.3	Global brand value, top 5,000, % GDP	169.3	6 ●
3.1.4	E-participation*	90.5	18	7.1.4	Industrial designs by origin/bn PPP\$ GDP	11.7	8 ● ◆
3.2	General infrastructure	52.4	21	7.2	Creative goods and services	27.7	36 ◇
3.2.1	Electricity output, GWh/mn pop.	7,803.7	21	7.2.1	Cultural and creative services exports, % total trade	1.1	26
3.2.2	Logistics performance*	83.3	16	7.2.2	National feature films/mn pop. 15-69	5.4	21
3.2.3	Gross capital formation, % GDP	25.7	47 ○	7.2.3	Entertainment and media market/th pop. 15-69	48.5	16
3.3	Ecological sustainability	36.4	39	7.2.4	Printing and other media, % manufacturing	0.9	54 ○
3.3.1	GDP/unit of energy use	12.3	46 ○	7.2.5	Creative goods exports, % total trade	1.6	34
3.3.2	Environmental performance*	62.5	12	7.3	Online creativity	28.5	25
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	2.1	43	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	42.2	17
				7.3.2	Country-code TLDs/th pop. 15-69	25.4	27
				7.3.3	GitHub commit pushes received/mn pop. 15-69	28.3	25
				7.3.4	Mobile app creation/bn PPP\$ GDP	18.1	15
 Market sophistication		58.0	10 ●				
4.1	Credit	47.3	24				
4.1.1	Finance for startups and scaleups*	48.5	17				
4.1.2	Domestic credit to private sector, % GDP	122.4	20				
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a				
4.2	Investment	39.9	15				
4.2.1	Market capitalization, % GDP	92.7	18				
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.2	20				
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.1	9 ●				
4.2.4	Venture capital received, value, % GDP	0.0	14				
4.3	Trade, diversification, and market scale	86.7	8 ● ◆				
4.3.1	Applied tariff rate, weighted avg., %	1.5	20				
4.3.2	Domestic industry diversification	95.0	26				
4.3.3	Domestic market scale, bn PPP\$	3,322.3	9 ● ◆				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Georgia

74

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
82	61	Upper middle	NAWA	4.0	61.6	16,590

Institutions		Score/Value	Rank
1.1 Political environment		70.7	30
1.1.1	Political and operational stability*	67.0	46
1.1.2	Government effectiveness*	67.3	71
1.2 Regulatory environment		80.9	29
1.2.1	Regulatory quality*	72.6	28
1.2.2	Rule of law*	53.5	52
1.2.3	Cost of redundancy dismissal	8.6	16
1.3 Business environment		64.3	[25]
1.3.1	Policies for doing business [†]	64.3	28
1.3.2	Entrepreneurship policies and culture*	n/a	n/a

Human capital and research		Score/Value	Rank
2.1 Education		30.0	70
2.1.1	Expenditure on education, % GDP	53.4	61
2.1.2	Government funding/pupil, secondary, % GDP/cap	3.9	86
2.1.3	School life expectancy, years	n/a	n/a
2.1.4	PISA scales in reading, maths and science	15.6	45
2.1.5	Pupil-teacher ratio, secondary	386.7	70
2.2 Tertiary education		6.5	2
2.2.1	Tertiary enrolment, % gross	32.5	61
2.2.2	Graduates in science and engineering, %	66.7	41
2.2.3	Tertiary inbound mobility, %	18.6	80
2.3 Research and development (R&D)		8.7	30
2.3.1	Researchers, FTE/mn pop.	4.1	75
2.3.2	Gross expenditure on R&D, % GDP	1,712.4	44
2.3.3	Global corporate R&D investors, top 3, mn USD	0.3	77
2.3.4	QS university ranking, top 3*	0.0	38
		0.0	72

Infrastructure		Score/Value	Rank
3.1 Information and communication technologies (ICTs)		38.6	83
3.1.1	ICT access*	70.2	75
3.1.2	ICT use*	92.2	27
3.1.3	Government's online service*	65.6	61
3.1.4	E-participation*	58.8	88
3.2 General infrastructure		64.3	80
3.2.1	Electricity output, GWh/mn pop.	22.8	90
3.2.2	Logistics performance*	3,008.1	63
3.2.3	Gross capital formation, % GDP	18.1	109
3.3 Ecological sustainability		25.6	50
3.3.1	GDP/unit of energy use	22.9	80
3.3.2	Environmental performance*	10.5	64
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	39.1	74
		0.3	97

Market sophistication		Score/Value	Rank
4.1 Credit		30.8	72
4.1.1	Finance for startups and scaleups*	32.5	43
4.1.2	Domestic credit to private sector, % GDP	n/a	n/a
4.1.3	Loans from microfinance institutions, % GDP	79.9	42
4.2 Investment		2.4	13
4.2.1	Market capitalization, % GDP	2.8	[97]
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	64
4.2.4	Venture capital 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., %	57.2	64
4.3.2	Domestic industry diversification	0.2	4
4.3.3	Domestic market scale, bn PPP\$	71.7	83
		61.6	98

Business sophistication		Score/Value	Rank
5.1 Knowledge workers		27.6	64
5.1.1	Knowledge-intensive employment, %	33.5	60
5.1.2	Firms offering formal training, %	24.7	58
5.1.3	GERD performed by business, % GDP	32.0	49
5.1.4	GERD financed by business, %	n/a	n/a
5.1.5	Females employed w/advanced degrees, %	1.7	90
5.2 Innovation linkages		18.1	40
5.2.1	University-industry R&D collaboration [†]	22.8	68
5.2.2	State of cluster development and depth [†]	45.6	57
5.2.3	GERD financed by abroad, % GDP	50.2	49
5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	56
5.2.5	Patent families/bn PPP\$ GDP	0.0	48
5.3 Knowledge absorption		0.1	67
5.3.1	Intellectual property payments, % total trade	26.5	83
5.3.2	High-tech imports, % total trade	0.5	71
5.3.3	ICT services imports, % total trade	6.9	94
5.3.4	FDI net inflows, % GDP	1.1	84
5.3.5	Research talent, % in businesses	6.1	14
		n/a	n/a

Knowledge and technology outputs		Score/Value	Rank
6.1 Knowledge creation		19.1	75
6.1.1	Patents by origin/bn PPP\$ GDP	13.8	61
6.1.2	PCT patents by origin/bn PPP\$ GDP	1.5	51
6.1.3	Utility models by origin/bn PPP\$ GDP	0.3	41
6.1.4	Scientific and technical articles/bn PPP\$ GDP	1.0	23
6.1.5	Citable documents H-index	14.7	65
6.2 Knowledge impact		10.2	71
6.2.1	Labor productivity growth, %	26.1	69
6.2.2	New businesses/th pop. 15-64	2.9	22
6.2.3	Software spending, % GDP	7.5	19
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	0.1	93
6.2.5	High-tech manufacturing, %	3.7	68
6.3 Knowledge diffusion		11.0	87
6.3.1	Intellectual property receipts, % total trade	17.2	82
6.3.2	Production and export complexity	0.0	96
6.3.3	High-tech exports, % total trade	41.3	62
6.3.4	ICT services exports, % total trade	0.9	78
		1.5	77








Creative outputs		Score/Value	Rank
7.1 Intangible assets		13.4	86
7.1.1	Intangible asset intensity, top 15, %	17.8	83
7.1.2	Trademarks by origin/bn PPP\$ GDP	n/a	n/a
7.1.3	Global brand value, top 5,000, % GDP	47.1	51
7.1.4	Industrial designs by origin/bn PPP\$ GDP	9.4	58
7.2 Creative goods and services		2.6	40
7.2.1	Cultural and creative services exports, % total trade	14.1	68
7.2.2	National feature films/mn pop. 15-69	0.2	72
7.2.3	Entertainment and media market/th pop. 15-69	3.6	33
7.2.4	Printing and other media, % manufacturing	n/a	n/a
7.2.5	Creative goods exports, % total trade	1.4	28
7.3 Online creativity		0.1	94
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	3.8	68
7.3.2	Country-code TLDs/th pop. 15-69	1.8	81
7.3.3	GitHub commit pushes received/mn pop. 15-69	5.6	52
7.3.4	Mobile app creation/bn PPP\$ GDP	5.4	56
		2.3	67

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Germany






8

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
7	12	High	EUR	83.9	4,843.4	58,150

	Score/ Value	Rank		Score/ Value	Rank
 Institutions	76.5	20	 Business sophistication	52.7	19
1.1 Political environment	80.4	20	5.1 Knowledge workers	60.7	21
1.1.1 Political and operational stability*	81.8	24	5.1.1 Knowledge-intensive employment, %	45.7	21
1.1.2 Government effectiveness*	79.0	20	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	79.3	30	5.1.3 GERD performed by business, % GDP	2.1	9
1.2.1 Regulatory quality*	84.4	13	5.1.4 GERD financed by business, %	64.5	8
1.2.2 Rule of law*	86.5	15	5.1.5 Females employed w/advanced degrees, %	14.9	51 ○ ◇
1.2.3 Cost of redundancy dismissal	21.6	92 ○ ◇	5.2 Innovation linkages	52.2	13
1.3 Business environment	69.6	20	5.2.1 University-industry R&D collaboration†	64.9	16
1.3.1 Policies for doing business†	72.2	14	5.2.2 State of cluster development and depth†	68.5	7 ●
1.3.2 Entrepreneurship policies and culture*	67.1	15	5.2.3 GERD financed by abroad, % GDP	0.2	15
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	27 ○ ◇
			5.2.5 Patent families/bn PPP\$ GDP	5.2	6 ●
 Human capital and research	64.1	2 ● ◆	5.3 Knowledge absorption	45.4	25
2.1 Education	62.2	22	5.3.1 Intellectual property payments, % total trade	1.0	41
2.1.1 Expenditure on education, % GDP	5.0	40 ○	5.3.2 High-tech imports, % total trade	10.4	35
2.1.2 Government funding/pupil, secondary, % GDP/cap	23.7	28	5.3.3 ICT services imports, % total trade	2.7	23
2.1.3 School life expectancy, years	17.0	18	5.3.4 FDI net inflows, % GDP	2.9	48
2.1.4 PISA scales in reading, maths and science	500.4	18	5.3.5 Research talent, % in businesses	60.2	12
2.1.5 Pupil-teacher ratio, secondary	11.8	48			
2.2 Tertiary education	54.7	7 ● ◆	 Knowledge and technology outputs	54.8	9
2.2.1 Tertiary enrolment, % gross	73.5	29	6.1 Knowledge creation	68.3	7 ●
2.2.2 Graduates in science and engineering, %	35.8	7 ◆	6.1.1 Patents by origin/bn PPP\$ GDP	15.0	1 ● ◆
2.2.3 Tertiary inbound mobility, %	10.1	25	6.1.2 PCT patents by origin/bn PPP\$ GDP	3.6	10
2.3 Research and development (R&D)	75.3	5 ●	6.1.3 Utility models by origin/bn PPP\$ GDP	2.0	11
2.3.1 Researchers, FTE/mn pop.	5,393.1	14	6.1.4 Scientific and technical articles/bn PPP\$ GDP	27.7	33
2.3.2 Gross expenditure on R&D, % GDP	3.1	9	6.1.5 Citable documents H-index	87.4	3 ● ◆
2.3.3 Global corporate R&D investors, top 3, mn USD	94.0	2 ● ◆	6.2 Knowledge impact	40.2	24
2.3.4 QS university ranking, top 3*	72.2	11	6.2.1 Labor productivity growth, %	0.0	88 ○
			6.2.2 New businesses/th pop. 15-64	1.4	73 ○ ◇
			6.2.3 Software spending, % GDP	0.5	18
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	10.9	27
			6.2.5 High-tech manufacturing, %	56.8	7
 Infrastructure	57.7	23	6.3 Knowledge diffusion	55.9	10
3.1 Information and communication technologies (ICTs)	80.0	48 ○ ◇	6.3.1 Intellectual property receipts, % total trade	2.2	11
3.1.1 ICT access*	91.6	32	6.3.2 Production and export complexity	90.1	3 ● ◆
3.1.2 ICT use*	79.7	23	6.3.3 High-tech exports, % total trade	11.7	14
3.1.3 Government's online service*	73.5	59 ○ ◇	6.3.4 ICT services exports, % total trade	2.2	59 ○
3.1.4 E-participation*	75.0	57 ○ ◇			
3.2 General infrastructure	54.5	17	 Creative outputs	52.3	7 ●
3.2.1 Electricity output, GWh/mn pop.	6,919.7	28	7.1 Intangible assets	67.8	7 ●
3.2.2 Logistics performance*	100.0	1 ● ◆	7.1.1 Intangible asset intensity, top 15, %	79.6	10
3.2.3 Gross capital formation, % GDP	22.3	76 ○	7.1.2 Trademarks by origin/bn PPP\$ GDP	70.4	27
3.3 Ecological sustainability	38.6	32	7.1.3 Global brand value, top 5,000, % GDP	148.2	9
3.3.1 GDP/unit of energy use	14.3	28	7.1.4 Industrial designs by origin/bn PPP\$ GDP	12.0	7 ● ◆
3.3.2 Environmental performance*	62.4	13	7.2 Creative goods and services	28.4	34
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	2.2	39	7.2.1 Cultural and creative services exports, % total trade	1.1	30
			7.2.2 National feature films/mn pop. 15-69	4.1	29
			7.2.3 Entertainment and media market/th pop. 15-69	51.7	12
			7.2.4 Printing and other media, % manufacturing	0.9	53 ○
			7.2.5 Creative goods exports, % total trade	2.2	25
 Market sophistication	53.7	14	7.3 Online creativity	45.2	10
4.1 Credit	40.0	31	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	51.9	13
4.1.1 Finance for startups and scaleups*	48.3	18	7.3.2 Country-code TLDs/th pop. 15-69	84.0	6 ● ◆
4.1.2 Domestic credit to private sector, % GDP	85.7	36	7.3.3 GitHub commit pushes received/mn pop. 15-69	36.8	19
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	8.0	47
4.2 Investment	25.4	30			
4.2.1 Market capitalization, % GDP	52.5	36 ○			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.2	24			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	22			
4.2.4 Venture capital received, value, % GDP	0.0	23			
4.3 Trade, diversification, and market scale	95.8	2 ● ◆			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	97.0	19			
4.3.3 Domestic market scale, bn PPP\$	4,843.4	1 ● ◆			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ○ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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\$
88	105	Lower middle	SSA	31.7	193.6	6,190








	Score/Value	Rank		Score/Value	Rank
 Institutions	46.9	100	 Business sophistication	23.1	88
1.1 Political environment	55.9	79	5.1 Knowledge workers	22.6	[86]
1.1.1 Political and operational stability*	65.5	74	5.1.1 Knowledge-intensive employment, %	9.6	108
1.1.2 Government effectiveness*	46.4	78	5.1.2 Firms offering formal training, %	40.1	33 ●
1.2 Regulatory environment	31.1	128 ○ ◇	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	44.9	73 ◆	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	45.1	61 ◆	5.1.5 Females employed w/advanced degrees, %	2.9	101
1.2.3 Cost of redundancy dismissal	49.8	128 ○ ◇	5.2 Innovation linkages	25.7	52 ● ◆
1.3 Business environment	53.5	[51]	5.2.1 University-industry R&D collaboration†	44.8	62
1.3.1 Policies for doing business†	53.5	53 ●	5.2.2 State of cluster development and depth†	52.8	42 ●
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	79
			5.2.5 Patent families/bn PPP\$ GDP	0.0	101 ○ ◇
 Human capital and research	18.5	101	5.3 Knowledge absorption	20.9	106
2.1 Education	44.5	82	5.3.1 Intellectual property payments, % total trade	0.6	60
2.1.1 Expenditure on education, % GDP	3.9	82 ○	5.3.2 High-tech imports, % total trade	2.8	127 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap	18.9	59 ○	5.3.3 ICT services imports, % total trade	0.6	109
2.1.3 School life expectancy, years	12.0	91	5.3.4 FDI net inflows, % GDP	4.3	22 ●
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	14.5	68	 Knowledge and technology outputs	11.3	103
2.2 Tertiary education	10.7	108	6.1 Knowledge creation	5.8	100
2.2.1 Tertiary enrolment, % gross	18.7	99	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	119
2.2.2 Graduates in science and engineering, %	15.2	96	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	96
2.2.3 Tertiary inbound mobility, %	1.0	88	6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	75 ○
2.3 Research and development (R&D)	0.2	114	6.1.4 Scientific and technical articles/bn PPP\$ GDP	14.3	66
2.3.1 Researchers, FTE/mn pop.	89.1	91 ○	6.1.5 Citable documents H-index	8.5	83
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	6.2 Knowledge impact	16.0	105
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2.1 Labor productivity growth, %	1.8	39 ●
2.3.4 QS university ranking, top 3*	0.0	72 ○ ◇	6.2.2 New businesses/th pop. 15-64	0.9	84 ○
			6.2.3 Software spending, % GDP	0.0	121 ○ ◇
 Infrastructure	34.3	96	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	0.6	115
3.1 Information and communication technologies (ICTs)	62.3	91	6.2.5 High-tech manufacturing, %	11.0	86 ○
3.1.1 ICT access*	72.4	93	6.3 Knowledge diffusion	12.0	96
3.1.2 ICT use*	50.1	93	6.3.1 Intellectual property receipts, % total trade	0.7	26 ● ◆
3.1.3 Government's online service*	63.5	80	6.3.2 Production and export complexity	21.6	98
3.1.4 E-participation*	63.1	82	6.3.3 High-tech exports, % total trade	0.0	126 ○
3.2 General infrastructure	16.6	116	6.3.4 ICT services exports, % total trade	0.4	108
3.2.1 Electricity output, GWh/mn pop.	634.4	104	 Creative outputs	16.3	[77]
3.2.2 Logistics performance*	24.2	97	7.1 Intangible assets	16.4	[87]
3.2.3 Gross capital formation, % GDP	18.6	103	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	24.1	77	7.1.2 Trademarks by origin/bn PPP\$ GDP	4.8	120
3.3.1 GDP/unit of energy use	15.0	25 ● ◆	7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a
3.3.2 Environmental performance*	27.7	124 ○	7.1.4 Industrial designs by origin/bn PPP\$ GDP	5.2	22 ●
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.4	89	7.2 Creative goods and services	31.8	[22]
			7.2.1 Cultural and creative services exports, % total trade	2.5	7 ● ◆
 Market sophistication	16.2	119	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	1.9	130 ○ ◇	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 Printing and other media, % manufacturing	1.6	20 ●
4.1.2 Domestic credit to private sector, % GDP	11.5	125 ○	7.2.5 Creative goods exports, % total trade	0.0	118
4.1.3 Loans from microfinance institutions, % GDP	0.1	54	7.3 Online creativity	0.4	113
4.2 Investment	6.2	68	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.6	100
4.2.1 Market capitalization, % GDP	13.5	69	7.3.2 Country-code TLDs/th pop. 15-69	0.0	124
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	55	7.3.3 GitHub commit pushes received/mn pop. 15-69	1.0	101
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	45	7.3.4 Mobile app creation/bn PPP\$ GDP	0.0	113 ○
4.2.4 Venture capital received, value, % GDP	0.0	61			
4.3 Trade, diversification, and market scale	40.6	98			
4.3.1 Applied tariff rate, weighted avg., %	10.5	121			
4.3.2 Domestic industry diversification	85.7	58 ○			
4.3.3 Domestic market scale, bn PPP\$	193.6	70			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ○ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Greece

44

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
49	44	High	EUR	10.4	339.7	31,821








	Score/ Value	Rank		Score/ Value	Rank
 Institutions	55.2	69	 Business sophistication	30.7	55
1.1 Political environment	66.0	49	5.1 Knowledge workers	39.6	48
1.1.1 Political and operational stability*	72.7	46	5.1.1 Knowledge-intensive employment, %	31.7	46
1.1.2 Government effectiveness*	59.3	44	5.1.2 Firms offering formal training, %	21.6	75
1.2 Regulatory environment	70.5	47	5.1.3 GERD performed by business, % GDP	0.7	34
1.2.1 Regulatory quality*	58.7	44	5.1.4 GERD financed by business, %	40.2	43
1.2.2 Rule of law*	54.4	49	5.1.5 Females employed w/advanced degrees, %	19.7	34
1.2.3 Cost of redundancy dismissal	15.9	67	5.2 Innovation linkages	25.1	55
1.3 Business environment	29.1	112	5.2.1 University-industry R&D collaboration [†]	32.0	112
1.3.1 Policies for doing business [†]	41.1	92	5.2.2 State of cluster development and depth [†]	34.7	118
1.3.2 Entrepreneurship policies and culture*	17.1	59	5.2.3 GERD financed by abroad, % GDP	0.2	19
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	53
			5.2.5 Patent families/bn PPP\$ GDP	0.4	33
 Human capital and research	45.4	31	5.3 Knowledge absorption	27.5	78
2.1 Education	59.9	38	5.3.1 Intellectual property payments, % total trade	0.4	72
2.1.1 Expenditure on education, % GDP	3.6	93	5.3.2 High-tech imports, % total trade	7.1	91
2.1.2 Government funding/pupil, secondary, % GDP/cap	21.6	41	5.3.3 ICT services imports, % total trade	1.4	71
2.1.3 School life expectancy, years	20.0	3	5.3.4 FDI net inflows, % GDP	2.0	74
2.1.4 PISA scales in reading, maths and science	453.5	43	5.3.5 Research talent, % in businesses	27.6	45
2.1.5 Pupil-teacher ratio, secondary	8.6	16	 Knowledge and technology outputs	28.3	46
2.2 Tertiary education	56.6	6	6.1 Knowledge creation	22.8	42
2.2.1 Tertiary enrolment, % gross	148.5	1	6.1.1 Patents by origin/bn PPP\$ GDP	1.7	42
2.2.2 Graduates in science and engineering, %	27.3	30	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.3	43
2.2.3 Tertiary inbound mobility, %	3.5	63	6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	70
2.3 Research and development (R&D)	19.7	40	6.1.4 Scientific and technical articles/bn PPP\$ GDP	42.8	18
2.3.1 Researchers, FTE/mn pop.	4,010.4	26	6.1.5 Citable documents H-index	33.8	29
2.3.2 Gross expenditure on R&D, % GDP	1.5	27	6.2 Knowledge impact	37.7	31
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2.1 Labor productivity growth, %	-0.1	92
2.3.4 QS university ranking, top 3*	22.4	45	6.2.2 New businesses/th pop. 15-64	1.8	64
			6.2.3 Software spending, % GDP	0.6	7
 Infrastructure	50.4	46	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	22.3	10
3.1 Information and communication technologies (ICTs)	78.4	51	6.2.5 High-tech manufacturing, %	18.1	66
3.1.1 ICT access*	89.3	52	6.3 Knowledge diffusion	24.3	62
3.1.2 ICT use*	75.0	42	6.3.1 Intellectual property receipts, % total trade	0.1	58
3.1.3 Government's online service*	70.6	65	6.3.2 Production and export complexity	44.8	50
3.1.4 E-participation*	78.6	50	6.3.3 High-tech exports, % total trade	3.1	48
3.2 General infrastructure	29.6	63	6.3.4 ICT services exports, % total trade	1.7	71
3.2.1 Electricity output, GWh/mn pop.	4,316.5	48	 Creative outputs	24.0	54
3.2.2 Logistics performance*	53.5	41	7.1 Intangible assets	31.0	58
3.2.3 Gross capital formation, % GDP	14.2	120	7.1.1 Intangible asset intensity, top 15, %	49.7	52
3.3 Ecological sustainability	43.3	27	7.1.2 Trademarks by origin/bn PPP\$ GDP	n/a	n/a
3.3.1 GDP/unit of energy use	14.2	30	7.1.3 Global brand value, top 5,000, % GDP	5.7	67
3.3.2 Environmental performance*	56.2	28	7.1.4 Industrial designs by origin/bn PPP\$ GDP	3.7	32
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	5.6	19	7.2 Creative goods and services	21.0	55
			7.2.1 Cultural and creative services exports, % total trade	0.7	39
 Market sophistication	33.1	64	7.2.2 National feature films/mn pop. 15-69	4.8	26
4.1 Credit	32.1	46	7.2.3 Entertainment and media market/th pop. 15-69	22.5	27
4.1.1 Finance for startups and scaleups*	33.8	51	7.2.4 Printing and other media, % manufacturing	1.1	45
4.1.2 Domestic credit to private sector, % GDP	82.3	40	7.2.5 Creative goods exports, % total trade	1.5	36
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	12.9	40
4.2 Investment	5.0	76	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	13.2	34
4.2.1 Market capitalization, % GDP	23.8	57	7.3.2 Country-code TLDs/th pop. 15-69	20.5	30
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.1	43	7.3.3 GitHub commit pushes received/mn pop. 15-69	14.1	38
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	90	7.3.4 Mobile app creation/bn PPP\$ GDP	4.1	61
4.2.4 Venture capital received, value, % GDP	0.0	63			
4.3 Trade, diversification, and market scale	62.2	45			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	88.7	48			
4.3.3 Domestic market scale, bn PPP\$	339.7	54			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Guatemala

110

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
96	117	Upper middle	LCN	18.2	163.1	8,895

	Score/Value	Rank		Score/Value	Rank
 Institutions	39.2	122	 Business sophistication	22.8	89
1.1 Political environment	45.6	110	5.1 Knowledge workers	20.4	94
1.1.1 Political and operational stability*	56.4	108	5.1.1 Knowledge-intensive employment, %	9.3	109
1.1.2 Government effectiveness*	34.9	108	5.1.2 Firms offering formal training, %	55.7	13
1.2 Regulatory environment	46.1	116	5.1.3 GERD performed by business, % GDP	0.0	89
1.2.1 Regulatory quality*	40.6	85	5.1.4 GERD financed by business, %	11.1	74
1.2.2 Rule of law*	18.8	122	5.1.5 Females employed w/advanced degrees, %	2.7	102
1.2.3 Cost of redundancy dismissal	27.0	108	5.2 Innovation linkages	17.6	110
1.3 Business environment	25.8	118	5.2.1 University-industry R&D collaboration†	39.7	80
1.3.1 Policies for doing business†	36.5	101	5.2.2 State of cluster development and depth†	47.6	69
1.3.2 Entrepreneurship policies and culture*	15.1	64	5.2.3 GERD financed by abroad, % GDP	0.0	96
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	127
			5.2.5 Patent families/bn PPP\$ GDP	0.0	101
 Human capital and research	12.9	121	5.3 Knowledge absorption	30.5	64
2.1 Education	34.1	111	5.3.1 Intellectual property payments, % total trade	1.4	26
2.1.1 Expenditure on education, % GDP	3.3	101	5.3.2 High-tech imports, % total trade	11.0	26
2.1.2 Government funding/pupil, secondary, % GDP/cap	5.3	107	5.3.3 ICT services imports, % total trade	1.9	41
2.1.3 School life expectancy, years	10.6	101	5.3.4 FDI net inflows, % GDP	1.3	92
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	3.5	73
2.1.5 Pupil-teacher ratio, secondary	12.2	50	 Knowledge and technology outputs	13.7	91
2.2 Tertiary education	4.6	121	6.1 Knowledge creation	1.6	125
2.2.1 Tertiary enrolment, % gross	22.1	94	6.1.1 Patents by origin/bn PPP\$ GDP	0.0	121
2.2.2 Graduates in science and engineering, %	9.8	107	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	94
2.2.3 Tertiary inbound mobility, %	0.2	107	6.1.3 Utility models by origin/bn PPP\$ GDP	0.1	60
2.3 Research and development (R&D)	0.0	117	6.1.4 Scientific and technical articles/bn PPP\$ GDP	2.0	127
2.3.1 Researchers, FTE/mn pop.	14.4	108	6.1.5 Citable documents H-index	3.6	110
2.3.2 Gross expenditure on R&D, % GDP	0.0	113	6.2 Knowledge impact	15.6	107
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2.1 Labor productivity growth, %	1.1	59
2.3.4 QS university ranking, top 3*	0.0	72	6.2.2 New businesses/th pop. 15-64	0.6	92
			6.2.3 Software spending, % GDP	0.0	118
 Infrastructure	25.9	119	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	1.4	95
3.1 Information and communication technologies (ICTs)	47.2	109	6.2.5 High-tech manufacturing, %	n/a	n/a
3.1.1 ICT access*	63.7	110	6.3 Knowledge diffusion	23.9	63
3.1.2 ICT use*	24.1	122	6.3.1 Intellectual property receipts, % total trade	0.1	60
3.1.3 Government's online service*	51.2	104	6.3.2 Production and export complexity	34.0	77
3.1.4 E-participation*	50.0	103	6.3.3 High-tech exports, % total trade	1.9	66
3.2 General infrastructure	12.3	125	6.3.4 ICT services exports, % total trade	4.3	25
3.2.1 Electricity output, GWh/mn pop.	745.0	102	 Creative outputs	8.5	[99]
3.2.2 Logistics performance*	16.7	112	7.1 Intangible assets	14.7	[89]
3.2.3 Gross capital formation, % GDP	15.3	118	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	18.3	103	7.1.2 Trademarks by origin/bn PPP\$ GDP	40.9	61
3.3.1 GDP/unit of energy use	9.9	70	7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a
3.3.2 Environmental performance*	28.0	121	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.0	117
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.2	104	7.2 Creative goods and services	3.0	[109]
			7.2.1 Cultural and creative services exports, % total trade	0.1	81
 Market sophistication	21.7	107	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	16.4	96	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.1 Finance for startups and scaleups*	20.9	70	7.2.4 Printing and other media, % manufacturing	n/a	n/a
4.1.2 Domestic credit to private sector, % GDP	35.9	86	7.2.5 Creative goods exports, % total trade	0.2	72
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	1.6	90
4.2 Investment	2.0	[105]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.8	58
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	0.6	98
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	73	7.3.3 GitHub commit pushes received/mn pop. 15-69	2.2	84
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	0.0	105
4.2.4 Venture capital received, value, % GDP	n/a	n/a			
4.3 Trade, diversification, and market scale	46.6	88			
4.3.1 Applied tariff rate, weighted avg., %	1.6	51			
4.3.2 Domestic industry diversification	n/a	n/a			
4.3.3 Domestic market scale, bn PPP\$	163.1	73			

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Guinea

132

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
128	131	Low	SSA	13.5	40.3	2,818

Institutions		Score/Value	Rank
1.1 Political environment		44.3	117
1.1.1	Political and operational stability*	58.2	103
1.1.2	Government effectiveness*	30.4	120
1.2 Regulatory environment		57.3	89 ●
1.2.1	Regulatory quality*	24.1	119
1.2.2	Rule of law*	13.3	128
1.2.3	Cost of redundancy dismissal	10.1	29 ●
1.3 Business environment		41.7	[84]
1.3.1	Policies for doing business [†]	⊙ 41.7	90 ●
1.3.2	Entrepreneurship policies and culture*	n/a	n/a

Human capital and research		Score/Value	Rank
2.1 Education		15.8	132 ○ ◇
2.1.1	Expenditure on education, % GDP	2.2	121 ○ ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	⊙ 8.2	101 ○ ◇
2.1.3	School life expectancy, years	⊙ 9.0	111
2.1.4	PISA scales in reading, maths and science	n/a	n/a
2.1.5	Pupil-teacher ratio, secondary	⊙ 33.1	121
2.2 Tertiary education		2.2	125 ○ ◇
2.2.1	Tertiary enrolment, % gross	7.0	120
2.2.2	Graduates in science and engineering, %	n/a	n/a
2.2.3	Tertiary inbound mobility, %	⊙ 0.9	89
2.3 Research and development (R&D)		0.0	[120]
2.3.1	Researchers, FTE/mn pop.	n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇
2.3.4	QS university ranking, top 3*	0.0	72 ○ ◇

Infrastructure		Score/Value	Rank
3.1 Information and communication technologies (ICTs)		30.1	127
3.1.1	ICT access*	51.2	121
3.1.2	ICT use*	16.7	127
3.1.3	Government's online service*	21.8	129 ○ ◇
3.1.4	E-participation*	30.9	122
3.2 General infrastructure		13.3	124
3.2.1	Electricity output, GWh/mn pop.	n/a	n/a
3.2.2	Logistics performance*	7.0	120
3.2.3	Gross capital formation, % GDP	17.0	110
3.3 Ecological sustainability		16.1	120
3.3.1	GDP/unit of energy use	n/a	n/a
3.3.2	Environmental performance*	31.6	102
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.1	122

Market sophistication		Score/Value	Rank
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	9.0	126 ○ ◇
4.1.3	Loans from microfinance institutions, % GDP	0.3	46 ●
4.2 Investment		n/a	[n/a]
4.2.1	Market capitalization, % GDP	n/a	n/a
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a
4.2.4	Venture capital received, value, % GDP	n/a	n/a
4.3 Trade, diversification, and market scale		10.8	129 ○ ◇
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\$	40.3	112

Business sophistication		Score/Value	Rank
5.1 Knowledge workers		9.7	[121]
5.1.1	Knowledge-intensive employment, %	⊙ 7.4	113
5.1.2	Firms offering formal training, %	⊙ 16.0	90
5.1.3	GERD performed by business, % GDP	n/a	n/a
5.1.4	GERD financed by business, %	n/a	n/a
5.1.5	Females employed w/advanced degrees, %	⊙ 2.2	104 ◆
5.2 Innovation linkages		29.7	[39]
5.2.1	University-industry R&D collaboration [†]	⊙ 46.9	54 ◆
5.2.2	State of cluster development and depth [†]	⊙ 42.2	96 ●
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	101 ○ ◇
5.3 Knowledge absorption		18.7	117
5.3.1	Intellectual property payments, % total trade	⊙ 0.0	112
5.3.2	High-tech imports, % total trade	⊙ 2.4	128 ○ ◇
5.3.3	ICT services imports, % total trade	⊙ 1.3	76 ●
5.3.4	FDI net inflows, % GDP	1.5	87 ●
5.3.5	Research talent, % in businesses	n/a	n/a

Knowledge and technology outputs		Score/Value	Rank
6.1 Knowledge creation		1.3	127 ○ ◇
6.1.1	Patents by origin/bn PPP\$ GDP	0.1	112
6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	101 ○ ◇
6.1.3	Utility models by origin/bn PPP\$ GDP	⊙ 0.0	78 ○ ◇
6.1.4	Scientific and technical articles/bn PPP\$ GDP	3.2	119 ○ ◇
6.1.5	Citable documents H-index	1.7	125
6.2 Knowledge impact		2.0	[130]
6.2.1	Labor productivity growth, %	n/a	n/a
6.2.2	New businesses/th pop. 15-64	0.5	98
6.2.3	Software spending, % GDP	0.0	105
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	0.4	127
6.2.5	High-tech manufacturing, %	n/a	n/a
6.3 Knowledge diffusion		3.1	127 ○ ◇
6.3.1	Intellectual property receipts, % total trade	n/a	n/a
6.3.2	Production and export complexity	0.5	119 ○ ◇
6.3.3	High-tech exports, % total trade	⊙ 0.0	129 ○ ◇
6.3.4	ICT services exports, % total trade	⊙ 1.2	81 ●


Creative outputs		Score/Value	Rank
7.1 Intangible assets		6.8	[111]
7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
7.1.2	Trademarks by origin/bn PPP\$ GDP	9.1	112
7.1.3	Global brand value, top 5,000, % GDP	n/a	n/a
7.1.4	Industrial designs by origin/bn PPP\$ GDP	1.5	54 ●
7.2 Creative goods and services		3.2	[107]
7.2.1	Cultural and creative services exports, % total trade	⊙ 0.3	66 ●
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	Printing and other media, % manufacturing	n/a	n/a
7.2.5	Creative goods exports, % total trade	⊙ 0.0	126
7.3 Online creativity		0.0	132 ○
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.1	124
7.3.2	Country-code TLDs/th pop. 15-69	0.0	131 ○
7.3.3	GitHub commit pushes received/mn pop. 15-69	0.0	128
7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	n/a

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Honduras

113

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
116	108	Lower middle	LCN	10.1	58.3	5,767

	Score/Value	Rank		Score/Value	Rank
 Institutions	37.7	125	 Business sophistication	24.9	78
1.1 Political environment	47.5	102	5.1 Knowledge workers	25.5	77
1.1.1 Political and operational stability*	58.2	103	5.1.1 Knowledge-intensive employment, %	⊙ 12.3	101
1.1.2 Government effectiveness*	36.9	105	5.1.2 Firms offering formal training, %	⊙ 47.7	22
1.2 Regulatory environment	41.3	121	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	32.6	100	5.1.4 GERD financed by business, %	⊙ 10.4	75
1.2.2 Rule of law*	21.2	118	5.1.5 Females employed w/advanced degrees, %	⊙ 4.8	93
1.2.3 Cost of redundancy dismissal	30.3	120	5.2 Innovation linkages	16.0	118
1.3 Business environment	24.2	[120]	5.2.1 University-industry R&D collaboration†	32.1	111
1.3.1 Policies for doing business†	24.2	123	5.2.2 State of cluster development and depth†	42.4	93
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	⊙ 0.0	91
Human capital and research	20.6	96	5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	81
2.1 Education	48.9	69	5.2.5 Patent families/bn PPP\$ GDP	0.0	101
2.1.1 Expenditure on education, % GDP	6.4	12	5.3 Knowledge absorption	33.2	55
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊙ 20.3	55	5.3.1 Intellectual property payments, % total trade	1.0	43
2.1.3 School life expectancy, years	⊙ 9.7	105	5.3.2 High-tech imports, % total trade	⊙ 7.7	79
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.3 ICT services imports, % total trade	2.0	38
2.1.5 Pupil-teacher ratio, secondary	14.6	70	5.3.4 FDI net inflows, % GDP	3.6	30
2.2 Tertiary education	12.7	105	5.3.5 Research talent, % in businesses	n/a	n/a
2.2.1 Tertiary enrolment, % gross	25.5	90	Knowledge and technology outputs	10.1	110
2.2.2 Graduates in science and engineering, %	⊙ 15.7	91	6.1 Knowledge creation	1.0	129
2.2.3 Tertiary inbound mobility, %	0.8	92	6.1.1 Patents by origin/bn PPP\$ GDP	⊙ 0.0	131
2.3 Research and development (R&D)	0.1	115	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	92
2.3.1 Researchers, FTE/mn pop.	⊙ 34.7	99	6.1.3 Utility models by origin/bn PPP\$ GDP	⊙ 0.0	78
2.3.2 Gross expenditure on R&D, % GDP	⊙ 0.0	111	6.1.4 Scientific and technical articles/bn PPP\$ GDP	2.7	120
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.1.5 Citable documents H-index	1.6	127
2.3.4 QS university ranking, top 3*	0.0	72	6.2 Knowledge impact	14.3	[109]
Infrastructure	31.4	101	6.2.1 Labor productivity growth, %	n/a	n/a
3.1 Information and communication technologies (ICTs)	50.8	102	6.2.2 New businesses/th pop. 15-64	n/a	n/a
3.1.1 ICT access*	65.3	104	6.2.3 Software spending, % GDP	0.2	59
3.1.2 ICT use*	42.4	100	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	3.1	74
3.1.3 Government's online service*	46.5	110	6.2.5 High-tech manufacturing, %	n/a	n/a
3.1.4 E-participation*	48.8	105	6.3 Knowledge diffusion	14.9	89
3.2 General infrastructure	22.2	94	6.3.1 Intellectual property receipts, % total trade	n/a	n/a
3.2.1 Electricity output, GWh/mn pop.	⊙ 1,080.0	94	6.3.2 Production and export complexity	28.2	88
3.2.2 Logistics performance*	25.6	88	6.3.3 High-tech exports, % total trade	⊙ 0.1	115
3.2.3 Gross capital formation, % GDP	25.6	48	6.3.4 ICT services exports, % total trade	1.9	68
3.3 Ecological sustainability	21.1	89	Creative outputs	4.0	120
3.3.1 GDP/unit of energy use	8.9	82	7.1 Intangible assets	7.6	106
3.3.2 Environmental performance*	36.5	86	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.8	73	7.1.2 Trademarks by origin/bn PPP\$ GDP	32.1	70
Market sophistication	23.0	104	7.1.3 Global brand value, top 5,000, % GDP	0.0	77
4.1 Credit	25.4	[70]	7.1.4 Industrial designs by origin/bn PPP\$ GDP	⊙ 0.1	116
4.1.1 Finance for startups and scaleups*	n/a	n/a	7.2 Creative goods and services	0.3	[128]
4.1.2 Domestic credit to private sector, % GDP	69.8	49	7.2.1 Cultural and creative services exports, % total trade	⊙ 0.0	99
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	3.7	90	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 Printing and other media, % manufacturing	n/a	n/a
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	57	7.2.5 Creative goods exports, % total trade	⊙ 0.0	116
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	⊙ 0.0	69	7.3 Online creativity	0.6	108
4.2.4 Venture capital received, value, % GDP	⊙ 0.0	78	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.6	102
4.3 Trade, diversification, and market scale	39.8	99	7.3.2 Country-code TLDs/th pop. 15-69	0.3	102
4.3.1 Applied tariff rate, weighted avg., %	3.3	76	7.3.3 GitHub commit pushes received/mn pop. 15-69	1.2	98
4.3.2 Domestic industry diversification	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	0.1	97
4.3.3 Domestic market scale, bn PPP\$	58.3	100			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Hong Kong, China

14

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
25	5	High	SEAO	7.6	488.7	65,403

Institutions

Score/Value: 82.5 Rank: 10

1.1 Political environment	83.7	16
1.1.1 Political and operational stability*	81.8	24
1.1.2 Government effectiveness*	85.5	9
1.2 Regulatory environment	94.2	5
1.2.1 Regulatory quality*	89.6	7
1.2.2 Rule of law*	87.3	14
1.2.3 Cost of redundancy dismissal	8.0	1 ●
1.3 Business environment	69.7	[18]
1.3.1 Policies for doing business [†]	69.7	20
1.3.2 Entrepreneurship policies and culture*	n/a	n/a

Human capital and research

Score/Value: 57.4 Rank: 13

2.1 Education	64.3	15
2.1.1 Expenditure on education, % GDP	4.4	63 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap	24.1	25
2.1.3 School life expectancy, years	17.3	17
2.1.4 PISA scales in reading, maths and science	530.7	3 ● ◆
2.1.5 Pupil-teacher ratio, secondary	10.9	38
2.2 Tertiary education	49.4	12
2.2.1 Tertiary enrolment, % gross	84.4	17
2.2.2 Graduates in science and engineering, %	n/a	n/a
2.2.3 Tertiary inbound mobility, %	16.2	12
2.3 Research and development (R&D)	58.4	18
2.3.1 Researchers, FTE/mn pop.	4,352.2	24
2.3.2 Gross expenditure on R&D, % GDP	1.0	41 ◇
2.3.3 Global corporate R&D investors, top 3, mn USD	n/a	n/a
2.3.4 QS university ranking, top 3*	82.9	5

Infrastructure

Score/Value: 63.7 Rank: 6

3.1 Information and communication technologies (ICTs)	90.6	[10]
3.1.1 ICT access*	98.2	2 ● ◆
3.1.2 ICT use*	83.0	12
3.1.3 Government's online service*	n/a	n/a
3.1.4 E-participation*	n/a	n/a
3.2 General infrastructure	44.2	30
3.2.1 Electricity output, GWh/mn pop.	4,707.2	45
3.2.2 Logistics performance*	87.0	12
3.2.3 Gross capital formation, % GDP	18.6	102 ○ ◇
3.3 Ecological sustainability	56.3	3 ● ◆
3.3.1 GDP/unit of energy use	32.8	2 ● ◆
3.3.2 Environmental performance*	n/a	n/a
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	2.1	46

Market sophistication

Score/Value: 76.3 Rank: 2 ● ◆

4.1 Credit	100.0	[1]
4.1.1 Finance for startups and scaleups*	n/a	n/a
4.1.2 Domestic credit to private sector, % GDP	258.4	1 ● ◆
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a
4.2 Investment	67.5	7
4.2.1 Market capitalization, % GDP	1,391.4	1 ● ◆
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.9	1 ● ◆
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	29
4.2.4 Venture capital received, value, % GDP	0.0	17
4.3 Trade, diversification, and market scale	61.5	49
4.3.1 Applied tariff rate, weighted avg., %	0.0	1 ● ◆
4.3.2 Domestic industry diversification	73.6	81 ○ ◇
4.3.3 Domestic market scale, bn PPP\$	488.7	45

Business sophistication

Score/Value: 46.7 Rank: 27 ◇

5.1 Knowledge workers	46.1	37 ◇
5.1.1 Knowledge-intensive employment, %	41.4	28
5.1.2 Firms offering formal training, %	n/a	n/a
5.1.3 GERD performed by business, % GDP	0.4	44 ◇
5.1.4 GERD financed by business, %	49.2	31 ◇
5.1.5 Females employed w/advanced degrees, %	15.8	47 ◇
5.2 Innovation linkages	44.1	24
5.2.1 University-industry R&D collaboration [†]	62.9	18
5.2.2 State of cluster development and depth [†]	66.1	12
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	0.8	28 ◇
5.3 Knowledge absorption	49.8	15
5.3.1 Intellectual property payments, % total trade	0.3	79 ○ ◇
5.3.2 High-tech imports, % total trade	61.9	1 ● ◆
5.3.3 ICT services imports, % total trade	0.3	123 ○ ◇
5.3.4 FDI net inflows, % GDP	25.6	6 ◆
5.3.5 Research talent, % in businesses	35.6	39 ◆

Knowledge and technology outputs

Score/Value: 23.2 Rank: 60 ◇

6.1 Knowledge creation	22.9	[41]
6.1.1 Patents by origin/bn PPP\$ GDP	1.0	67 ○ ◇
6.1.2 PCT patents by origin/bn PPP\$ GDP	n/a	n/a
6.1.3 Utility models by origin/bn PPP\$ GDP	1.0	21
6.1.4 Scientific and technical articles/bn PPP\$ GDP	n/a	n/a
6.1.5 Citable documents H-index	38.4	24
6.2 Knowledge impact	43.1	15
6.2.1 Labor productivity growth, %	1.7	42
6.2.2 New businesses/th pop. 15-64	19.2	2 ● ◆
6.2.3 Software spending, % GDP	0.3	28
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	5.2	55
6.2.5 High-tech manufacturing, %	23.9	53 ◇
6.3 Knowledge diffusion	3.5	124 ○ ◇
6.3.1 Intellectual property receipts, % total trade	0.1	52 ◇
6.3.2 Production and export complexity	n/a	n/a
6.3.3 High-tech exports, % total trade	0.1	117 ○ ◇
6.3.4 ICT services exports, % total trade	0.5	100 ○

Creative outputs

Score/Value: 53.2 Rank: 5 ● ◆






7.1 Intangible assets	54.7	14
7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
7.1.2 Trademarks by origin/bn PPP\$ GDP	66.9	32
7.1.3 Global brand value, top 5,000, % GDP	264.3	1 ● ◆
7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.5	41
7.2 Creative goods and services	47.4	2 ● ◆
7.2.1 Cultural and creative services exports, % total trade	0.1	82 ○ ◇
7.2.2 National feature films/mn pop. 15-69	8.1	9
7.2.3 Entertainment and media market/th pop. 15-69	48.3	18
7.2.4 Printing and other media, % manufacturing	n/a	n/a
7.2.5 Creative goods exports, % total trade	12.7	1 ● ◆
7.3 Online creativity	56.3	5 ● ◆
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	75.5	7
7.3.2 Country-code TLDs/th pop. 15-69	11.7	39 ◇
7.3.3 GitHub commit pushes received/mn pop. 15-69	100.0	1 ● ◆
7.3.4 Mobile app creation/bn PPP\$ GDP	37.9	5 ● ◆

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Hungary

34

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
34	36	High	EUR	9.6	359.9	36,849

	Score/Value	Rank		Score/Value	Rank
 Institutions	62.0	48	 Business sophistication	44.3	30
1.1 Political environment	72.0	39	5.1 Knowledge workers	48.5	34
1.1.1 Political and operational stability*	81.8	24	5.1.1 Knowledge-intensive employment, %	38.9	33
1.1.2 Government effectiveness*	62.2	42	5.1.2 Firms offering formal training, %	29.3	57
1.2 Regulatory environment	73.7	40	5.1.3 GERD performed by business, % GDP	1.2	19
1.2.1 Regulatory quality*	57.0	49	5.1.4 GERD financed by business, %	52.9	25
1.2.2 Rule of law*	59.4	44	5.1.5 Females employed w/advanced degrees, %	18.3	38
1.2.3 Cost of redundancy dismissal	13.4	48	5.2 Innovation linkages	29.0	42
1.3 Business environment	40.3	86	5.2.1 University-industry R&D collaboration†	45.6	58
1.3.1 Policies for doing business†	43.0	86	5.2.2 State of cluster development and depth†	48.9	57
1.3.2 Entrepreneurship policies and culture*	37.5	43	5.2.3 GERD financed by abroad, % GDP	0.2	20
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	71
			5.2.5 Patent families/bn PPP\$ GDP	0.4	34
 Human capital and research	41.3	37	5.3 Knowledge absorption	55.3	7
2.1 Education	57.7	49	5.3.1 Intellectual property payments, % total trade	1.1	33
2.1.1 Expenditure on education, % GDP	4.6	56	5.3.2 High-tech imports, % total trade	15.8	15
2.1.2 Government funding/pupil, secondary, % GDP/cap	20.6	51	5.3.3 ICT services imports, % total trade	1.6	56
2.1.3 School life expectancy, years	15.1	48	5.3.4 FDI net inflows, % GDP	42.8	1
2.1.4 PISA scales in reading, maths and science	479.3	33	5.3.5 Research talent, % in businesses	58.5	14
2.1.5 Pupil-teacher ratio, secondary	8.1	10	 Knowledge and technology outputs	39.7	23
2.2 Tertiary education	29.1	72	6.1 Knowledge creation	20.2	47
2.2.1 Tertiary enrolment, % gross	52.4	62	6.1.1 Patents by origin/bn PPP\$ GDP	1.7	45
2.2.2 Graduates in science and engineering, %	15.5	92	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.3	38
2.2.3 Tertiary inbound mobility, %	12.6	16	6.1.3 Utility models by origin/bn PPP\$ GDP	0.7	31
2.3 Research and development (R&D)	37.1	30	6.1.4 Scientific and technical articles/bn PPP\$ GDP	26.6	35
2.3.1 Researchers, FTE/mn pop.	4,358.1	23	6.1.5 Citable documents H-index	29.6	33
2.3.2 Gross expenditure on R&D, % GDP	1.6	25	6.2 Knowledge impact	48.4	9
2.3.3 Global corporate R&D investors, top 3, mn USD	51.7	27	6.2.1 Labor productivity growth, %	2.1	33
2.3.4 QS university ranking, top 3*	20.1	50	6.2.2 New businesses/th pop. 15-64	4.0	35
			6.2.3 Software spending, % GDP	0.3	46
 Infrastructure	54.3	35	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	22.4	9
3.1 Information and communication technologies (ICTs)	75.5	59	6.2.5 High-tech manufacturing, %	59.8	5
3.1.1 ICT access*	88.4	59	6.3 Knowledge diffusion	50.5	17
3.1.2 ICT use*	71.2	55	6.3.1 Intellectual property receipts, % total trade	1.2	19
3.1.3 Government's online service*	74.7	55	6.3.2 Production and export complexity	79.9	10
3.1.4 E-participation*	67.9	75	6.3.3 High-tech exports, % total trade	14.9	10
3.2 General infrastructure	40.6	38	6.3.4 ICT services exports, % total trade	2.3	57
3.2.1 Electricity output, GWh/mn pop.	3,581.5	58	 Creative outputs	25.9	46
3.2.2 Logistics performance*	63.7	30	7.1 Intangible assets	26.8	65
3.2.3 Gross capital formation, % GDP	28.2	31	7.1.1 Intangible asset intensity, top 15, %	52.3	49
3.3 Ecological sustainability	46.6	20	7.1.2 Trademarks by origin/bn PPP\$ GDP	28.8	78
3.3.1 GDP/unit of energy use	11.3	57	7.1.3 Global brand value, top 5,000, % GDP	9.1	59
3.3.2 Environmental performance*	55.1	31	7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.3	45
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	8.9	11	7.2 Creative goods and services	30.8	26
			7.2.1 Cultural and creative services exports, % total trade	0.6	48
 Market sophistication	32.4	67	7.2.2 National feature films/mn pop. 15-69	2.8	39
4.1 Credit	28.0	63	7.2.3 Entertainment and media market/th pop. 15-69	13.8	29
4.1.1 Finance for startups and scaleups*	43.1	31	7.2.4 Printing and other media, % manufacturing	0.7	68
4.1.2 Domestic credit to private sector, % GDP	38.3	84	7.2.5 Creative goods exports, % total trade	8.2	7
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	19.1	33
4.2 Investment	5.5	70	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	11.0	40
4.2.1 Market capitalization, % GDP	18.7	63	7.3.2 Country-code TLDs/th pop. 15-69	35.3	19
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	46	7.3.3 GitHub commit pushes received/mn pop. 15-69	25.3	28
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	64	7.3.4 Mobile app creation/bn PPP\$ GDP	5.0	55
4.2.4 Venture capital received, value, % GDP	0.0	67			
4.3 Trade, diversification, and market scale	63.8	34			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	93.2	33			
4.3.3 Domestic market scale, bn PPP\$	359.9	53			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Iceland

20

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
17	24	High	EUR	0.3	21.9	59,268

Institutions		Score/Value	Rank
80.4			14
1.1 Political environment		86.7	9
1.1.1 Political and operational stability*		90.9	4 ●
1.1.2 Government effectiveness*		82.5	15
1.2 Regulatory environment		88.5	14
1.2.1 Regulatory quality*		81.1	17
1.2.2 Rule of law*		92.7	9
1.2.3 Cost of redundancy dismissal		13.0	41
1.3 Business environment		66.0	[23]
1.3.1 Policies for doing business [†]		66.0	25
1.3.2 Entrepreneurship policies and culture*		n/a	n/a

Human capital and research		Score/Value	Rank
46.4			29 ◊
2.1 Education		70.4	6 ●◆
2.1.1 Expenditure on education, % GDP	⊙	7.6	6 ●◆
2.1.2 Government funding/pupil, secondary, % GDP/cap		21.9	39
2.1.3 School life expectancy, years		19.2	6 ◆
2.1.4 PISA scales in reading, maths and science		481.4	30
2.1.5 Pupil-teacher ratio, secondary		9.3	23
2.2 Tertiary education		34.2	52
2.2.1 Tertiary enrolment, % gross		77.6	24
2.2.2 Graduates in science and engineering, %		18.2	85 ◊
2.2.3 Tertiary inbound mobility, %		8.4	31
2.3 Research and development (R&D)		34.5	34 ◊
2.3.1 Researchers, FTE/mn pop.	⊙	6,088.3	7
2.3.2 Gross expenditure on R&D, % GDP		2.5	12
2.3.3 Global corporate R&D investors, top 3, mn USD		45.9	33 ◊
2.3.4 QS university ranking, top 3*		0.0	72 ◊

Infrastructure		Score/Value	Rank
57.8			22
3.1 Information and communication technologies (ICTs)		85.7	26
3.1.1 ICT access*		96.9	7 ◆
3.1.2 ICT use*		89.1	1 ●◆
3.1.3 Government's online service*		79.4	42 ◊
3.1.4 E-participation*		77.4	51 ◊
3.2 General infrastructure		61.8	7
3.2.1 Electricity output, GWh/mn pop.		51,702.7	1 ●◆
3.2.2 Logistics performance*		54.9	39 ◊
3.2.3 Gross capital formation, % GDP		22.8	71
3.3 Ecological sustainability		25.8	65 ◊
3.3.1 GDP/unit of energy use		3.1	129 ◊
3.3.2 Environmental performance*		62.8	10
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP		1.9	53

Market sophistication		Score/Value	Rank
40.0			41 ◊
4.1 Credit		18.6	89 ◊
4.1.1 Finance for startups and scaleups*		n/a	n/a
4.1.2 Domestic credit to private sector, % GDP		99.8	29
4.1.3 Loans from microfinance institutions, % GDP		0.0	61 ◊
4.2 Investment		48.5	12
4.2.1 Market capitalization, % GDP		n/a	n/a
4.2.2 Venture capital investors, deals/bn PPP\$ GDP		0.2	17
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP		0.2	7
4.2.4 Venture capital received, value, % GDP		0.0	13
4.3 Trade, diversification, and market scale		52.8	78 ◊
4.3.1 Applied tariff rate, weighted avg., %	⊙	1.5	50
4.3.2 Domestic industry diversification	⊙	67.9	91 ◊
4.3.3 Domestic market scale, bn PPP\$		21.9	129 ◊

Business sophistication		Score/Value	Rank
54.8			14
5.1 Knowledge workers		61.7	20
5.1.1 Knowledge-intensive employment, %		52.2	6
5.1.2 Firms offering formal training, %		n/a	n/a
5.1.3 GERD performed by business, % GDP		1.7	13
5.1.4 GERD financed by business, %		38.6	44 ◊
5.1.5 Females employed w/advanced degrees, %		25.2	18
5.2 Innovation linkages		59.8	7
5.2.1 University-industry R&D collaboration [†]		56.8	28
5.2.2 State of cluster development and depth [†]		51.7	45 ◊
5.2.3 GERD financed by abroad, % GDP		0.8	1 ●◆
5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.2	15
5.2.5 Patent families/bn PPP\$ GDP		1.7	21
5.3 Knowledge absorption		42.8	31
5.3.1 Intellectual property payments, % total trade		1.0	39
5.3.2 High-tech imports, % total trade		6.9	95 ◊
5.3.3 ICT services imports, % total trade		4.4	9 ◆
5.3.4 FDI net inflows, % GDP		-3.1	127 ◊
5.3.5 Research talent, % in businesses	⊙	42.7	31 ◊

Knowledge and technology outputs		Score/Value	Rank
39.7			22
6.1 Knowledge creation		44.7	18
6.1.1 Patents by origin/bn PPP\$ GDP		4.2	22
6.1.2 PCT patents by origin/bn PPP\$ GDP		1.4	23 ◊
6.1.3 Utility models by origin/bn PPP\$ GDP		n/a	n/a
6.1.4 Scientific and technical articles/bn PPP\$ GDP		70.3	1 ●◆
6.1.5 Citable documents H-index		19.3	42 ◊
6.2 Knowledge impact		30.3	57 ◊
6.2.1 Labor productivity growth, %		0.8	65
6.2.2 New businesses/th pop. 15-64		10.4	11
6.2.3 Software spending, % GDP		0.3	35
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP		5.1	56
6.2.5 High-tech manufacturing, %	⊙	11.9	82 ◊
6.3 Knowledge diffusion		44.1	25
6.3.1 Intellectual property receipts, % total trade		3.8	6
6.3.2 Production and export complexity		n/a	n/a
6.3.3 High-tech exports, % total trade		1.9	61 ◊
6.3.4 ICT services exports, % total trade		4.6	21

Creative outputs		Score/Value	Rank
46.4			13
7.1 Intangible assets		41.9	32
7.1.1 Intangible asset intensity, top 15, %		58.4	42 ◊
7.1.2 Trademarks by origin/bn PPP\$ GDP		66.4	34
7.1.3 Global brand value, top 5,000, % GDP		n/a	n/a
7.1.4 Industrial designs by origin/bn PPP\$ GDP		0.4	90 ◊
7.2 Creative goods and services		38.1	11
7.2.1 Cultural and creative services exports, % total trade		0.8	38
7.2.2 National feature films/mn pop. 15-69		21.0	1 ●◆
7.2.3 Entertainment and media market/th pop. 15-69		n/a	n/a
7.2.4 Printing and other media, % manufacturing	⊙	1.3	29
7.2.5 Creative goods exports, % total trade		0.1	85
7.3 Online creativity		63.6	1 ●◆
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		97.9	3 ●◆
7.3.2 Country-code TLDs/th pop. 15-69		98.4	5 ●◆
7.3.3 GitHub commit pushes received/mn pop. 15-69		54.5	5 ●
7.3.4 Mobile app creation/bn PPP\$ GDP		3.7	63 ◊

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◊ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

India

40

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
39	42	Lower middle	CSA	1,393.4	10,181.2	7,314








	Score/Value	Rank		Score/Value	Rank
Institutions	60.1	54	Business sophistication	30.9	54
1.1 Political environment	59.9	64	5.1 Knowledge workers	24.7	80
1.1.1 Political and operational stability*	61.8	87	5.1.1 Knowledge-intensive employment, %	17.0	86
1.1.2 Government effectiveness*	58.0	49	5.1.2 Firms offering formal training, %	35.9	42
1.2 Regulatory environment	64.1	67	5.1.3 GERD performed by business, % GDP	0.2	51
1.2.1 Regulatory quality*	41.5	81	5.1.4 GERD financed by business, %	36.8	51
1.2.2 Rule of law*	45.6	60	5.1.5 Females employed w/advanced degrees, %	26.5	103
1.2.3 Cost of redundancy dismissal	15.8	63	5.2 Innovation linkages	28.7	43
1.3 Business environment	56.3	40	5.2.1 University-industry R&D collaboration†	50.7	42
1.3.1 Policies for doing business†	40.6	94	5.2.2 State of cluster development and depth†	42.4	94
1.3.2 Entrepreneurship policies and culture*	72.1	12	5.2.3 GERD financed by abroad, % GDP	n/a	n/a
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	33
			5.2.5 Patent families/bn PPP\$ GDP	0.2	44
Human capital and research	38.3	43	5.3 Knowledge absorption	39.2	38
2.1 Education	41.1	93	5.3.1 Intellectual property payments, % total trade	1.4	27
2.1.1 Expenditure on education, % GDP	4.5	60	5.3.2 High-tech imports, % total trade	10.7	31
2.1.2 Government funding/pupil, secondary, % GDP/cap	17.2	70	5.3.3 ICT services imports, % total trade	2.3	32
2.1.3 School life expectancy, years	11.9	92	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	34.0	40
2.1.5 Pupil-teacher ratio, secondary	20.4	95			
2.2 Tertiary education	33.3	60	Knowledge and technology outputs	33.8	34
2.2.1 Tertiary enrolment, % gross	29.4	86	6.1 Knowledge creation	20.3	46
2.2.2 Graduates in science and engineering, %	33.7	11	6.1.1 Patents by origin/bn PPP\$ GDP	2.6	28
2.2.3 Tertiary inbound mobility, %	0.1	109	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	52
2.3 Research and development (R&D)	40.6	26	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1 Researchers, FTE/mn pop.	252.7	82	6.1.4 Scientific and technical articles/bn PPP\$ GDP	11.1	78
2.3.2 Gross expenditure on R&D, % GDP	0.7	53	6.1.5 Citable documents H-index	41.9	21
2.3.3 Global corporate R&D investors, top 3, mn USD	68.5	16	6.2 Knowledge impact	30.4	56
2.3.4 QS university ranking, top 3*	46.0	24	6.2.1 Labor productivity growth, %	3.5	12
			6.2.2 New businesses/th pop. 15-64	0.2	114
			6.2.3 Software spending, % GDP	0.2	58
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	3.8	67
			6.2.5 High-tech manufacturing, %	34.8	37
			6.3 Knowledge diffusion	50.7	15
			6.3.1 Intellectual property receipts, % total trade	0.2	46
			6.3.2 Production and export complexity	52.4	43
			6.3.3 High-tech exports, % total trade	4.4	39
			6.3.4 ICT services exports, % total trade	14.0	1
			Creative outputs	24.3	52
			7.1 Intangible assets	38.0	40
			7.1.1 Intangible asset intensity, top 15, %	75.1	14
			7.1.2 Trademarks by origin/bn PPP\$ GDP	42.6	56
			7.1.3 Global brand value, top 5,000, % GDP	75.0	29
			7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.0	66
			7.2 Creative goods and services	17.2	61
			7.2.1 Cultural and creative services exports, % total trade	1.9	12
			7.2.2 National feature films/mn pop. 15-69	2.5	42
			7.2.3 Entertainment and media market/th pop. 15-69	1.0	56
			7.2.4 Printing and other media, % manufacturing	0.5	86
			7.2.5 Creative goods exports, % total trade	1.9	30
			7.3 Online creativity	4.1	66
			7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.9	95
			7.3.2 Country-code TLDs/th pop. 15-69	0.7	96
			7.3.3 GitHub commit pushes received/mn pop. 15-69	3.8	66
			7.3.4 Mobile app creation/bn PPP\$ GDP	10.8	38
Infrastructure	40.7	78			
3.1 Information and communication technologies (ICTs)	71.6	72			
3.1.1 ICT access*	70.4	99			
3.1.2 ICT use*	45.0	97			
3.1.3 Government's online service*	85.3	24			
3.1.4 E-participation*	85.7	29			
3.2 General infrastructure	33.9	50			
3.2.1 Electricity output, GWh/mn pop.	1,167.4	93			
3.2.2 Logistics performance*	52.6	43			
3.2.3 Gross capital formation, % GDP	29.7	25			
3.3 Ecological sustainability	16.7	115			
3.3.1 GDP/unit of energy use	9.9	73			
3.3.2 Environmental performance*	18.9	130			
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	1.0	70			
Market sophistication	50.3	19			
4.1 Credit	26.4	68			
4.1.1 Finance for startups and scaleups*	54.2	8			
4.1.2 Domestic credit to private sector, % GDP	54.8	64			
4.1.3 Loans from microfinance institutions, % GDP	0.4	42			
4.2 Investment	38.8	17			
4.2.1 Market capitalization, % GDP	87.2	19			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.1	35			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	23			
4.2.4 Venture capital 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	97.7	14			
4.3.3 Domestic market scale, bn PPP\$	10,181.2	1			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Indonesia

75

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
74	72	Lower middle	SEAO	276.4	3,530.3	12,967

	Score/Value	Rank		Score/Value	Rank
 Institutions	55.1	71	 Business sophistication	22.1	92
1.1 Political environment	61.6	58	5.1 Knowledge workers	9.7	123
1.1.1 Political and operational stability*	65.5	74	5.1.1 Knowledge-intensive employment, %	10.9	104
1.1.2 Government effectiveness*	57.7	51	5.1.2 Firms offering formal training, %	7.7	98
1.2 Regulatory environment	21.8	131	5.1.3 GERD performed by business, % GDP	0.0	82
1.2.1 Regulatory quality*	46.9	69	5.1.4 GERD financed by business, %	8.0	79
1.2.2 Rule of law*	37.3	80	5.1.5 Females employed w/advanced degrees, %	6.6	88
1.2.3 Cost of redundancy dismissal	57.8	130	5.2 Innovation linkages	27.4	46
1.3 Business environment	82.1	5	5.2.1 University-industry R&D collaboration†	66.4	13
1.3.1 Policies for doing business†	65.2	26	5.2.2 State of cluster development and depth†	68.4	9
1.3.2 Entrepreneurship policies and culture*	98.9	2	5.2.3 GERD financed by abroad, % GDP	0.0	94
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	113
			5.2.5 Patent families/bn PPP\$ GDP	0.0	98
 Human capital and research	22.4	90	5.3 Knowledge absorption	29.1	68
2.1 Education	35.0	110	5.3.1 Intellectual property payments, % total trade	0.9	49
2.1.1 Expenditure on education, % GDP	2.8	112	5.3.2 High-tech imports, % total trade	10.6	32
2.1.2 Government funding/pupil, secondary, % GDP/cap	10.5	96	5.3.3 ICT services imports, % total trade	2.0	39
2.1.3 School life expectancy, years	13.6	75	5.3.4 FDI net inflows, % GDP	2.0	76
2.1.4 PISA scales in reading, maths and science	381.9	72	5.3.5 Research talent, % in businesses	7.5	63
2.1.5 Pupil-teacher ratio, secondary	15.2	75			
2.2 Tertiary education	18.7	93	 Knowledge and technology outputs	19.0	78
2.2.1 Tertiary enrolment, % gross	36.3	78	6.1 Knowledge creation	6.9	92
2.2.2 Graduates in science and engineering, %	19.4	73	6.1.1 Patents by origin/bn PPP\$ GDP	0.4	80
2.2.3 Tertiary inbound mobility, %	0.1	110	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	100
2.3 Research and development (R&D)	13.5	49	6.1.3 Utility models by origin/bn PPP\$ GDP	0.7	30
2.3.1 Researchers, FTE/mn pop.	395.7	75	6.1.4 Scientific and technical articles/bn PPP\$ GDP	2.0	128
2.3.2 Gross expenditure on R&D, % GDP	0.3	80	6.1.5 Citable documents H-index	14.1	57
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2 Knowledge impact	27.7	66
2.3.4 QS university ranking, top 3*	35.9	34	6.2.1 Labor productivity growth, %	1.5	48
			6.2.2 New businesses/th pop. 15-64	0.3	105
 Infrastructure	43.4	68	6.2.3 Software spending, % GDP	0.4	24
3.1 Information and communication technologies (ICTs)	72.5	66	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	2.2	81
3.1.1 ICT access*	89.2	54	6.2.5 High-tech manufacturing, %	29.9	43
3.1.2 ICT use*	57.8	79	6.3 Knowledge diffusion	22.3	70
3.1.3 Government's online service*	68.2	72	6.3.1 Intellectual property receipts, % total trade	0.0	77
3.1.4 E-participation*	75.0	57	6.3.2 Production and export complexity	42.0	60
3.2 General infrastructure	34.3	48	6.3.3 High-tech exports, % total trade	3.8	46
3.2.1 Electricity output, GWh/mn pop.	1,052.9	96	6.3.4 ICT services exports, % total trade	0.8	92
3.2.2 Logistics performance*	51.2	44			
3.2.3 Gross capital formation, % GDP	31.5	18	 Creative outputs	18.6	72
3.3 Ecological sustainability	23.2	79	7.1 Intangible assets	30.4	59
3.3.1 GDP/unit of energy use	13.4	34	7.1.1 Intangible asset intensity, top 15, %	75.3	13
3.3.2 Environmental performance*	28.2	119	7.1.2 Trademarks by origin/bn PPP\$ GDP	24.4	87
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.7	75	7.1.3 Global brand value, top 5,000, % GDP	36.1	40
			7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.7	78
 Market sophistication	41.7	36	7.2 Creative goods and services	11.3	79
4.1 Credit	23.5	76	7.2.1 Cultural and creative services exports, % total trade	0.0	96
4.1.1 Finance for startups and scaleups*	57.3	4	7.2.2 National feature films/mn pop. 15-69	0.7	64
4.1.2 Domestic credit to private sector, % GDP	38.7	82	7.2.3 Entertainment and media market/th pop. 15-69	3.3	50
4.1.3 Loans from microfinance institutions, % GDP	0.0	58	7.2.4 Printing and other media, % manufacturing	0.9	50
4.2 Investment	13.9	42	7.2.5 Creative goods exports, % total trade	2.3	22
4.2.1 Market capitalization, % GDP	46.8	39	7.3 Online creativity	2.3	81
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	69	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.5	89
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	56	7.3.2 Country-code TLDs/th pop. 15-69	0.8	93
4.2.4 Venture capital received, value, % GDP	0.0	26	7.3.3 GitHub commit pushes received/mn pop. 15-69	3.0	72
4.3 Trade, diversification, and market scale	87.7	7	7.3.4 Mobile app creation/bn PPP\$ GDP	4.1	60
4.3.1 Applied tariff rate, weighted avg., %	2.0	63			
4.3.2 Domestic industry diversification	96.8	20			
4.3.3 Domestic market scale, bn PPP\$	3,530.3	7			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Iran (Islamic Republic of)

53

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
38	73	Lower middle	CSA	85.0	1,189.2	13,993

	Score/Value	Rank		Score/Value	Rank
Institutions	31.1	131	Business sophistication	18.7	115
1.1 Political environment	36.9	125	5.1 Knowledge workers	19.2	[97]
1.1.1 Political and operational stability*	45.5	126	5.1.1 Knowledge-intensive employment, %	19.7	78
1.1.2 Government effectiveness*	28.4	123	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	43.1	120	5.1.3 GERD performed by business, % GDP	0.2	53
1.2.1 Regulatory quality*	8.5	131	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	23.6	113	5.1.5 Females employed w/advanced degrees, %	7.6	83
1.2.3 Cost of redundancy dismissal	23.1	99	5.2 Innovation linkages	18.1	107
1.3 Business environment	13.3	129	5.2.1 University-industry R&D collaboration†	27.7	121
1.3.1 Policies for doing business†	22.0	124	5.2.2 State of cluster development and depth†	44.4	81
1.3.2 Entrepreneurship policies and culture*	4.6	70	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	129
			5.2.5 Patent families/bn PPP\$ GDP	0.0	86
			5.3 Knowledge absorption	18.7	119
			5.3.1 Intellectual property payments, % total trade	0.2	95
			5.3.2 High-tech imports, % total trade	5.1	117
			5.3.3 ICT services imports, % total trade	0.5	113
			5.3.4 FDI net inflows, % GDP	0.7	109
			5.3.5 Research talent, % in businesses	19.2	54
Human capital and research	35.0	54	Knowledge and technology outputs	26.7	50
2.1 Education	44.1	84	6.1 Knowledge creation	42.5	20
2.1.1 Expenditure on education, % GDP	3.6	94	6.1.1 Patents by origin/bn PPP\$ GDP	10.2	10
2.1.2 Government funding/pupil, secondary, % GDP/cap	17.2	69	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.3	40
2.1.3 School life expectancy, years	14.6	59	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	44.4	15
2.1.5 Pupil-teacher ratio, secondary	19.0	91	6.1.5 Citable documents H-index	22.1	39
2.2 Tertiary education	46.4	21	6.2 Knowledge impact	27.8	65
2.2.1 Tertiary enrolment, % gross	58.2	53	6.2.1 Labor productivity growth, %	0.8	67
2.2.2 Graduates in science and engineering, %	39.0	2	6.2.2 New businesses/th pop. 15-64	0.6	90
2.2.3 Tertiary inbound mobility, %	0.8	94	6.2.3 Software spending, % GDP	0.3	30
2.3 Research and development (R&D)	14.4	47	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	1.4	94
2.3.1 Researchers, FTE/mn pop.	1,659.5	47	6.2.5 High-tech manufacturing, %	38.4	29
2.3.2 Gross expenditure on R&D, % GDP	0.9	45	6.3 Knowledge diffusion	9.8	103
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.3.1 Intellectual property receipts, % total trade	0.0	90
2.3.4 QS university ranking, top 3*	25.8	43	6.3.2 Production and export complexity	33.4	78
			6.3.3 High-tech exports, % total trade	0.2	111
			6.3.4 ICT services exports, % total trade	0.2	127
			Creative outputs	31.8	33
			7.1 Intangible assets	60.2	10
			7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
			7.1.2 Trademarks by origin/bn PPP\$ GDP	469.9	1
			7.1.3 Global brand value, top 5,000, % GDP	0.6	76
			7.1.4 Industrial designs by origin/bn PPP\$ GDP	13.3	6
			7.2 Creative goods and services	4.0	104
			7.2.1 Cultural and creative services exports, % total trade	0.2	74
			7.2.2 National feature films/mn pop. 15-69	1.7	50
			7.2.3 Entertainment and media market/th pop. 15-69	3.0	52
			7.2.4 Printing and other media, % manufacturing	0.3	93
			7.2.5 Creative goods exports, % total trade	0.1	97
			7.3 Online creativity	2.6	78
			7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.8	80
			7.3.2 Country-code TLDs/th pop. 15-69	7.1	46
			7.3.3 GitHub commit pushes received/mn pop. 15-69	1.0	102
			7.3.4 Mobile app creation/bn PPP\$ GDP	0.5	81
Infrastructure	41.1	75			
3.1 Information and communication technologies (ICTs)	65.4	86			
3.1.1 ICT access*	88.0	63			
3.1.2 ICT use*	68.2	58			
3.1.3 Government's online service*	58.8	88			
3.1.4 E-participation*	46.4	107			
3.2 General infrastructure	43.3	31			
3.2.1 Electricity output, GWh/mn pop.	3,869.7	55			
3.2.2 Logistics performance*	37.2	63			
3.2.3 Gross capital formation, % GDP	46.0	2			
3.3 Ecological sustainability	14.7	125			
3.3.1 GDP/unit of energy use	4.2	125			
3.3.2 Environmental performance*	34.5	93			
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.5	84			
Market sophistication	56.8	11			
4.1 Credit	27.1	65			
4.1.1 Finance for startups and scaleups*	30.3	58			
4.1.2 Domestic credit to private sector, % GDP	66.1	52			
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a			
4.2 Investment	96.5	[1]			
4.2.1 Market capitalization, % GDP	257.2	3			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a			
4.2.4 Venture capital received, value, % GDP	n/a	n/a			
4.3 Trade, diversification, and market scale	46.9	87			
4.3.1 Applied tariff rate, weighted avg., %	12.1	126			
4.3.2 Domestic industry diversification	92.4	38			
4.3.3 Domestic market scale, bn PPP\$	1,189.1	22			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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\$
127	130	Upper middle	NAWA	41.2	428.9	10,415








		Score/ Value	Rank			Score/ Value	Rank
	Institutions	36.7	127		Business sophistication	10.2	132
1.1	Political environment	23.3	131	5.1	Knowledge workers	16.1	109
1.1.1	Political and operational stability*	25.5	131	5.1.1	Knowledge-intensive employment, %	22.1	67
1.1.2	Government effectiveness*	21.1	131	5.1.2	Firms offering formal training, %	22.2	69
1.2	Regulatory environment	50.1	106	5.1.3	GERD performed by business, % GDP	0.0	91
1.2.1	Regulatory quality*	10.6	129	5.1.4	GERD financed by business, %	1.8	89
1.2.2	Rule of law*	0.6	131	5.1.5	Females employed w/advanced degrees, %	7.2	87
1.2.3	Cost of redundancy dismissal	10.7	34	5.2	Innovation linkages	0.3	[132]
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 and depth†	n/a	n/a
1.3.2	Entrepreneurship policies and culture*	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	0.0	97
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	128
				5.2.5	Patent families/bn PPP\$ GDP	0.0	99
	Human capital and research	21.2	[93]	5.3	Knowledge absorption	14.3	132
2.1	Education	40.7	[95]	5.3.1	Intellectual property payments, % total trade	0.0	116
2.1.1	Expenditure on education, % GDP	4.7	50	5.3.2	High-tech imports, % total trade	n/a	n/a
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3	ICT services imports, % total trade	0.8	91
2.1.3	School life expectancy, years	n/a	n/a	5.3.4	FDI net inflows, % GDP	-1.8	126
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.5	Research talent, % in businesses	0.8	79
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a				
2.2	Tertiary education	n/a	[n/a]		Knowledge and technology outputs	5.5	[125]
2.2.1	Tertiary enrolment, % gross	n/a	n/a	6.1	Knowledge creation	11.1	[71]
2.2.2	Graduates in science and engineering, %	n/a	n/a	6.1.1	Patents by origin/bn PPP\$ GDP	1.6	49
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)	1.8	88	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1	Researchers, FTE/mn pop.	141.4	87	6.1.4	Scientific and technical articles/bn PPP\$ GDP	10.7	81
2.3.2	Gross expenditure on R&D, % GDP	0.0	110	6.1.5	Citable documents H-index	6.3	89
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	6.2	Knowledge impact	4.6	123
2.3.4	QS university ranking, top 3*	4.3	70	6.2.1	Labor productivity growth, %	-4.3	116
				6.2.2	New businesses/th pop. 15-64	0.1	119
	Infrastructure	23.9	124	6.2.3	Software spending, % GDP	n/a	n/a
3.1	Information and communication technologies (ICTs)	47.0	111	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	0.3	130
3.1.1	ICT access*	80.2	86	6.2.5	High-tech manufacturing, %	7.0	94
3.1.2	ICT use*	43.2	99	6.3	Knowledge diffusion	0.9	[132]
3.1.3	Government's online service*	33.5	121	6.3.1	Intellectual property receipts, % total trade	0.0	108
3.1.4	E-participation*	30.9	122	6.3.2	Production and export complexity	n/a	n/a
3.2	General infrastructure	8.9	130	6.3.3	High-tech exports, % total trade	n/a	n/a
3.2.1	Electricity output, GWh/mn pop.	2,437.5	73	6.3.4	ICT services exports, % total trade	0.2	122
3.2.2	Logistics performance*	6.0	121				
3.2.3	Gross capital formation, % GDP	n/a	n/a		Creative outputs	1.0	129
3.3	Ecological sustainability	15.8	123	7.1	Intangible assets	0.7	129
3.3.1	GDP/unit of energy use	7.8	96	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.2	Environmental performance*	27.8	123	7.1.2	Trademarks by origin/bn PPP\$ GDP	4.2	124
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.1	120	7.1.3	Global brand value, top 5,000, % GDP	0.0	77
				7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.2	105
	Market sophistication	10.8	[128]	7.2	Creative goods and services	2.3	[111]
4.1	Credit	1.2	[131]	7.2.1	Cultural and creative services exports, % total trade	0.1	80
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	8.6	127	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	Printing and other media, % manufacturing	0.2	97
4.2	Investment	0.5	[112]	7.2.5	Creative goods exports, % total trade	n/a	n/a
4.2.1	Market capitalization, % GDP	n/a	n/a	7.3	Online creativity	0.2	119
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.2	115
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	97	7.3.2	Country-code TLDs/th pop. 15-69	0.0	128
4.2.4	Venture capital received, value, % GDP	0.0	100	7.3.3	GitHub commit pushes received/mn pop. 15-69	0.7	108
4.3	Trade, diversification, and market scale	30.8	114	7.3.4	Mobile app creation/bn PPP\$ GDP	0.0	104
4.3.1	Applied tariff rate, weighted avg., %	n/a	n/a				
4.3.2	Domestic industry diversification	52.1	99				
4.3.3	Domestic market scale, bn PPP\$	428.9	48				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Ireland








23

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
19	25	High	EUR	5.0	561.5	111,360

	Score/Value	Rank		Score/Value	Rank
 Institutions	79.2	16	 Business sophistication	55.1	13
1.1 Political environment	81.7	19	5.1 Knowledge workers	67.8	11
1.1.1 Political and operational stability*	81.8	24	5.1.1 Knowledge-intensive employment, %	47.3	16
1.1.2 Government effectiveness*	81.6	16	5.1.2 Firms offering formal training, %	59.8	9
1.2 Regulatory environment	85.4	19	5.1.3 GERD performed by business, % GDP	0.9	26
1.2.1 Regulatory quality*	81.7	16	5.1.4 GERD financed by business, %	62.8	11
1.2.2 Rule of law*	85.0	17	5.1.5 Females employed w/advanced degrees, %	29.0	4 ●◆
1.2.3 Cost of redundancy dismissal	14.3	55	5.2 Innovation linkages	45.5	22
1.3 Business environment	70.6	17	5.2.1 University-industry R&D collaboration†	69.2	6 ●
1.3.1 Policies for doing business†	74.6	10	5.2.2 State of cluster development and depth†	58.8	31
1.3.2 Entrepreneurship policies and culture*	66.5	16	5.2.3 GERD financed by abroad, % GDP	0.2	24
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	21
			5.2.5 Patent families/bn PPP\$ GDP	2.1	17
 Human capital and research	48.9	23	5.3 Knowledge absorption	52.1	11
2.1 Education	48.7	70 ◇	5.3.1 Intellectual property payments, % total trade	20.2	1 ●◆
2.1.1 Expenditure on education, % GDP	3.4	97 ○◇	5.3.2 High-tech imports, % total trade	6.3	101 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap	11.7	94 ○◇	5.3.3 ICT services imports, % total trade	1.3	74 ○◇
2.1.3 School life expectancy, years	18.9	8 ●	5.3.4 FDI net inflows, % GDP	4.5	21
2.1.4 PISA scales in reading, maths and science	504.6	10	5.3.5 Research talent, % in businesses	55.0	19
2.1.5 Pupil-teacher ratio, secondary	n/a	n/a	 Knowledge and technology outputs	47.0	14
2.2 Tertiary education	45.0	25	6.1 Knowledge creation	23.1	40 ◇
2.2.1 Tertiary enrolment, % gross	75.2	27	6.1.1 Patents by origin/bn PPP\$ GDP	2.2	33 ◇
2.2.2 Graduates in science and engineering, %	26.4	32	6.1.2 PCT patents by origin/bn PPP\$ GDP	1.5	21 ◇
2.2.3 Tertiary inbound mobility, %	10.7	22	6.1.3 Utility models by origin/bn PPP\$ GDP	0.2	46 ○
2.3 Research and development (R&D)	53.0	21	6.1.4 Scientific and technical articles/bn PPP\$ GDP	20.5	46 ◇
2.3.1 Researchers, FTE/mn pop.	4,769.1	20	6.1.5 Citable documents H-index	34.9	28
2.3.2 Gross expenditure on R&D, % GDP	1.2	33 ◇	6.2 Knowledge impact	44.4	13
2.3.3 Global corporate R&D investors, top 3, mn USD	72.5	12	6.2.1 Labor productivity growth, %	-0.3	98 ○
2.3.4 QS university ranking, top 3*	48.0	21	6.2.2 New businesses/th pop. 15-64	6.8	22
			6.2.3 Software spending, % GDP	0.6	4 ●
 Infrastructure	60.1	15	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	5.4	53
3.1 Information and communication technologies (ICTs)	81.8	41 ◇	6.2.5 High-tech manufacturing, %	58.5	6 ●◆
3.1.1 ICT access*	88.1	62 ◇	6.3 Knowledge diffusion	73.4	1 ●◆
3.1.2 ICT use*	76.3	33 ◇	6.3.1 Intellectual property receipts, % total trade	2.9	9 ●
3.1.3 Government's online service*	77.1	47 ◇	6.3.2 Production and export complexity	72.9	17
3.1.4 E-participation*	85.7	29	6.3.3 High-tech exports, % total trade	9.0	20
3.2 General infrastructure	42.0	34 ◇	6.3.4 ICT services exports, % total trade	32.1	1 ●◆
3.2.1 Electricity output, GWh/mn pop.	6,427.7	31	 Creative outputs	35.5	29 ◇
3.2.2 Logistics performance*	67.9	28	7.1 Intangible assets	41.2	34
3.2.3 Gross capital formation, % GDP	20.8	87 ○	7.1.1 Intangible asset intensity, top 15, %	87.2	5 ●◆
3.3 Ecological sustainability	56.6	2 ●◆	7.1.2 Trademarks by origin/bn PPP\$ GDP	n/a	n/a
3.3.1 GDP/unit of energy use	32.9	1 ●◆	7.1.3 Global brand value, top 5,000, % GDP	44.8	36 ◇
3.3.2 Environmental performance*	57.4	24	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.8	50
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	2.0	48	7.2 Creative goods and services	23.0	53 ◇
			7.2.1 Cultural and creative services exports, % total trade	0.4	56
 Market sophistication	35.8	55 ◇	7.2.2 National feature films/mn pop. 15-69	7.4	16
4.1 Credit	28.1	62 ◇	7.2.3 Entertainment and media market/th pop. 15-69	49.2	15
4.1.1 Finance for startups and scaleups*	45.6	24	7.2.4 Printing and other media, % manufacturing	0.3	92 ○◇
4.1.2 Domestic credit to private sector, % GDP	32.4	90 ○◇	7.2.5 Creative goods exports, % total trade	1.4	38
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	36.8	17
4.2 Investment	22.8	32	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	58.6	12
4.2.1 Market capitalization, % GDP	37.5	42 ◇	7.3.2 Country-code TLDs/th pop. 15-69	27.5	25
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.2	18	7.3.3 GitHub commit pushes received/mn pop. 15-69	44.0	13
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	16	7.3.4 Mobile app creation/bn PPP\$ GDP	17.1	18
4.2.4 Venture capital received, value, % GDP	0.0	35			
4.3 Trade, diversification, and market scale	56.6	67			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	66.8	92 ○◇			
4.3.3 Domestic market scale, bn PPP\$	561.5	40			







NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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\$
16	22	High	NAWA	8.8	421.8	44,966

	Score/Value	Rank		Score/Value	Rank
 Institutions	65.0	41	 Business sophistication	60.8	6
1.1 Political environment	72.1	38	5.1 Knowledge workers	67.9	9
1.1.1 Political and operational stability*	70.9	53	5.1.1 Knowledge-intensive employment, %	48.4	11
1.1.2 Government effectiveness*	73.3	27	5.1.2 Firms offering formal training, %	18.6	82
1.2 Regulatory environment	67.7	58	5.1.3 GERD performed by business, % GDP	4.9	1
1.2.1 Regulatory quality*	75.9	22	5.1.4 GERD financed by business, %	38.1	46
1.2.2 Rule of law*	71.9	29	5.1.5 Females employed w/advanced degrees, %	30.3	1
1.2.3 Cost of redundancy dismissal	27.4	115	5.2 Innovation linkages	78.4	1
1.3 Business environment	55.1	47	5.2.1 University-industry R&D collaboration†	77.6	2
1.3.1 Policies for doing business†	58.4	43	5.2.2 State of cluster development and depth†	56.1	34
1.3.2 Entrepreneurship policies and culture*	51.8	32	5.2.3 GERD financed by abroad, % GDP	2.6	1
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.3	3
			5.2.5 Patent families/bn PPP\$ GDP	5.2	7
 Human capital and research	48.1	24	5.3 Knowledge absorption	36.0	47
2.1 Education	57.8	47	5.3.1 Intellectual property payments, % total trade	0.8	53
2.1.1 Expenditure on education, % GDP	6.1	18	5.3.2 High-tech imports, % total trade	10.7	30
2.1.2 Government funding/pupil, secondary, % GDP/cap	19.9	57	5.3.3 ICT services imports, % total trade	2.1	35
2.1.3 School life expectancy, years	16.1	35	5.3.4 FDI net inflows, % GDP	5.4	18
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	14.2	65	 Knowledge and technology outputs	55.8	7
2.2 Tertiary education	26.0	78	6.1 Knowledge creation	59.9	12
2.2.1 Tertiary enrolment, % gross	60.3	50	6.1.1 Patents by origin/bn PPP\$ GDP	4.3	20
2.2.2 Graduates in science and engineering, %	18.8	78	6.1.2 PCT patents by origin/bn PPP\$ GDP	5.0	1
2.2.3 Tertiary inbound mobility, %	2.8	72	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	60.5	16	6.1.4 Scientific and technical articles/bn PPP\$ GDP	42.1	20
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index	46.5	16
2.3.2 Gross expenditure on R&D, % GDP	5.4	1	6.2 Knowledge impact	40.2	23
2.3.3 Global corporate R&D investors, top 3, mn USD	62.9	21	6.2.1 Labor productivity growth, %	2.4	26
2.3.4 QS university ranking, top 3*	38.3	32	6.2.2 New businesses/th pop. 15-64	3.1	44
			6.2.3 Software spending, % GDP	0.2	60
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	21.7	12
			6.2.5 High-tech manufacturing, %	34.3	38
 Infrastructure	52.2	42	6.3 Knowledge diffusion	67.3	3
3.1 Information and communication technologies (ICTs)	78.9	49	6.3.1 Intellectual property receipts, % total trade	1.0	22
3.1.1 ICT access*	89.4	51	6.3.2 Production and export complexity	71.2	20
3.1.2 ICT use*	80.1	21	6.3.3 High-tech exports, % total trade	12.5	13
3.1.3 Government's online service*	74.7	55	6.3.4 ICT services exports, % total trade	16.5	1
3.1.4 E-participation*	71.4	66	 Creative outputs	30.6	36
3.2 General infrastructure	42.1	33	7.1 Intangible assets	27.3	64
3.2.1 Electricity output, GWh/mn pop.	7,900.2	20	7.1.1 Intangible asset intensity, top 15, %	69.5	24
3.2.2 Logistics performance*	58.6	34	7.1.2 Trademarks by origin/bn PPP\$ GDP	12.3	104
3.2.3 Gross capital formation, % GDP	22.0	79	7.1.3 Global brand value, top 5,000, % GDP	18.8	46
3.3 Ecological sustainability	35.6	40	7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.0	48
3.3.1 GDP/unit of energy use	16.0	18	7.2 Creative goods and services	34.7	18
3.3.2 Environmental performance*	48.2	46	7.2.1 Cultural and creative services exports, % total trade	3.1	5
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	2.1	44	7.2.2 National feature films/mn pop. 15-69	5.1	23
			7.2.3 Entertainment and media market/th pop. 15-69	36.0	21
			7.2.4 Printing and other media, % manufacturing	1.1	42
			7.2.5 Creative goods exports, % total trade	1.7	32
 Market sophistication	60.2	7	7.3 Online creativity	33.2	22
4.1 Credit	38.1	34	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	21.8	26
4.1.1 Finance for startups and scaleups*	51.2	11	7.3.2 Country-code TLDs/th pop. 15-69	14.2	34
4.1.2 Domestic credit to private sector, % GDP	68.6	50	7.3.3 GitHub commit pushes received/mn pop. 15-69	48.9	10
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	47.8	3
4.2 Investment	80.4	4			
4.2.1 Market capitalization, % GDP	58.1	33			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.8	1			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.6	1			
4.2.4 Venture capital received, value, % GDP	0.0	1			
4.3 Trade, diversification, and market scale	62.2	44			
4.3.1 Applied tariff rate, weighted avg., %	1.8	59			
4.3.2 Domestic industry diversification	89.4	46			
4.3.3 Domestic market scale, bn PPP\$	421.8	49			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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\$
15	31	High	EUR	60.4	2,697.1	45,267

		Score/ Value	Rank			Score/ Value	Rank
	Institutions	59.0	58		Business sophistication	39.3	33
1.1	Political environment	63.7	52	5.1	Knowledge workers	39.5	49
1.1.1	Political and operational stability*	69.1	63	5.1.1	Knowledge-intensive employment, %	35.8	42
1.1.2	Government effectiveness*	58.3	48	5.1.2	Firms offering formal training, %	12.6	94
1.2	Regulatory environment	77.5	33	5.1.3	GERD performed by business, % GDP	0.9	23
1.2.1	Regulatory quality*	57.5	48	5.1.4	GERD financed by business, %	55.9	19
1.2.2	Rule of law*	52.3	53	5.1.5	Females employed w/advanced degrees, %	13.8	54
1.2.3	Cost of redundancy dismissal	8.0	1	5.2	Innovation linkages	39.9	27
1.3	Business environment	35.7	93	5.2.1	University-industry R&D collaboration†	58.2	27
1.3.1	Policies for doing business†	46.3	77	5.2.2	State of cluster development and depth†	70.2	4
1.3.2	Entrepreneurship policies and culture*	25.0	55	5.2.3	GERD financed by abroad, % GDP	0.1	29
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	49
				5.2.5	Patent families/bn PPP\$ GDP	1.7	20
	Human capital and research	46.8	28	5.3	Knowledge absorption	38.5	42
2.1	Education	59.8	39	5.3.1	Intellectual property payments, % total trade	0.8	54
2.1.1	Expenditure on education, % GDP	4.3	67	5.3.2	High-tech imports, % total trade	8.6	60
2.1.2	Government funding/pupil, secondary, % GDP/cap	26.6	16	5.3.3	ICT services imports, % total trade	2.4	29
2.1.3	School life expectancy, years	16.2	31	5.3.4	FDI net inflows, % GDP	0.8	106
2.1.4	PISA scales in reading, maths and science	477.0	34	5.3.5	Research talent, % in businesses	48.5	27
2.1.5	Pupil-teacher ratio, secondary	10.0	30				
2.2	Tertiary education	31.7	64		Knowledge and technology outputs	45.2	16
2.2.1	Tertiary enrolment, % gross	66.1	42	6.1	Knowledge creation	41.9	21
2.2.2	Graduates in science and engineering, %	22.7	53	6.1.1	Patents by origin/bn PPP\$ GDP	6.0	16
2.2.3	Tertiary inbound mobility, %	2.8	70	6.1.2	PCT patents by origin/bn PPP\$ GDP	1.3	24
2.3	Research and development (R&D)	49.1	22	6.1.3	Utility models by origin/bn PPP\$ GDP	0.9	24
2.3.1	Researchers, FTE/mn pop.	2,671.8	33	6.1.4	Scientific and technical articles/bn PPP\$ GDP	33.9	27
2.3.2	Gross expenditure on R&D, % GDP	1.5	26	6.1.5	Citable documents H-index	68.7	8
2.3.3	Global corporate R&D investors, top 3, mn USD	68.9	15	6.2	Knowledge impact	52.8	3
2.3.4	QS university ranking, top 3*	49.1	20	6.2.1	Labor productivity growth, %	-0.1	93
				6.2.2	New businesses/th pop. 15-64	3.0	46
				6.2.3	Software spending, % GDP	0.6	8
	Infrastructure	57.4	26	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	38.6	1
3.1	Information and communication technologies (ICTs)	81.7	42	6.2.5	High-tech manufacturing, %	39.5	27
3.1.1	ICT access*	88.1	60	6.3	Knowledge diffusion	41.0	27
3.1.2	ICT use*	73.4	46	6.3.1	Intellectual property receipts, % total trade	0.8	24
3.1.3	Government's online service*	82.9	36	6.3.2	Production and export complexity	73.7	15
3.1.4	E-participation*	82.1	41	6.3.3	High-tech exports, % total trade	6.8	27
3.2	General infrastructure	41.9	36	6.3.4	ICT services exports, % total trade	1.6	74
3.2.1	Electricity output, GWh/mn pop.	4,656.1	46				
3.2.2	Logistics performance*	78.6	19		Creative outputs	41.3	16
3.2.3	Gross capital formation, % GDP	19.5	96	7.1	Intangible assets	62.2	9
3.3	Ecological sustainability	48.7	15	7.1.1	Intangible asset intensity, top 15, %	79.7	9
3.3.1	GDP/unit of energy use	15.4	22	7.1.2	Trademarks by origin/bn PPP\$ GDP	51.4	46
3.3.2	Environmental performance*	57.7	23	7.1.3	Global brand value, top 5,000, % GDP	91.3	23
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	7.3	13	7.1.4	Industrial designs by origin/bn PPP\$ GDP	14.3	5
				7.2	Creative goods and services	25.3	46
	Market sophistication	41.9	35	7.2.1	Cultural and creative services exports, % total trade	0.5	50
4.1	Credit	35.7	37	7.2.2	National feature films/mn pop. 15-69	7.4	15
4.1.1	Finance for startups and scaleups*	40.7	39	7.2.3	Entertainment and media market/th pop. 15-69	28.7	23
4.1.2	Domestic credit to private sector, % GDP	83.5	38	7.2.4	Printing and other media, % manufacturing	1.1	44
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.5	Creative goods exports, % total trade	2.1	27
4.2	Investment	6.4	66	7.3	Online creativity	15.5	35
4.2.1	Market capitalization, % GDP	26.3	51	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	23.2	25
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	58	7.3.2	Country-code TLDs/th pop. 15-69	23.6	29
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	62	7.3.3	GitHub commit pushes received/mn pop. 15-69	11.8	40
4.2.4	Venture capital received, value, % GDP	0.0	62	7.3.4	Mobile app creation/bn PPP\$ GDP	3.5	64
4.3	Trade, diversification, and market scale	83.5	10				
4.3.1	Applied tariff rate, weighted avg., %	1.5	20				
4.3.2	Domestic industry diversification	99.6	4				
4.3.3	Domestic market scale, bn PPP\$	2,697.1	12				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Jamaica

76

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
60	88	Upper middle	LCN	3.0	29.6	10,815

Institutions		Score/Value	Rank
1.1 Political environment		66.6	48
1.1.1	Political and operational stability*	74.5	42 ●
1.1.2	Government effectiveness*	58.6	47
1.2 Regulatory environment		65.8	64
1.2.1	Regulatory quality*	47.2	68
1.2.2	Rule of law*	39.9	74
1.2.3	Cost of redundancy dismissal	14.0	53
1.3 Business environment		46.1	72
1.3.1	Policies for doing business [†]	⊙ 54.8	49
1.3.2	Entrepreneurship policies and culture*	37.3	44

Human capital and research		Score/Value	Rank
2.1 Education		62.0	[24]
2.1.1	Expenditure on education, % GDP	6.0	22 ●
2.1.2	Government funding/pupil, secondary, % GDP/cap	28.5	13 ●◆
2.1.3	School life expectancy, years	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	14.9	74
2.2 Tertiary education		15.9	[99]
2.2.1	Tertiary enrolment, % gross	⊙ 27.1	88 ◇
2.2.2	Graduates in science and engineering, %	n/a	n/a
2.2.3	Tertiary inbound mobility, %	n/a	n/a
2.3 Research and development (R&D)		0.0	[120]
2.3.1	Researchers, FTE/mn pop.	n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○◇
2.3.4	QS university ranking, top 3*	0.0	72 ○◇

Infrastructure		Score/Value	Rank
3.1 Information and communication technologies (ICTs)		52.0	100 ◇
3.1.1	ICT access*	80.4	85
3.1.2	ICT use*	51.8	89
3.1.3	Government's online service*	38.8	115 ○◇
3.1.4	E-participation*	36.9	114 ○◇
3.2 General infrastructure		19.9	110
3.2.1	Electricity output, GWh/mn pop.	⊙ 1,501.7	91
3.2.2	Logistics performance*	21.9	104 ◇
3.2.3	Gross capital formation, % GDP	22.8	70
3.3 Ecological sustainability		26.0	63
3.3.1	GDP/unit of energy use	8.7	84
3.3.2	Environmental performance*	45.6	56
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	1.8	56

Market sophistication		Score/Value	Rank
4.1 Credit		25.0	72
4.1.1	Finance for startups and scaleups*	29.9	60
4.1.2	Domestic credit to private sector, % GDP	56.3	61
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a
4.2 Investment		11.7	50
4.2.1	Market capitalization, % GDP	87.0	20 ●
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	⊙ 0.0	59
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	⊙ 0.0	46
4.2.4	Venture capital received, value, % GDP	⊙ 0.0	101 ○◇
4.3 Trade, diversification, and market scale		23.0	122 ○◇
4.3.1	Applied tariff rate, weighted avg., %	8.4	107 ◇
4.3.2	Domestic industry diversification	n/a	n/a
4.3.3	Domestic market scale, bn PPP\$	29.6	124 ○

Business sophistication		Score/Value	Rank
5.1 Knowledge workers		22.5	[87]
5.1.1	Knowledge-intensive employment, %	⊙ 21.6	71
5.1.2	Firms offering formal training, %	n/a	n/a
5.1.3	GERD performed by business, % GDP	n/a	n/a
5.1.4	GERD financed by business, %	n/a	n/a
5.1.5	Females employed w/advanced degrees, %	⊙ 4.1	96 ◇
5.2 Innovation linkages		28.5	44 ●◆
5.2.1	University-industry R&D collaboration [†]	⊙ 44.8	61
5.2.2	State of cluster development and depth [†]	⊙ 46.5	73
5.2.3	GERD financed by abroad, % GDP	n/a	n/a
5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	24 ●◆
5.2.5	Patent families/bn PPP\$ GDP	0.0	101 ○◇
5.3 Knowledge absorption		29.9	65
5.3.1	Intellectual property payments, % total trade	0.9	48
5.3.2	High-tech imports, % total trade	5.9	108
5.3.3	ICT services imports, % total trade	1.8	48
5.3.4	FDI net inflows, % GDP	3.7	28 ●
5.3.5	Research talent, % in businesses	n/a	n/a

Knowledge and technology outputs		Score/Value	Rank
6.1 Knowledge creation		5.8	[101]
6.1.1	Patents by origin/bn PPP\$ GDP	0.4	82
6.1.2	PCT patents by origin/bn PPP\$ GDP	n/a	n/a
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
6.1.4	Scientific and technical articles/bn PPP\$ GDP	7.7	102
6.1.5	Citable documents H-index	4.3	103
6.2 Knowledge impact		20.4	92
6.2.1	Labor productivity growth, %	-1.6	110 ○◇
6.2.2	New businesses/th pop. 15-64	2.0	61
6.2.3	Software spending, % GDP	0.4	23 ●◆
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	1.3	99
6.2.5	High-tech manufacturing, %	n/a	n/a
6.3 Knowledge diffusion		16.0	86
6.3.1	Intellectual property receipts, % total trade	0.1	59
6.3.2	Production and export complexity	35.9	72
6.3.3	High-tech exports, % total trade	0.2	109 ◇
6.3.4	ICT services exports, % total trade	2.8	49

Creative outputs		Score/Value	Rank
7.1 Intangible assets		60.2	11 ●◆
7.1.1	Intangible asset intensity, top 15, %	57.9	44
7.1.2	Trademarks by origin/bn PPP\$ GDP	111.2	9 ●◆
7.1.3	Global brand value, top 5,000, % GDP	96.8	21 ●◆
7.1.4	Industrial designs by origin/bn PPP\$ GDP	7.7	14 ●◆
7.2 Creative goods and services		2.0	[115]
7.2.1	Cultural and creative services exports, % total trade	0.1	90
7.2.2	National feature films/mn pop. 15-69	⊙ 0.5	70 ○
7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
7.2.4	Printing and other media, % manufacturing	n/a	n/a
7.2.5	Creative goods exports, % total trade	0.2	76
7.3 Online creativity		1.2	97
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1.9	79
7.3.2	Country-code TLDs/th pop. 15-69	1.0	86
7.3.3	GitHub commit pushes received/mn pop. 15-69	2.0	86
7.3.4	Mobile app creation/bn PPP\$ GDP	0.1	101 ○

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Japan

13

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
12	11	High	SEAO	126.1	5,633.5	44,935

Institutions		Score/Value	Rank
75.8			21
1.1 Political environment		86.6	11
1.1.1 Political and operational stability*		89.1	7
1.1.2 Government effectiveness*		84.1	13
1.2 Regulatory environment		91.1	9
1.2.1 Regulatory quality*		78.7	19
1.2.2 Rule of law*		85.6	16
1.2.3 Cost of redundancy dismissal		8.0	1 ●
1.3 Business environment		49.8	60 ◇
1.3.1 Policies for doing business†		65.1	27
1.3.2 Entrepreneurship policies and culture*		34.6	46 ○ ◇

Human capital and research		Score/Value	Rank
52.7			21
2.1 Education		56.5	54 ◇
2.1.1 Expenditure on education, % GDP	⊙	3.1	107 ○ ◇
2.1.2 Government funding/pupil, secondary, % GDP/cap		23.6	30
2.1.3 School life expectancy, years		n/a	n/a
2.1.4 PISA scales in reading, maths and science		520.0	5
2.1.5 Pupil-teacher ratio, secondary		10.8	36
2.2 Tertiary education		24.2	83 ○ ◇
2.2.1 Tertiary enrolment, % gross		n/a	n/a
2.2.2 Graduates in science and engineering, %	⊙	19.7	68 ○
2.2.3 Tertiary inbound mobility, %		5.2	47
2.3 Research and development (R&D)		77.4	4 ●
2.3.1 Researchers, FTE/mn pop.		5,454.7	13
2.3.2 Gross expenditure on R&D, % GDP		3.3	6
2.3.3 Global corporate R&D investors, top 3, mn USD		90.1	5 ●
2.3.4 QS university ranking, top 3*		80.7	8

Infrastructure		Score/Value	Rank
61.3			12
3.1 Information and communication technologies (ICTs)		90.2	14
3.1.1 ICT access*		92.1	29
3.1.2 ICT use*		79.2	24
3.1.3 Government's online service*		90.6	12
3.1.4 E-participation*		98.8	4 ●
3.2 General infrastructure		55.9	14
3.2.1 Electricity output, GWh/mn pop.		8,140.8	17
3.2.2 Logistics performance*		92.1	4 ●
3.2.3 Gross capital formation, % GDP		25.5	51
3.3 Ecological sustainability		37.8	35
3.3.1 GDP/unit of energy use		12.9	40
3.3.2 Environmental performance*		57.2	25
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP		3.4	28

Market sophistication		Score/Value	Rank
59.0			9
4.1 Credit		59.6	7
4.1.1 Finance for startups and scaleups*		45.4	26
4.1.2 Domestic credit to private sector, % GDP		192.1	3 ● ◆
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a
4.2 Investment		24.2	31
4.2.1 Market capitalization, % GDP		119.4	10
4.2.2 Venture capital investors, deals/bn PPP\$ GDP		0.1	27
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP		0.1	25
4.2.4 Venture capital received, value, % GDP		0.0	53 ○ ◇
4.3 Trade, diversification, and market scale		93.2	4 ● ◆
4.3.1 Applied tariff rate, weighted avg., %		2.2	64
4.3.2 Domestic industry diversification	⊙	94.1	28
4.3.3 Domestic market scale, bn PPP\$		5,633.5	1 ● ◆



Business sophistication		Score/Value	Rank
58.1			8
5.1 Knowledge workers		65.9	12
5.1.1 Knowledge-intensive employment, %	⊙	25.9	56 ◇
5.1.2 Firms offering formal training, %		n/a	n/a
5.1.3 GERD performed by business, % GDP		2.6	4 ●
5.1.4 GERD financed by business, %		78.3	2 ● ◆
5.1.5 Females employed w/advanced degrees, %	⊙	22.9	24
5.2 Innovation linkages		47.7	20
5.2.1 University-industry R&D collaboration†		59.1	25
5.2.2 State of cluster development and depth†		64.4	17
5.2.3 GERD financed by abroad, % GDP		0.0	66 ○ ◇
5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	41 ◇
5.2.5 Patent families/bn PPP\$ GDP		13.6	1 ● ◆
5.3 Knowledge absorption		60.7	5 ● ◆
5.3.1 Intellectual property payments, % total trade		2.9	8
5.3.2 High-tech imports, % total trade		15.0	16
5.3.3 ICT services imports, % total trade		2.6	24
5.3.4 FDI net inflows, % GDP		0.8	104 ○
5.3.5 Research talent, % in businesses		74.7	3 ● ◆

Knowledge and technology outputs		Score/Value	Rank
52.6			11
6.1 Knowledge creation		62.1	10
6.1.1 Patents by origin/bn PPP\$ GDP		42.8	1 ● ◆
6.1.2 PCT patents by origin/bn PPP\$ GDP		8.9	1 ● ◆
6.1.3 Utility models by origin/bn PPP\$ GDP		0.8	27
6.1.4 Scientific and technical articles/bn PPP\$ GDP		17.6	54 ◇
6.1.5 Citable documents H-index		67.7	9
6.2 Knowledge impact		30.5	55 ◇
6.2.1 Labor productivity growth, %		-0.8	102 ○ ◇
6.2.2 New businesses/th pop. 15-64		0.4	99 ○ ◇
6.2.3 Software spending, % GDP		0.2	52
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP		6.2	45
6.2.5 High-tech manufacturing, %	⊙	55.2	9
6.3 Knowledge diffusion		65.2	5 ●
6.3.1 Intellectual property receipts, % total trade		5.2	3 ● ◆
6.3.2 Production and export complexity		100.0	1 ● ◆
6.3.3 High-tech exports, % total trade		13.1	11
6.3.4 ICT services exports, % total trade		1.2	80 ○

Creative outputs		Score/Value	Rank
38.9			19
7.1 Intangible assets		53.8	15
7.1.1 Intangible asset intensity, top 15, %		70.8	21
7.1.2 Trademarks by origin/bn PPP\$ GDP		64.6	36
7.1.3 Global brand value, top 5,000, % GDP		154.6	8
7.1.4 Industrial designs by origin/bn PPP\$ GDP		4.2	29
7.2 Creative goods and services		36.7	13
7.2.1 Cultural and creative services exports, % total trade		0.4	59 ○
7.2.2 National feature films/mn pop. 15-69		8.2	8
7.2.3 Entertainment and media market/th pop. 15-69		73.9	3 ●
7.2.4 Printing and other media, % manufacturing	⊙	1.6	21
7.2.5 Creative goods exports, % total trade		1.8	31
7.3 Online creativity		11.4	41 ◇
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		16.1	31 ◇
7.3.2 Country-code TLDs/th pop. 15-69		5.8	50 ◇
7.3.3 GitHub commit pushes received/mn pop. 15-69		13.7	39 ◇
7.3.4 Mobile app creation/bn PPP\$ GDP		9.7	42

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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\$
78	71	Upper middle	NAWA	10.3	111.7	10,821








	Score/Value	Rank		Score/Value	Rank
 Institutions	63.5	45	 Business sophistication	25.2	75
1.1 Political environment	58.8	67	5.1 Knowledge workers	23.7	[83]
1.1.1 Political and operational stability*	65.5	74	5.1.1 Knowledge-intensive employment, %	21.0	74
1.1.2 Government effectiveness*	52.2	63	5.1.2 Firms offering formal training, %	16.9	88 ○
1.2 Regulatory environment	75.5	35 ● ◆	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	50.6	62	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	51.6	55	5.1.5 Females employed w/advanced degrees, %	7.8	82 ◇
1.2.3 Cost of redundancy dismissal	8.0	1 ● ◆	5.2 Innovation linkages	32.2	35 ● ◆
1.3 Business environment	56.1	41	5.2.1 University-industry R&D collaboration†	52.8	37 ● ◆
1.3.1 Policies for doing business†	56.7	46	5.2.2 State of cluster development and depth†	61.2	23 ● ◆
1.3.2 Entrepreneurship policies and culture*	55.6	27	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	38 ◆
			5.2.5 Patent families/bn PPP\$ GDP	0.0	69
 Human capital and research	28.3	76	5.3 Knowledge absorption	19.9	111 ◇
2.1 Education	37.6	106 ◇	5.3.1 Intellectual property payments, % total trade	0.1	96
2.1.1 Expenditure on education, % GDP	3.0	109 ○	5.3.2 High-tech imports, % total trade	8.3	67
2.1.2 Government funding/pupil, secondary, % GDP/cap	16.0	77	5.3.3 ICT services imports, % total trade	0.3	125 ○ ◇
2.1.3 School life expectancy, years	10.6	100 ○ ◇	5.3.4 FDI net inflows, % GDP	1.8	80
2.1.4 PISA scales in reading, maths and science	416.0	58	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	13.3	59	 Knowledge and technology outputs	19.0	76
2.2 Tertiary education	39.0	39	6.1 Knowledge creation	16.8	55
2.2.1 Tertiary enrolment, % gross	33.6	81	6.1.1 Patents by origin/bn PPP\$ GDP	0.3	84
2.2.2 Graduates in science and engineering, %	28.4	25 ●	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	50
2.2.3 Tertiary inbound mobility, %	12.2	18 ● ◆	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	8.4	62	6.1.4 Scientific and technical articles/bn PPP\$ GDP	35.4	26 ● ◆
2.3.1 Researchers, FTE/mn pop.	596.0	63	6.1.5 Citable documents H-index	10.2	71
2.3.2 Gross expenditure on R&D, % GDP	0.7	51	6.2 Knowledge impact	24.0	75
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2.1 Labor productivity growth, %	0.7	70
2.3.4 QS university ranking, top 3*	15.5	57	6.2.2 New businesses/th pop. 15-64	0.4	100
			6.2.3 Software spending, % GDP	0.3	48
 Infrastructure	31.9	100 ◇	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	5.4	52
3.1 Information and communication technologies (ICTs)	48.8	104 ◇	6.2.5 High-tech manufacturing, %	22.4	58
3.1.1 ICT access*	68.8	101 ◇	6.3 Knowledge diffusion	16.3	84
3.1.2 ICT use*	57.2	81	6.3.1 Intellectual property receipts, % total trade	0.1	65
3.1.3 Government's online service*	35.9	118 ○ ◇	6.3.2 Production and export complexity	40.8	63
3.1.4 E-participation*	33.3	118 ○ ◇	6.3.3 High-tech exports, % total trade	1.3	70
3.2 General infrastructure	20.7	105	6.3.4 ICT services exports, % total trade	0.1	130 ○
3.2.1 Electricity output, GWh/mn pop.	2,028.7	80	 Creative outputs	16.0	78
3.2.2 Logistics performance*	29.8	81	7.1 Intangible assets	22.4	73
3.2.3 Gross capital formation, % GDP	18.5	104	7.1.1 Intangible asset intensity, top 15, %	44.8	58
3.3 Ecological sustainability	26.2	62	7.1.2 Trademarks by origin/bn PPP\$ GDP	26.1	84
3.3.1 GDP/unit of energy use	10.1	68	7.1.3 Global brand value, top 5,000, % GDP	7.9	61
3.3.2 Environmental performance*	43.6	60	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.7	77
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	1.4	60	7.2 Creative goods and services	14.4	67
			7.2.1 Cultural and creative services exports, % total trade	0.0	111 ○
 Market sophistication	36.9	52	7.2.2 National feature films/mn pop. 15-69	1.0	58
4.1 Credit	28.7	59	7.2.3 Entertainment and media market/th pop. 15-69	1.0	57 ○ ◇
4.1.1 Finance for startups and scaleups*	43.6	30	7.2.4 Printing and other media, % manufacturing	2.3	10 ● ◆
4.1.2 Domestic credit to private sector, % GDP	83.1	39	7.2.5 Creative goods exports, % total trade	0.6	59
4.1.3 Loans from microfinance institutions, % GDP	0.8	31	7.3 Online creativity	5.0	63
4.2 Investment	25.4	28 ● ◆	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	4.8	54
4.2.1 Market capitalization, % GDP	47.3	38	7.3.2 Country-code TLDs/th pop. 15-69	0.2	108
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.1	30	7.3.3 GitHub commit pushes received/mn pop. 15-69	4.4	64
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	30 ● ◆	7.3.4 Mobile app creation/bn PPP\$ GDP	10.8	39
4.2.4 Venture capital received, value, % GDP	0.0	15 ● ◆			
4.3 Trade, diversification, and market scale	56.6	65			
4.3.1 Applied tariff rate, weighted avg., %	4.0	83			
4.3.2 Domestic industry diversification	93.3	31 ●			
4.3.3 Domestic market scale, bn PPP\$	111.7	85			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Kazakhstan

83

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
97	65	Upper middle	CSA	19.0	536.3	28,043








		Score/Value	Rank			Score/Value	Rank
	Institutions	60.5	52		Business sophistication	26.9	68
1.1	Political environment	61.1	61	5.1	Knowledge workers	41.2	45
1.1.1	Political and operational stability*	69.1	63	5.1.1	Knowledge-intensive employment, %	36.9	39
1.1.2	Government effectiveness*	53.1	59	5.1.2	Firms offering formal training, %	21.8	73
1.2	Regulatory environment	70.4	49	5.1.3	GERD performed by business, % GDP	0.1	72
1.2.1	Regulatory quality*	48.4	66	5.1.4	GERD financed by business, %	47.4	34
1.2.2	Rule of law*	35.8	85	5.1.5	Females employed w/advanced degrees, %	20.7	31
1.2.3	Cost of redundancy dismissal	8.7	18	5.2	Innovation linkages	14.3	123
1.3	Business environment	50.1	57	5.2.1	University-industry R&D collaboration†	29.6	117
1.3.1	Policies for doing business†	41.0	93	5.2.2	State of cluster development and depth†	33.9	120
1.3.2	Entrepreneurship policies and culture*	59.2	23	5.2.3	GERD financed by abroad, % GDP	0.0	88
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	97
				5.2.5	Patent families/bn PPP\$ GDP	0.1	51
	Human capital and research	32.7	60	5.3	Knowledge absorption	25.2	89
2.1	Education	48.2	73	5.3.1	Intellectual property payments, % total trade	0.3	81
2.1.1	Expenditure on education, % GDP	2.9	111	5.3.2	High-tech imports, % total trade	10.1	40
2.1.2	Government funding/pupil, secondary, % GDP/cap	21.2	46	5.3.3	ICT services imports, % total trade	0.9	88
2.1.3	School life expectancy, years	15.8	41	5.3.4	FDI net inflows, % GDP	2.1	70
2.1.4	PISA scales in reading, maths and science	402.4	64	5.3.5	Research talent, % in businesses	n/a	n/a
2.1.5	Pupil-teacher ratio, secondary	8.3	12				
2.2	Tertiary education	36.7	42		Knowledge and technology outputs	17.8	81
2.2.1	Tertiary enrolment, % gross	70.7	33	6.1	Knowledge creation	12.3	66
2.2.2	Graduates in science and engineering, %	24.1	43	6.1.1	Patents by origin/bn PPP\$ GDP	1.8	39
2.2.3	Tertiary inbound mobility, %	5.5	45	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	73
2.3	Research and development (R&D)	13.1	51	6.1.3	Utility models by origin/bn PPP\$ GDP	1.6	14
2.3.1	Researchers, FTE/mn pop.	629.9	62	6.1.4	Scientific and technical articles/bn PPP\$ GDP	3.9	117
2.3.2	Gross expenditure on R&D, % GDP	0.1	101	6.1.5	Citable documents H-index	5.3	93
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	6.2	Knowledge impact	20.3	93
2.3.4	QS university ranking, top 3*	34.7	36	6.2.1	Labor productivity growth, %	2.2	31
				6.2.2	New businesses/th pop. 15-64	3.5	39
				6.2.3	Software spending, % GDP	0.0	119
	Infrastructure	46.2	58	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	0.9	109
3.1	Information and communication technologies (ICTs)	85.7	25	6.2.5	High-tech manufacturing, %	15.3	75
3.1.1	ICT access*	90.2	43	6.3	Knowledge diffusion	20.8	71
3.1.2	ICT use*	72.2	51	6.3.1	Intellectual property receipts, % total trade	0.0	99
3.1.3	Government's online service*	92.3	11	6.3.2	Production and export complexity	34.1	76
3.1.4	E-participation*	88.1	26	6.3.3	High-tech exports, % total trade	5.2	36
3.2	General infrastructure	33.8	52	6.3.4	ICT services exports, % total trade	0.3	115
3.2.1	Electricity output, GWh/mn pop.	5,774.2	33				
3.2.2	Logistics performance*	35.3	67		Creative outputs	4.3	118
3.2.3	Gross capital formation, % GDP	26.6	41	7.1	Intangible assets	5.4	115
3.3	Ecological sustainability	19.2	98	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.1	GDP/unit of energy use	6.4	109	7.1.2	Trademarks by origin/bn PPP\$ GDP	20.9	92
3.3.2	Environmental performance*	40.9	68	7.1.3	Global brand value, top 5,000, % GDP	3.7	70
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.4	88	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.2	107
	Market sophistication	25.6	90	7.2	Creative goods and services	3.9	106
4.1	Credit	18.0	91	7.2.1	Cultural and creative services exports, % total trade	0.1	89
4.1.1	Finance for startups and scaleups*	37.3	44	7.2.2	National feature films/mn pop. 15-69	0.3	73
4.1.2	Domestic credit to private sector, % GDP	25.6	107	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.3	Loans from microfinance institutions, % GDP	0.6	35	7.2.4	Printing and other media, % manufacturing	0.5	80
4.2	Investment	2.3	102	7.2.5	Creative goods exports, % total trade	0.2	79
4.2.1	Market capitalization, % GDP	23.9	56	7.3	Online creativity	2.3	82
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	93	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.3	113
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	102	7.3.2	Country-code TLDs/th pop. 15-69	3.7	60
4.2.4	Venture capital received, value, % GDP	0.0	99	7.3.3	GitHub commit pushes received/mn pop. 15-69	2.2	82
4.3	Trade, diversification, and market scale	56.6	66	7.3.4	Mobile app creation/bn PPP\$ GDP	3.0	65
4.3.1	Applied tariff rate, weighted avg., %	2.0	61				
4.3.2	Domestic industry diversification	70.6	86				
4.3.3	Domestic market scale, bn PPP\$	536.3	41				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Kenya








88

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
79	103	Lower middle	SSA	55.0	269.3	5,407

	Score/Value	Rank		Score/Value	Rank
 Institutions	51.8	82	 Business sophistication	24.7	80
1.1 Political environment	49.2	98	5.1 Knowledge workers	22.3	[89]
1.1.1 Political and operational stability*	56.4	108	5.1.1 Knowledge-intensive employment, %	⊙	13.8 93
1.1.2 Government effectiveness*	42.1	89	5.1.2 Firms offering formal training, %	⊙	37.4 40
1.2 Regulatory environment	58.7	84	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	33.9	99	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	31.6	96	5.1.5 Females employed w/advanced degrees, %	⊙	1.7 109
1.2.3 Cost of redundancy dismissal	15.8	63	5.2 Innovation linkages	25.4	53 ◆
1.3 Business environment	47.6	[67]	5.2.1 University-industry R&D collaboration†	45.3	60
1.3.1 Policies for doing business†	47.6	72	5.2.2 State of cluster development and depth†	49.2	53
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	96
 Human capital and research	14.0	[119]	5.3 Knowledge absorption	26.3	84
2.1 Education	38.3	[103]	5.3.1 Intellectual property payments, % total trade	⊙	1.0 37 ◆
2.1.1 Expenditure on education, % GDP	4.8	48 ●	5.3.2 High-tech imports, % total trade	⊙	9.3 50 ●
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	n/a	n/a	5.3.4 FDI net inflows, % GDP	1.3	93
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	⊙	30.7 119 ○ ◇	 Knowledge and technology outputs	19.2	74
2.2 Tertiary education	3.7	123 ○ ◇	6.1 Knowledge creation	12.7	65
2.2.1 Tertiary enrolment, % gross	10.0	113 ○	6.1.1 Patents by origin/bn PPP\$ GDP	1.4	54
2.2.2 Graduates in science and engineering, %	n/a	n/a	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	83
2.2.3 Tertiary inbound mobility, %	1.3	86	6.1.3 Utility models by origin/bn PPP\$ GDP	0.9	25 ●
2.3 Research and development (R&D)	0.0	[120]	6.1.4 Scientific and technical articles/bn PPP\$ GDP	12.3	77
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index	15.7	52 ●
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	6.2 Knowledge impact	21.6	83
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2.1 Labor productivity growth, %	2.8	24 ●
2.3.4 QS university ranking, top 3*	0.0	72 ○ ◇	6.2.2 New businesses/th pop. 15-64	1.5	68
			6.2.3 Software spending, % GDP	0.2	76
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	1.9	85
			6.2.5 High-tech manufacturing, %	11.4	83
 Infrastructure	30.3	107	6.3 Knowledge diffusion	23.2	66
3.1 Information and communication technologies (ICTs)	58.8	94	6.3.1 Intellectual property receipts, % total trade	⊙	0.5 28 ◆
3.1.1 ICT access*	75.3	91	6.3.2 Production and export complexity	34.5	75
3.1.2 ICT use*	32.6	109	6.3.3 High-tech exports, % total trade	0.6	85
3.1.3 Government's online service*	67.7	75	6.3.4 ICT services exports, % total trade	⊙	4.1 26 ●
3.1.4 E-participation*	59.5	87	 Creative outputs	15.6	79
3.2 General infrastructure	16.1	117 ○	7.1 Intangible assets	17.7	84
3.2.1 Electricity output, GWh/mn pop.	⊙	204.1 118 ○	7.1.1 Intangible asset intensity, top 15, %	18.2	71 ○
3.2.2 Logistics performance*	35.3	67	7.1.2 Trademarks by origin/bn PPP\$ GDP	21.3	91
3.2.3 Gross capital formation, % GDP	13.0	124 ○ ◇	7.1.3 Global brand value, top 5,000, % GDP	16.7	49
3.3 Ecological sustainability	16.1	121 ○	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.9	71
3.3.1 GDP/unit of energy use	6.9	102	7.2 Creative goods and services	25.8	44 ◆
3.3.2 Environmental performance*	30.8	103	7.2.1 Cultural and creative services exports, % total trade	⊙	0.0 102 ○
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.3	100	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	2.2	53
			7.2.4 Printing and other media, % manufacturing	3.7	3 ◆
			7.2.5 Creative goods exports, % total trade	0.1	92
 Market sophistication	19.7	111	7.3 Online creativity	1.3	96
4.1 Credit	8.3	117 ○	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.9	97
4.1.1 Finance for startups and scaleups*	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	0.8	92
4.1.2 Domestic credit to private sector, % GDP	32.0	91	7.3.3 GitHub commit pushes received/mn pop. 15-69	2.8	75
4.1.3 Loans from microfinance institutions, % GDP	0.4	40	7.3.4 Mobile app creation/bn PPP\$ GDP	0.7	79
4.2 Investment	13.9	43 ●			
4.2.1 Market capitalization, % GDP	23.1	58			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.1	39 ◆			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	24 ◆			
4.2.4 Venture capital received, value, % GDP	0.0	43			
4.3 Trade, diversification, and market scale	36.9	106			
4.3.1 Applied tariff rate, weighted avg., %	9.3	115 ○			
4.3.2 Domestic industry diversification	65.1	93			
4.3.3 Domestic market scale, bn PPP\$	269.3	61			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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\$
66	66	High	NAWA	4.3	211.3	44,609








	Score/Value	Rank		Score/Value	Rank
 Institutions	51.0	86	 Business sophistication	20.7	[101]
1.1 Political environment	54.1	84	5.1 Knowledge workers	17.2	[108]
1.1.1 Political and operational stability*	61.8	87	5.1.1 Knowledge-intensive employment, %	22.7	66
1.1.2 Government effectiveness*	46.3	80	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	56.8	90	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	52.1	58	5.1.4 GERD financed by business, %	1.0	94
1.2.2 Rule of law*	54.7	48	5.1.5 Females employed w/advanced degrees, %	n/a	n/a
1.2.3 Cost of redundancy dismissal	28.1	117	5.2 Innovation linkages	21.6	74
1.3 Business environment	42.2	81	5.2.1 University-industry R&D collaboration†	40.9	77
1.3.1 Policies for doing business†	51.7	58	5.2.2 State of cluster development and depth†	54.4	39
1.3.2 Entrepreneurship policies and culture*	32.7	50	5.2.3 GERD financed by abroad, % GDP	0.0	97
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	44
			5.2.5 Patent families/bn PPP\$ GDP	0.0	72
 Human capital and research	34.9	55	5.3 Knowledge absorption	23.3	[97]
2.1 Education	60.8	35	5.3.1 Intellectual property payments, % total trade	n/a	n/a
2.1.1 Expenditure on education, % GDP	6.6	11	5.3.2 High-tech imports, % total trade	7.3	88
2.1.2 Government funding/pupil, secondary, % GDP/cap	17.3	68	5.3.3 ICT services imports, % total trade	0.3	122
2.1.3 School life expectancy, years	14.7	57	5.3.4 FDI net inflows, % GDP	-0.1	121
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	5	 Knowledge and technology outputs	20.1	68
2.2 Tertiary education	39.5	[37]	6.1 Knowledge creation	5.4	105
2.2.1 Tertiary enrolment, % gross	61.1	49	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	118
2.2.2 Graduates in science and engineering, %	n/a	n/a	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	84
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)	4.5	73	6.1.4 Scientific and technical articles/bn PPP\$ GDP	8.8	96
2.3.1 Researchers, FTE/mn pop.	513.9	67	6.1.5 Citable documents H-index	8.8	81
2.3.2 Gross expenditure on R&D, % GDP	0.2	91	6.2 Knowledge impact	21.3	85
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2.1 Labor productivity growth, %	-2.4	113
2.3.4 QS university ranking, top 3*	8.9	64	6.2.2 New businesses/th pop. 15-64	3.3	41
			6.2.3 Software spending, % GDP	0.4	26
 Infrastructure	54.0	36	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	3.0	75
3.1 Information and communication technologies (ICTs)	86.5	21	6.2.5 High-tech manufacturing, %	20.9	63
3.1.1 ICT access*	96.0	8	6.3 Knowledge diffusion	33.6	46
3.1.2 ICT use*	75.5	38	6.3.1 Intellectual property receipts, % total trade	n/a	n/a
3.1.3 Government's online service*	84.1	31	6.3.2 Production and export complexity	23.6	94
3.1.4 E-participation*	90.5	18	6.3.3 High-tech exports, % total trade	0.3	97
3.2 General infrastructure	55.4	15	6.3.4 ICT services exports, % total trade	9.9	6
3.2.1 Electricity output, GWh/mn pop.	17,833.7	4	 Creative outputs	20.4	60
3.2.2 Logistics performance*	37.7	62	7.1 Intangible assets	37.1	44
3.2.3 Gross capital formation, % GDP	28.4	29	7.1.1 Intangible asset intensity, top 15, %	46.1	56
3.3 Ecological sustainability	20.0	92	7.1.2 Trademarks by origin/bn PPP\$ GDP	16.4	97
3.3.1 GDP/unit of energy use	4.9	123	7.1.3 Global brand value, top 5,000, % GDP	93.3	22
3.3.2 Environmental performance*	42.4	63	7.1.4 Industrial designs by origin/bn PPP\$ GDP	n/a	n/a
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	1.4	62	7.2 Creative goods and services	4.8	[102]
			7.2.1 Cultural and creative services exports, % total trade	n/a	n/a
 Market sophistication	30.7	73	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	36.6	35	7.2.3 Entertainment and media market/th pop. 15-69	6.8	40
4.1.1 Finance for startups and scaleups*	39.5	42	7.2.4 Printing and other media, % manufacturing	0.4	91
4.1.2 Domestic credit to private sector, % GDP	90.9	33	7.2.5 Creative goods exports, % total trade	0.1	100
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	2.6	79
4.2 Investment	11.4	51	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	7.7	44
4.2.1 Market capitalization, % GDP	93.4	17	7.3.2 Country-code TLDs/th pop. 15-69	0.3	104
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.1	42	7.3.3 GitHub commit pushes received/mn pop. 15-69	1.2	100
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	89	7.3.4 Mobile app creation/bn PPP\$ GDP	1.2	76
4.2.4 Venture capital received, value, % GDP	0.0	69			
4.3 Trade, diversification, and market scale	44.0	94			
4.3.1 Applied tariff rate, weighted avg., %	3.0	73			
4.3.2 Domestic industry diversification	47.0	102			
4.3.3 Domestic market scale, bn PPP\$	211.3	66			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Kyrgyzstan

94

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
108	85	Lower middle	CSA	6.6	34.5	5,187








	Score/Value	Rank		Score/Value	Rank
 Institutions	43.2	113	 Business sophistication	19.7	107
1.1 Political environment	42.7	123	5.1 Knowledge workers	24.9	79
1.1.1 Political and operational stability*	47.3	125 ○ ◇	5.1.1 Knowledge-intensive employment, %	19.7	77
1.1.2 Government effectiveness*	38.1	100	5.1.2 Firms offering formal training, %	41.4	29 ●
1.2 Regulatory environment	55.0	94	5.1.3 GERD performed by business, % GDP	0.0	78
1.2.1 Regulatory quality*	34.8	95	5.1.4 GERD financed by business, %	6.9	80
1.2.2 Rule of law*	22.0	116	5.1.5 Females employed w/advanced degrees, %	11.7	64
1.2.3 Cost of redundancy dismissal	17.3	71	5.2 Innovation linkages	13.7	125 ○ ◇
1.3 Business environment	32.1	[104]	5.2.1 University-industry R&D collaboration†	24.4	124 ○ ◇
1.3.1 Policies for doing business†	32.1	116	5.2.2 State of cluster development and depth†	40.6	101
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.0	81
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	109
			5.2.5 Patent families/bn PPP\$ GDP	0.0	101 ○ ◇
 Human capital and research	31.5	63 ● ◆	5.3 Knowledge absorption	20.5	108
2.1 Education	59.7	[41]	5.3.1 Intellectual property payments, % total trade	0.1	98
2.1.1 Expenditure on education, % GDP	5.4	31 ●	5.3.2 High-tech imports, % total trade	8.1	70
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	0.6	107
2.1.3 School life expectancy, years	13.2	80	5.3.4 FDI net inflows, % GDP	0.4	117
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	12.2	51 ● ◆	 Knowledge and technology outputs	13.0	92
2.2 Tertiary education	34.5	50 ● ◆	6.1 Knowledge creation	8.9	79
2.2.1 Tertiary enrolment, % gross	46.5	68 ◆	6.1.1 Patents by origin/bn PPP\$ GDP	2.1	34 ●
2.2.2 Graduates in science and engineering, %	19.2	77	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	101 ○ ◇
2.2.3 Tertiary inbound mobility, %	15.5	13 ● ◆	6.1.3 Utility models by origin/bn PPP\$ GDP	0.6	36 ●
2.3 Research and development (R&D)	0.3	110	6.1.4 Scientific and technical articles/bn PPP\$ GDP	8.7	98
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index	3.2	116
2.3.2 Gross expenditure on R&D, % GDP	0.1	106	6.2 Knowledge impact	15.1	108
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2.1 Labor productivity growth, %	1.7	44 ●
2.3.4 QS university ranking, top 3*	0.0	72 ○ ◇	6.2.2 New businesses/th pop. 15-64	1.3	77
			6.2.3 Software spending, % GDP	0.1	88
 Infrastructure	37.1	86	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	0.4	121
3.1 Information and communication technologies (ICTs)	69.5	77 ◆	6.2.5 High-tech manufacturing, %	2.1	109 ○ ◇
3.1.1 ICT access*	84.3	72 ◆	6.3 Knowledge diffusion	15.1	88
3.1.2 ICT use*	57.4	80 ◆	6.3.1 Intellectual property receipts, % total trade	0.0	79
3.1.3 Government's online service*	64.7	79	6.3.2 Production and export complexity	40.7	64
3.1.4 E-participation*	71.4	66 ◆	6.3.3 High-tech exports, % total trade	0.8	79
3.2 General infrastructure	24.0	82	6.3.4 ICT services exports, % total trade	0.4	102
3.2.1 Electricity output, GWh/mn pop.	2,340.6	75	 Creative outputs	3.8	121 ○ ◇
3.2.2 Logistics performance*	23.3	100	7.1 Intangible assets	4.0	117
3.2.3 Gross capital formation, % GDP	26.4	43 ●	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	17.8	106	7.1.2 Trademarks by origin/bn PPP\$ GDP	14.2	100
3.3.1 GDP/unit of energy use	7.4	100	7.1.3 Global brand value, top 5,000, % GDP	0.0	77 ○ ◇
3.3.2 Environmental performance*	35.7	88	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.6	84
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.1	131 ○	7.2 Creative goods and services	6.2	[94]
			7.2.1 Cultural and creative services exports, % total trade	0.4	61
 Market sophistication	37.2	51 ●	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	32.2	45 ●	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 Printing and other media, % manufacturing	0.4	87
4.1.2 Domestic credit to private sector, % GDP	28.5	96	7.2.5 Creative goods exports, % total trade	0.1	88
4.1.3 Loans from microfinance institutions, % GDP	3.8	8 ● ◆	7.3 Online creativity	1.0	100
4.2 Investment	n/a	[n/a]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.2	117
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	0.8	95
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.3 GitHub commit pushes received/mn pop. 15-69	3.0	71
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	0.1	96
4.2.4 Venture capital received, value, % GDP	n/a	n/a			
4.3 Trade, diversification, and market scale	42.1	96			
4.3.1 Applied tariff rate, weighted avg., %	2.3	65 ● ◆			
4.3.2 Domestic industry diversification	40.9	105 ○ ◇			
4.3.3 Domestic market scale, bn PPP\$	34.5	120			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Latvia

41

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
42	39	High	EUR	1.9	65.1	34,169








		Score/ Value	Rank			Score/ Value	Rank
	Institutions	68.7	35		Business sophistication	37.5	36
1.1	Political environment	75.3	34	5.1	Knowledge workers	51.4	26
1.1.1	Political and operational stability*	81.8	24	5.1.1	Knowledge-intensive employment, %	44.5	23
1.1.2	Government effectiveness*	68.7	37	5.1.2	Firms offering formal training, %	52.9	18
1.2	Regulatory environment	81.4	27	5.1.3	GERD performed by business, % GDP	0.2	52
1.2.1	Regulatory quality*	74.6	26	5.1.4	GERD financed by business, %	24.3	63
1.2.2	Rule of law*	70.9	31	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	31.9	36
1.3	Business environment	49.3	61	5.2.1	University-industry R&D collaboration†	46.9	53
1.3.1	Policies for doing business†	51.4	60	5.2.2	State of cluster development and depth†	48.4	62
1.3.2	Entrepreneurship policies and culture*	47.1	34	5.2.3	GERD financed by abroad, % GDP	0.2	14
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	47
				5.2.5	Patent families/bn PPP\$ GDP	0.3	35
	Human capital and research	36.6	48	5.3	Knowledge absorption	29.4	66
2.1	Education	59.3	42	5.3.1	Intellectual property payments, % total trade	0.2	88
2.1.1	Expenditure on education, % GDP	4.2	70	5.3.2	High-tech imports, % total trade	12.5	20
2.1.2	Government funding/pupil, secondary, % GDP/cap	22.2	37	5.3.3	ICT services imports, % total trade	1.6	55
2.1.3	School life expectancy, years	16.2	33	5.3.4	FDI net inflows, % GDP	2.4	62
2.1.4	PISA scales in reading, maths and science	487.4	28	5.3.5	Research talent, % in businesses	20.8	52
2.1.5	Pupil-teacher ratio, secondary	8.7	17				
2.2	Tertiary education	41.3	34		Knowledge and technology outputs	29.4	44
2.2.1	Tertiary enrolment, % gross	94.9	6	6.1	Knowledge creation	16.8	56
2.2.2	Graduates in science and engineering, %	19.3	74	6.1.1	Patents by origin/bn PPP\$ GDP	2.0	35
2.2.3	Tertiary inbound mobility, %	10.4	24	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.6	33
2.3	Research and development (R&D)	9.3	61	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1	Researchers, FTE/mn pop.	2,158.8	40	6.1.4	Scientific and technical articles/bn PPP\$ GDP	21.6	41
2.3.2	Gross expenditure on R&D, % GDP	0.7	50	6.1.5	Citable documents H-index	9.2	79
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	6.2	Knowledge impact	33.0	46
2.3.4	QS university ranking, top 3*	9.2	63	6.2.1	Labor productivity growth, %	2.9	21
				6.2.2	New businesses/th pop. 15-64	6.9	21
	Infrastructure	48.1	52	6.2.3	Software spending, % GDP	0.1	85
3.1	Information and communication technologies (ICTs)	72.1	69	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	14.5	20
3.1.1	ICT access*	90.1	44	6.2.5	High-tech manufacturing, %	15.0	76
3.1.2	ICT use*	81.6	19	6.3	Knowledge diffusion	38.5	32
3.1.3	Government's online service*	58.2	90	6.3.1	Intellectual property receipts, % total trade	0.1	69
3.1.4	E-participation*	58.3	88	6.3.2	Production and export complexity	57.3	37
3.2	General infrastructure	29.3	65	6.3.3	High-tech exports, % total trade	9.2	19
3.2.1	Electricity output, GWh/mn pop.	3,010.5	62	6.3.4	ICT services exports, % total trade	4.8	20
3.2.2	Logistics performance*	35.3	67				
3.2.3	Gross capital formation, % GDP	26.8	39		Creative outputs	27.2	42
3.3	Ecological sustainability	42.9	28	7.1	Intangible assets	18.5	82
3.3.1	GDP/unit of energy use	12.4	44	7.1.1	Intangible asset intensity, top 15, %	-18.7	75
3.3.2	Environmental performance*	61.1	15	7.1.2	Trademarks by origin/bn PPP\$ GDP	40.6	63
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	5.5	20	7.1.3	Global brand value, top 5,000, % GDP	0.0	77
				7.1.4	Industrial designs by origin/bn PPP\$ GDP	4.6	27
	Market sophistication	32.8	65	7.2	Creative goods and services	52.7	1
4.1	Credit	28.2	61	7.2.1	Cultural and creative services exports, % total trade	2.1	10
4.1.1	Finance for startups and scaleups*	45.0	27	7.2.2	National feature films/mn pop. 15-69	10.6	3
4.1.2	Domestic credit to private sector, % GDP	34.4	88	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	Printing and other media, % manufacturing	2.6	6
4.2	Investment	10.7	53	7.2.5	Creative goods exports, % total trade	3.9	14
4.2.1	Market capitalization, % GDP	n/a	n/a	7.3	Online creativity	19.2	32
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.1	38	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	9.9	41
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.1	35	7.3.2	Country-code TLDs/th pop. 15-69	29.2	23
4.2.4	Venture capital received, value, % GDP	0.0	50	7.3.3	GitHub commit pushes received/mn pop. 15-69	21.7	30
4.3	Trade, diversification, and market scale	59.5	54	7.3.4	Mobile app creation/bn PPP\$ GDP	16.0	21
4.3.1	Applied tariff rate, weighted avg., %	1.5	20				
4.3.2	Domestic industry diversification	86.9	54				
4.3.3	Domestic market scale, bn PPP\$	65.1	94				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Lithuania

39

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
47	34	High	EUR	2.7	117.6	42,091








	Score/Value	Rank		Score/Value	Rank
 Institutions	72.0	26	 Business sophistication	37.5	37
1.1 Political environment	79.0	21	5.1 Knowledge workers	49.9	32
1.1.1 Political and operational stability*	85.5	10 ●	5.1.1 Knowledge-intensive employment, %	45.3	22
1.1.2 Government effectiveness*	72.5	28	5.1.2 Firms offering formal training, %	27.5	59 ◇
1.2 Regulatory environment	81.0	28	5.1.3 GERD performed by business, % GDP	0.6	39
1.2.1 Regulatory quality*	72.1	29	5.1.4 GERD financed by business, %	34.0	55
1.2.2 Rule of law*	71.9	30	5.1.5 Females employed w/advanced degrees, %	29.2	3 ● ◆
1.2.3 Cost of redundancy dismissal	13.0	41	5.2 Innovation linkages	33.8	34
1.3 Business environment	56.0	42	5.2.1 University-industry R&D collaboration†	53.7	35
1.3.1 Policies for doing business†	48.5	66	5.2.2 State of cluster development and depth†	44.0	84 ◇ ◇
1.3.2 Entrepreneurship policies and culture*	63.6	19	5.2.3 GERD financed by abroad, % GDP	0.3	8 ●
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	59
			5.2.5 Patent families/bn PPP\$ GDP	0.3	37
 Human capital and research	37.5	44	5.3 Knowledge absorption	28.7	70 ◇
2.1 Education	55.7	55	5.3.1 Intellectual property payments, % total trade	0.2	93 ◇ ◇
2.1.1 Expenditure on education, % GDP	3.9	81 ○	5.3.2 High-tech imports, % total trade	8.5	63
2.1.2 Government funding/pupil, secondary, % GDP/cap	16.4	75 ◇ ◇	5.3.3 ICT services imports, % total trade	1.4	69
2.1.3 School life expectancy, years	16.3	29	5.3.4 FDI net inflows, % GDP	5.5	16
2.1.4 PISA scales in reading, maths and science	479.7	32	5.3.5 Research talent, % in businesses	28.5	42
2.1.5 Pupil-teacher ratio, secondary	7.8	8 ● ◆	 Knowledge and technology outputs	27.3	48
2.2 Tertiary education	39.6	36	6.1 Knowledge creation	18.2	51
2.2.1 Tertiary enrolment, % gross	72.0	31	6.1.1 Patents by origin/bn PPP\$ GDP	1.3	57
2.2.2 Graduates in science and engineering, %	26.0	34	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.4	36
2.2.3 Tertiary inbound mobility, %	6.0	41	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	17.1	45	6.1.4 Scientific and technical articles/bn PPP\$ GDP	29.4	30
2.3.1 Researchers, FTE/mn pop.	3,728.5	28	6.1.5 Citable documents H-index	13.0	60
2.3.2 Gross expenditure on R&D, % GDP	1.2	35	6.2 Knowledge impact	29.7	58
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ◇ ◇	6.2.1 Labor productivity growth, %	3.4	14 ● ◆
2.3.4 QS university ranking, top 3*	19.4	52	6.2.2 New businesses/th pop. 15-64	3.0	45
			6.2.3 Software spending, % GDP	0.1	92 ◇ ◇
 Infrastructure	50.8	45	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	13.0	24
3.1 Information and communication technologies (ICTs)	83.5	31	6.2.5 High-tech manufacturing, %	17.0	69 ◇
3.1.1 ICT access*	94.3	14 ●	6.3 Knowledge diffusion	34.1	45
3.1.2 ICT use*	80.4	20	6.3.1 Intellectual property receipts, % total trade	0.1	61 ◇
3.1.3 Government's online service*	85.3	24	6.3.2 Production and export complexity	60.1	33
3.1.4 E-participation*	73.8	64	6.3.3 High-tech exports, % total trade	6.8	28
3.2 General infrastructure	22.2	95 ◇ ◇	6.3.4 ICT services exports, % total trade	2.8	48
3.2.1 Electricity output, GWh/mn pop.	1,692.9	89 ◇ ◇	 Creative outputs	25.8	47
3.2.2 Logistics performance*	45.1	53 ◇	7.1 Intangible assets	24.5	69
3.2.3 Gross capital formation, % GDP	13.5	121 ◇ ◇	7.1.1 Intangible asset intensity, top 15, %	28.2	68 ○
3.3 Ecological sustainability	46.9	19	7.1.2 Trademarks by origin/bn PPP\$ GDP	44.1	53
3.3.1 GDP/unit of energy use	12.9	39	7.1.3 Global brand value, top 5,000, % GDP	0.0	77 ◇ ◇
3.3.2 Environmental performance*	55.9	30	7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.3	44
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	8.0	12 ● ◆	7.2 Creative goods and services	26.9	41
			7.2.1 Cultural and creative services exports, % total trade	0.9	35
 Market sophistication	42.9	32	7.2.2 National feature films/mn pop. 15-69	7.7	13
4.1 Credit	34.4	40	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.1 Finance for startups and scaleups*	56.2	6 ● ◆	7.2.4 Printing and other media, % manufacturing	1.2	34
4.1.2 Domestic credit to private sector, % GDP	37.6	85 ◇ ◇	7.2.5 Creative goods exports, % total trade	1.9	29
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	27.1	26
4.2 Investment	34.8	21	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	14.3	33
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	34.5	20
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.2	26	7.3.3 GitHub commit pushes received/mn pop. 15-69	23.9	29
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	11 ●	7.3.4 Mobile app creation/bn PPP\$ GDP	35.6	7 ● ◆
4.2.4 Venture capital received, value, % GDP	0.0	20			
4.3 Trade, diversification, and market scale	59.5	55			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	85.7	59 ○			
4.3.3 Domestic market scale, bn PPP\$	117.6	82			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ○ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Luxembourg

19

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
18	20	High	EUR	0.6	80.8	126,569

	Score/ Value	Rank		Score/ Value	Rank
 Institutions	84.6	5 ●	 Business sophistication	61.7	4 ●
1.1 Political environment	90.1	5 ●	5.1 Knowledge workers	68.9	7
1.1.1 Political and operational stability*	90.9	4	5.1.1 Knowledge-intensive employment, %	63.6	1 ● ◆
1.1.2 Government effectiveness*	89.4	7	5.1.2 Firms offering formal training, %	66.1	5
1.2 Regulatory environment	82.4	26	5.1.3 GERD performed by business, % GDP	0.6	36 ◇
1.2.1 Regulatory quality*	90.9	4 ●	5.1.4 GERD financed by business, %	51.3	27
1.2.2 Rule of law*	92.6	10	5.1.5 Females employed w/advanced degrees, %	26.2	16
1.2.3 Cost of redundancy dismissal	21.7	94 ○ ◇	5.2 Innovation linkages	50.1	15
1.3 Business environment	81.4	6 ◆	5.2.1 University-industry R&D collaboration†	62.1	20
1.3.1 Policies for doing business†	89.7	2 ● ◆	5.2.2 State of cluster development and depth†	61.9	22
1.3.2 Entrepreneurship policies and culture*	73.1	11	5.2.3 GERD financed by abroad, % GDP	0.0	50
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.2	11
			5.2.5 Patent families/bn PPP\$ GDP	4.3	10
 Human capital and research	44.8	32 ◇	5.3 Knowledge absorption	66.0	2 ● ◆
2.1 Education	53.9	60 ◇	5.3.1 Intellectual property payments, % total trade	4.0	5 ● ◆
2.1.1 Expenditure on education, % GDP	3.6	91 ○ ◇	5.3.2 High-tech imports, % total trade	1.6	131 ○ ◇
2.1.2 Government funding/pupil, secondary, % GDP/cap	20.8	48	5.3.3 ICT services imports, % total trade	4.7	6 ◆
2.1.3 School life expectancy, years	14.4	66 ◇	5.3.4 FDI net inflows, % GDP	27.4	4 ● ◆
2.1.4 PISA scales in reading, maths and science	476.7	35 ◇	5.3.5 Research talent, % in businesses	40.5	35 ◇
2.1.5 Pupil-teacher ratio, secondary	8.6	15 ◆	 Knowledge and technology outputs	34.0	33 ◇
2.2 Tertiary education	47.6	17	6.1 Knowledge creation	44.6	19
2.2.1 Tertiary enrolment, % gross	18.4	100 ○ ◇	6.1.1 Patents by origin/bn PPP\$ GDP	7.1	14
2.2.2 Graduates in science and engineering, %	19.2	75 ○ ◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	4.2	7
2.2.3 Tertiary inbound mobility, %	48.6	1 ● ◆	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	33.0	35 ◇	6.1.4 Scientific and technical articles/bn PPP\$ GDP	20.7	44 ◇
2.3.1 Researchers, FTE/mn pop.	4,920.3	18	6.1.5 Citable documents H-index	11.6	64 ◇
2.3.2 Gross expenditure on R&D, % GDP	1.1	37 ◇	6.2 Knowledge impact	33.0	47 ◇
2.3.3 Global corporate R&D investors, top 3, mn USD	60.4	22	6.2.1 Labor productivity growth, %	-0.8	101 ○ ◇
2.3.4 QS university ranking, top 3*	0.0	72 ○ ◇	6.2.2 New businesses/th pop. 15-64	17.2	6 ◆
			6.2.3 Software spending, % GDP	0.2	74 ◇
 Infrastructure	53.4	40 ◇	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	2.2	82 ◇
3.1 Information and communication technologies (ICTs)	81.9	39 ◇	6.2.5 High-tech manufacturing, %	n/a	n/a
3.1.1 ICT access*	98.0	5 ● ◆	6.3 Knowledge diffusion	24.3	61 ◇
3.1.2 ICT use*	82.8	14	6.3.1 Intellectual property receipts, % total trade	1.5	15
3.1.3 Government's online service*	76.5	49 ◇	6.3.2 Production and export complexity	n/a	n/a
3.1.4 E-participation*	70.2	70 ◇	6.3.3 High-tech exports, % total trade	0.5	88 ◇
3.2 General infrastructure	33.3	55 ◇	6.3.4 ICT services exports, % total trade	3.1	40
3.2.1 Electricity output, GWh/mn pop.	1,952.4	81 ◇	 Creative outputs	50.3	9
3.2.2 Logistics performance*	73.5	24	7.1 Intangible assets	51.7	17
3.2.3 Gross capital formation, % GDP	15.6	117 ○ ◇	7.1.1 Intangible asset intensity, top 15, %	57.9	43 ◇
3.3 Ecological sustainability	44.9	22	7.1.2 Trademarks by origin/bn PPP\$ GDP	67.5	31
3.3.1 GDP/unit of energy use	19.1	10	7.1.3 Global brand value, top 5,000, % GDP	120.3	15
3.3.2 Environmental performance*	72.3	6	7.1.4 Industrial designs by origin/bn PPP\$ GDP	6.2	18
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	1.2	67	7.2 Creative goods and services	39.8	10
			7.2.1 Cultural and creative services exports, % total trade	5.6	1 ● ◆
 Market sophistication	42.9	31 ◇	7.2.2 National feature films/mn pop. 15-69	8.7	6
4.1 Credit	40.0	30	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.1 Finance for startups and scaleups*	40.4	40 ◇	7.2.4 Printing and other media, % manufacturing	0.7	66
4.1.2 Domestic credit to private sector, % GDP	105.8	25	7.2.5 Creative goods exports, % total trade	0.1	93 ○
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	57.9	4 ● ◆
4.2 Investment	42.8	13	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	84.8	5 ● ◆
4.2.1 Market capitalization, % GDP	67.6	26	7.3.2 Country-code TLDs/th pop. 15-69	68.5	7
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	1.4	1 ● ◆	7.3.3 GitHub commit pushes received/mn pop. 15-69	62.8	4 ●
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	34	7.3.4 Mobile app creation/bn PPP\$ GDP	15.3	23
4.2.4 Venture capital received, value, % GDP	0.0	25			
4.3 Trade, diversification, and market scale	46.0	89 ◇			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	n/a	n/a			
4.3.3 Domestic market scale, bn PPP\$	80.8	90 ○			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Madagascar

106

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
85	125	Low	SSA	28.4	46.1	1,630

Institutions		Score/Value	Rank
1.1 Political environment		40.8	120
1.1.1	Political and operational stability*	44.1	118
1.1.2	Government effectiveness*	60.0	97
1.2 Regulatory environment		28.1	125
1.2.1	Regulatory quality*	55.8	92
1.2.2	Rule of law*	26.4	115
1.2.3	Cost of redundancy dismissal	23.2	114
1.3 Business environment		14.7	58 ●
1.3.1	Policies for doing business [†]	22.5	123
1.3.2	Entrepreneurship policies and culture*	29.2	118 ◊
		15.7	63 ◊

Human capital and research		Score/Value	Rank
2.1 Education		18.0	105 ◆
2.1.1	Expenditure on education, % GDP	29.9	120
2.1.2	Government funding/pupil, secondary, % GDP/cap	3.1	106
2.1.3	Government funding/pupil, secondary, % GDP/cap	7.2	104 ◊
2.1.4	School life expectancy, years	10.2	102
2.1.5	PISA scales in reading, maths and science	n/a	n/a
2.1.5	Pupil-teacher ratio, secondary	18.1	87 ◆
2.2 Tertiary education		24.1	84 ◆
2.2.1	Tertiary enrolment, % gross	5.5	123
2.2.2	Graduates in science and engineering, %	29.1	21 ● ◆
2.2.3	Tertiary inbound mobility, %	1.9	79
2.3 Research and development (R&D)		0.0	118
2.3.1	Researchers, FTE/mn pop.	34.0	100
2.3.2	Gross expenditure on R&D, % GDP	0.0	114 ◊
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ◊
2.3.4	QS university ranking, top 3*	0.0	72 ◊

Infrastructure		Score/Value	Rank
3.1 Information and communication technologies (ICTs)		18.2	132 ◊
3.1.1	ICT access*	29.3	128 ◊
3.1.2	ICT use*	41.7	126
3.1.3	Government's online service*	16.8	126
3.1.4	E-participation*	28.8	125
3.1.4	E-participation*	29.8	126 ◊
3.2 General infrastructure		12.3	126
3.2.1	Electricity output, GWh/mn pop.	77.9	128 ◊
3.2.2	Logistics performance*	15.8	113
3.2.3	Gross capital formation, % GDP	17.6	107
3.3 Ecological sustainability		13.0	131 ◊
3.3.1	GDP/unit of energy use	5.0	121
3.3.2	Environmental performance*	28.0	121 ◊
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.2	105

Market sophistication		Score/Value	Rank
4.1 Credit		20.6	109
4.1.1	Finance for startups and scaleups*	14.1	103
4.1.2	Domestic credit to private sector, % GDP	25.9	66
4.1.3	Loans from microfinance institutions, % GDP	16.4	114
4.1.3	Loans from microfinance institutions, % GDP	0.8	30 ●
4.2 Investment		n/a	[n/a]
4.2.1	Market capitalization, % GDP	n/a	n/a
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a
4.2.4	Venture capital received, value, % GDP	n/a	n/a
4.3 Trade, diversification, and market scale		27.1	117
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\$	46.1	106

Business sophistication		Score/Value	Rank
5.1 Knowledge workers		17.2	118
5.1.1	Knowledge-intensive employment, %	5.9	[128]
5.1.2	Firms offering formal training, %	3.7	123 ◊
5.1.3	Firms offering formal training, %	12.7	93 ◊
5.1.3	GERD performed by business, % GDP	n/a	n/a
5.1.4	GERD financed by business, %	n/a	n/a
5.1.5	Females employed w/advanced degrees, %	1.9	107
5.2 Innovation linkages		18.7	102
5.2.1	University-industry R&D collaboration [†]	32.3	110
5.2.2	State of cluster development and depth [†]	39.1	108
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	94
5.2.5	Patent families/bn PPP\$ GDP	0.0	101 ◊
5.3 Knowledge absorption		26.9	81
5.3.1	Intellectual property payments, % total trade	0.4	75 ●
5.3.2	High-tech imports, % total trade	5.7	113
5.3.3	ICT services imports, % total trade	1.8	46 ●
5.3.4	FDI net inflows, % GDP	3.5	33 ●
5.3.5	Research talent, % in businesses	n/a	n/a

Knowledge and technology outputs		Score/Value	Rank
6.1 Knowledge creation		9.3	115
6.1.1	Patents by origin/bn PPP\$ GDP	4.4	113
6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	107
6.1.3	Utility models by origin/bn PPP\$ GDP	0.0	89 ◆
6.1.4	Scientific and technical articles/bn PPP\$ GDP	n/a	n/a
6.1.5	Citable documents H-index	9.1	94
6.1.5	Citable documents H-index	3.8	109
6.2 Knowledge impact		11.4	117
6.2.1	Labor productivity growth, %	-0.8	103
6.2.2	New businesses/th pop. 15-64	0.1	118 ◊
6.2.3	Software spending, % GDP	0.0	112
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	1.7	89 ◆
6.2.5	High-tech manufacturing, %	n/a	n/a
6.3 Knowledge diffusion		12.1	95 ◆
6.3.1	Intellectual property receipts, % total trade	0.1	57 ● ◆
6.3.2	Production and export complexity	19.3	105
6.3.3	High-tech exports, % total trade	0.2	113
6.3.4	ICT services exports, % total trade	3.0	43 ●

Creative outputs		Score/Value	Rank
7.1 Intangible assets		19.3	[68]
7.1.1	Intangible asset intensity, top 15, %	37.6	[42]
7.1.2	Trademarks by origin/bn PPP\$ GDP	n/a	n/a
7.1.3	Global brand value, top 5,000, % GDP	63.0	38 ● ◆
7.1.4	Industrial designs by origin/bn PPP\$ GDP	n/a	n/a
7.1.4	Industrial designs by origin/bn PPP\$ GDP	4.8	24 ● ◆
7.2 Creative goods and services		1.8	[116]
7.2.1	Cultural and creative services exports, % total trade	0.1	88
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	Printing and other media, % manufacturing	n/a	n/a
7.2.5	Creative goods exports, % total trade	0.1	90 ◆
7.3 Online creativity		0.1	125
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.1	122
7.3.2	Country-code TLDs/th pop. 15-69	0.1	122
7.3.3	GitHub commit pushes received/mn pop. 15-69	0.3	116
7.3.4	Mobile app creation/bn PPP\$ GDP	0.0	117 ◊

NOTES: ● indicates a strength; ◊ a weakness; ◆ an income group strength; ◊ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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	128	Low	SSA	20.9	51.1	2,522

Institutions		Score/Value	Rank
43.1			114
1.1 Political environment		33.3	130 ○
1.1.1 Political and operational stability*		41.8	130 ○
1.1.2 Government effectiveness*		24.8	127
1.2 Regulatory environment		57.4	88
1.2.1 Regulatory quality*		29.8	103
1.2.2 Rule of law*		22.1	115
1.2.3 Cost of redundancy dismissal		13.6	50 ●
1.3 Business environment		38.7	[89]
1.3.1 Policies for doing business†		38.7	98
1.3.2 Entrepreneurship policies and culture*		n/a	n/a

Human capital and research		Score/Value	Rank
10.7			128
2.1 Education		29.8	122
2.1.1 Expenditure on education, % GDP		3.8	89
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊙	25.4	22 ●
2.1.3 School life expectancy, years	⊙	7.5	116 ○ ◇
2.1.4 PISA scales in reading, maths and science		n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	⊙	29.7	116
2.2 Tertiary education		1.6	126 ◇
2.2.1 Tertiary enrolment, % gross	⊙	5.5	124
2.2.2 Graduates in science and engineering, %		n/a	n/a
2.2.3 Tertiary inbound mobility, %	⊙	0.9	90
2.3 Research and development (R&D)		0.5	105
2.3.1 Researchers, FTE/mn pop.	⊙	58.3	95
2.3.2 Gross expenditure on R&D, % GDP	⊙	0.2	94
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	38 ○ ◇
2.3.4 QS university ranking, top 3*		0.0	72 ○ ◇

Infrastructure		Score/Value	Rank
23.8			125
3.1 Information and communication technologies (ICTs)		38.3	121
3.1.1 ICT access*		61.8	113 ●
3.1.2 ICT use*		24.5	121
3.1.3 Government's online service*		34.7	120
3.1.4 E-participation*		32.1	121
3.2 General infrastructure		16.7	115
3.2.1 Electricity output, GWh/mn pop.	⊙	200.9	119
3.2.2 Logistics performance*		25.1	91
3.2.3 Gross capital formation, % GDP		19.4	98
3.3 Ecological sustainability		16.3	119
3.3.1 GDP/unit of energy use		7.9	95
3.3.2 Environmental performance*		28.5	114 ◇
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP		0.3	101

Market sophistication		Score/Value	Rank
12.8			124
4.1 Credit		14.7	100
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		1.5	22 ●
4.2 Investment		3.0	[95]
4.2.1 Market capitalization, % GDP		n/a	n/a
4.2.2 Venture capital investors, deals/bn PPP\$ GDP		n/a	n/a
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP		0.0	67
4.2.4 Venture capital received, value, % GDP		0.0	101 ○ ◇
4.3 Trade, diversification, and market scale		20.6	125
4.3.1 Applied tariff rate, weighted avg., %		9.2	114
4.3.2 Domestic industry diversification		n/a	n/a
4.3.3 Domestic market scale, bn PPP\$		51.1	104








Business sophistication		Score/Value	Rank
19.2			110 ◆
5.1 Knowledge workers		5.1	130 ○ ◇
5.1.1 Knowledge-intensive employment, %	⊙	3.6	124 ○
5.1.2 Firms offering formal training, %	⊙	17.7	86
5.1.3 GERD performed by business, % GDP		n/a	n/a
5.1.4 GERD financed by business, %	⊙	0.8	95
5.1.5 Females employed w/advanced degrees, %	⊙	0.5	122
5.2 Innovation linkages		23.4	63 ●
5.2.1 University-industry R&D collaboration†		39.7	79
5.2.2 State of cluster development and depth†		44.5	80 ◆
5.2.3 GERD financed by abroad, % GDP	⊙	0.1	28 ●
5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	⊙	0.0	63
5.2.5 Patent families/bn PPP\$ GDP		0.0	101 ○ ◇
5.3 Knowledge absorption		29.1	67
5.3.1 Intellectual property payments, % total trade	⊙	0.0	122 ○ ◇
5.3.2 High-tech imports, % total trade	⊙	7.2	90
5.3.3 ICT services imports, % total trade	⊙	2.1	34 ●
5.3.4 FDI net inflows, % GDP		2.9	47 ●
5.3.5 Research talent, % in businesses	⊙	31.4	41 ● ◆

Knowledge and technology outputs		Score/Value	Rank
10.8			107
6.1 Knowledge creation		3.2	116
6.1.1 Patents by origin/bn PPP\$ GDP		0.1	114
6.1.2 PCT patents by origin/bn PPP\$ GDP		0.0	90
6.1.3 Utility models by origin/bn PPP\$ GDP		n/a	n/a
6.1.4 Scientific and technical articles/bn PPP\$ GDP		5.7	109 ◇
6.1.5 Citable documents H-index		4.5	102
6.2 Knowledge impact		13.4	111
6.2.1 Labor productivity growth, %		0.4	81
6.2.2 New businesses/th pop. 15-64		0.3	107
6.2.3 Software spending, % GDP		0.0	114
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP		0.5	119
6.2.5 High-tech manufacturing, %		n/a	n/a
6.3 Knowledge diffusion		15.8	87 ◆
6.3.1 Intellectual property receipts, % total trade	⊙	0.0	112
6.3.2 Production and export complexity		27.5	89 ◆
6.3.3 High-tech exports, % total trade	⊙	0.2	107
6.3.4 ICT services exports, % total trade	⊙	4.3	24 ● ◆

Creative outputs		Score/Value	Rank
2.3			122
7.1 Intangible assets		0.9	128
7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
7.1.2 Trademarks by origin/bn PPP\$ GDP		4.4	123
7.1.3 Global brand value, top 5,000, % GDP		0.0	77 ○ ◇
7.1.4 Industrial designs by origin/bn PPP\$ GDP		0.3	100
7.2 Creative goods and services		5.5	[98]
7.2.1 Cultural and creative services exports, % total trade		0.5	53 ●
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 Printing and other media, % manufacturing		n/a	n/a
7.2.5 Creative goods exports, % total trade	⊙	0.0	115
7.3 Online creativity		2.1	84 ◆
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		0.1	121
7.3.2 Country-code TLDs/th pop. 15-69		6.2	49 ● ◆
7.3.3 GitHub commit pushes received/mn pop. 15-69		0.0	130 ○
7.3.4 Mobile app creation/bn PPP\$ GDP		n/a	n/a

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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	27	High	EUR	0.4	24.6	47,152







	Score/ Value	Rank		Score/ Value	Rank
 Institutions	71.8	28	 Business sophistication	54.0	16
1.1 Political environment	76.0	31	5.1 Knowledge workers	53.9	25
1.1.1 Political and operational stability*	80.0	30	5.1.1 Knowledge-intensive employment, %	46.2	19
1.1.2 Government effectiveness*	72.1	30	5.1.2 Firms offering formal training, %	49.9	21
1.2 Regulatory environment	86.3	17	5.1.3 GERD performed by business, % GDP	0.4	42
1.2.1 Regulatory quality*	75.4	24	5.1.4 GERD financed by business, %	58.7	15
1.2.2 Rule of law*	69.8	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	47.0	21
1.3 Business environment	53.1	[52]	5.2.1 University-industry R&D collaboration†	43.0	69
1.3.1 Policies for doing business†	53.1	56	5.2.2 State of cluster development and depth†	49.0	56
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.0	48
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.4	1
			5.2.5 Patent families/bn PPP\$ GDP	1.6	22
 Human capital and research	38.6	42	5.3 Knowledge absorption	61.2	4
2.1 Education	62.4	21	5.3.1 Intellectual property payments, % total trade	6.1	1
2.1.1 Expenditure on education, % GDP	⊙ 4.7	54	5.3.2 High-tech imports, % total trade	6.2	106
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊙ 28.1	14	5.3.3 ICT services imports, % total trade	1.4	70
2.1.3 School life expectancy, years	16.8	20	5.3.4 FDI net inflows, % GDP	29.3	1
2.1.4 PISA scales in reading, maths and science	458.8	42	5.3.5 Research talent, % in businesses	53.3	20
2.1.5 Pupil-teacher ratio, secondary	7.0	3	 Knowledge and technology outputs	34.7	32
2.2 Tertiary education	33.8	55	6.1 Knowledge creation	26.0	35
2.2.1 Tertiary enrolment, % gross	64.9	46	6.1.1 Patents by origin/bn PPP\$ GDP	3.1	26
2.2.2 Graduates in science and engineering, %	17.2	87	6.1.2 PCT patents by origin/bn PPP\$ GDP	1.9	18
2.2.3 Tertiary inbound mobility, %	12.4	17	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	19.6	41	6.1.4 Scientific and technical articles/bn PPP\$ GDP	24.8	37
2.3.1 Researchers, FTE/mn pop.	2,296.5	36	6.1.5 Citable documents H-index	6.9	87
2.3.2 Gross expenditure on R&D, % GDP	0.7	52	6.2 Knowledge impact	38.2	29
2.3.3 Global corporate R&D investors, top 3, mn USD	39.4	37	6.2.1 Labor productivity growth, %	-0.0	90
2.3.4 QS university ranking, top 3*	0.0	72	6.2.2 New businesses/th pop. 15-64	10.1	12
			6.2.3 Software spending, % GDP	0.3	29
 Infrastructure	57.2	27	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	9.8	29
3.1 Information and communication technologies (ICTs)	86.0	24	6.2.5 High-tech manufacturing, %	⊙ 36.2	35
3.1.1 ICT access*	95.1	10	6.3 Knowledge diffusion	39.8	28
3.1.2 ICT use*	84.3	10	6.3.1 Intellectual property receipts, % total trade	3.9	5
3.1.3 Government's online service*	81.2	40	6.3.2 Production and export complexity	n/a	n/a
3.1.4 E-participation*	83.3	38	6.3.3 High-tech exports, % total trade	4.3	41
3.2 General infrastructure	28.4	70	6.3.4 ICT services exports, % total trade	0.5	99
3.2.1 Electricity output, GWh/mn pop.	4,037.7	52	 Creative outputs	56.1	2
3.2.2 Logistics performance*	35.3	67	7.1 Intangible assets	69.6	5
3.2.3 Gross capital formation, % GDP	22.6	72	7.1.1 Intangible asset intensity, top 15, %	77.5	12
3.3 Ecological sustainability	57.3	1	7.1.2 Trademarks by origin/bn PPP\$ GDP	133.0	1
3.3.1 GDP/unit of energy use	27.8	4	7.1.3 Global brand value, top 5,000, % GDP	75.6	28
3.3.2 Environmental performance*	75.2	4	7.1.4 Industrial designs by origin/bn PPP\$ GDP	10.1	10
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	2.1	45	7.2 Creative goods and services	45.1	3
			7.2.1 Cultural and creative services exports, % total trade	13.9	1
 Market sophistication	42.9	33	7.2.2 National feature films/mn pop. 15-69	3.2	37
4.1 Credit	30.9	[53]	7.2.3 Entertainment and media market/th pop. 15-69	9.3	36
4.1.1 Finance for startups and scaleups*	n/a	n/a	7.2.4 Printing and other media, % manufacturing	8.0	1
4.1.2 Domestic credit to private sector, % GDP	83.6	37	7.2.5 Creative goods exports, % total trade	0.1	87
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	40.2	15
4.2 Investment	39.5	16	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	100.0	1
4.2.1 Market capitalization, % GDP	34.5	45	7.3.2 Country-code TLDs/th pop. 15-69	15.5	32
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.6	8	7.3.3 GitHub commit pushes received/mn pop. 15-69	31.8	22
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	26	7.3.4 Mobile app creation/bn PPP\$ GDP	13.4	27
4.2.4 Venture capital received, value, % GDP	0.0	18			
4.3 Trade, diversification, and market scale	58.4	60			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	⊙ 84.5	63			
4.3.3 Domestic market scale, bn PPP\$	24.6	128			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Mauritius

45

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
54	40	Upper middle	SSA	1.3	28.3	22,311








	Score/Value	Rank		Score/Value	Rank
 Institutions	74.6	22	 Business sophistication	21.6	96
1.1 Political environment	78.7	22	5.1 Knowledge workers	17.8	105
1.1.1 Political and operational stability*	89.1	7	5.1.1 Knowledge-intensive employment, %	24.1	61
1.1.2 Government effectiveness*	68.4	38	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	84.9	21	5.1.3 GERD performed by business, % GDP	0.0	79
1.2.1 Regulatory quality*	73.0	27	5.1.4 GERD financed by business, %	4.1	83
1.2.2 Rule of law*	70.0	33	5.1.5 Females employed w/advanced degrees, %	9.2	77
1.2.3 Cost of redundancy dismissal	8.9	22	5.2 Innovation linkages	20.6	88
1.3 Business environment	60.4	[35]	5.2.1 University-industry R&D collaboration†	36.6	97
1.3.1 Policies for doing business†	60.4	38	5.2.2 State of cluster development and depth†	48.8	59
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	61
			5.2.5 Patent families/bn PPP\$ GDP	0.3	39
 Human capital and research	30.7	66	5.3 Knowledge absorption	26.2	85
2.1 Education	60.9	34	5.3.1 Intellectual property payments, % total trade	0.3	84
2.1.1 Expenditure on education, % GDP	4.6	59	5.3.2 High-tech imports, % total trade	6.7	97
2.1.2 Government funding/pupil, secondary, % GDP/cap	30.4	11	5.3.3 ICT services imports, % total trade	2.9	20
2.1.3 School life expectancy, years	15.1	52	5.3.4 FDI net inflows, % GDP	3.0	45
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	4.4	70
2.1.5 Pupil-teacher ratio, secondary	10.7	34	 Knowledge and technology outputs	15.9	82
2.2 Tertiary education	28.9	73	6.1 Knowledge creation	5.7	[103]
2.2.1 Tertiary enrolment, % gross	44.3	71	6.1.1 Patents by origin/bn PPP\$ GDP	0.2	94
2.2.2 Graduates in science and engineering, %	21.6	58	6.1.2 PCT patents by origin/bn PPP\$ GDP	n/a	n/a
2.2.3 Tertiary inbound mobility, %	6.7	37	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	2.3	85	6.1.4 Scientific and technical articles/bn PPP\$ GDP	8.9	95
2.3.1 Researchers, FTE/mn pop.	563.9	66	6.1.5 Citable documents H-index	3.3	115
2.3.2 Gross expenditure on R&D, % GDP	0.4	67	6.2 Knowledge impact	24.8	74
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2.1 Labor productivity growth, %	1.3	54
2.3.4 QS university ranking, top 3*	0.0	72	6.2.2 New businesses/th pop. 15-64	7.1	20
			6.2.3 Software spending, % GDP	0.2	72
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	6.9	39
			6.2.5 High-tech manufacturing, %	3.8	105
 Infrastructure	42.7	70	6.3 Knowledge diffusion	17.3	81
3.1 Information and communication technologies (ICTs)	69.8	76	6.3.1 Intellectual property receipts, % total trade	0.0	89
3.1.1 ICT access*	89.2	55	6.3.2 Production and export complexity	37.2	68
3.1.2 ICT use*	55.6	85	6.3.3 High-tech exports, % total trade	0.5	91
3.1.3 Government's online service*	70.0	69	6.3.4 ICT services exports, % total trade	3.0	45
3.1.4 E-participation*	64.3	80	 Creative outputs	33.2	31
3.2 General infrastructure	23.9	84	7.1 Intangible assets	51.6	18
3.2.1 Electricity output, GWh/mn pop.	2,267.7	76	7.1.1 Intangible asset intensity, top 15, %	44.6	59
3.2.2 Logistics performance*	31.6	77	7.1.2 Trademarks by origin/bn PPP\$ GDP	94.9	15
3.2.3 Gross capital formation, % GDP	22.0	80	7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a
3.3 Ecological sustainability	34.5	44	7.1.4 Industrial designs by origin/bn PPP\$ GDP	3.2	35
3.3.1 GDP/unit of energy use	18.3	11	7.2 Creative goods and services	24.2	[49]
3.3.2 Environmental performance*	44.8	58	7.2.1 Cultural and creative services exports, % total trade	1.0	32
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	1.0	68	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 Printing and other media, % manufacturing	1.7	19
			7.2.5 Creative goods exports, % total trade	0.6	60
 Market sophistication	52.1	16	7.3 Online creativity	5.3	61
4.1 Credit	35.7	[38]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	12.9	35
4.1.1 Finance for startups and scaleups*	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	3.1	62
4.1.2 Domestic credit to private sector, % GDP	95.9	31	7.3.3 GitHub commit pushes received/mn pop. 15-69	5.0	58
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	0.4	85
4.2 Investment	65.9	8			
4.2.1 Market capitalization, % GDP	62.4	30			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	1.8	1			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	13			
4.2.4 Venture capital received, value, % GDP	0.0	1			
4.3 Trade, diversification, and market scale	54.7	71			
4.3.1 Applied tariff rate, weighted avg., %	0.9	10			
4.3.2 Domestic industry diversification	69.7	88			
4.3.3 Domestic market scale, bn PPP\$	28.3	125			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Mongolia

71

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
64	81	Lower middle	SEAO	3.3	43.2	12,671






	Score/Value	Rank		Score/Value	Rank
 Institutions	54.1	76	 Business sophistication	28.7	61
1.1 Political environment	57.5	73	5.1 Knowledge workers	42.2	44
1.1.1 Political and operational stability*	72.7	46	5.1.1 Knowledge-intensive employment, %	26.5	55
1.1.2 Government effectiveness*	42.3	88	5.1.2 Firms offering formal training, %	66.2	4
1.2 Regulatory environment	69.8	51	5.1.3 GERD performed by business, % GDP	0.0	85
1.2.1 Regulatory quality*	42.6	78	5.1.4 GERD financed by business, %	8.1	78
1.2.2 Rule of law*	39.2	75	5.1.5 Females employed w/advanced degrees, %	24.0	23
1.2.3 Cost of redundancy dismissal	8.7	18	5.2 Innovation linkages	15.4	119
1.3 Business environment	34.9	[95]	5.2.1 University-industry R&D collaboration [†]	31.5	114
1.3.1 Policies for doing business [†]	34.9	105	5.2.2 State of cluster development and depth [†]	37.3	111
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.0	83
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	62
			5.2.5 Patent families/bn PPP\$ GDP	0.0	101
 Human capital and research	31.2	64	5.3 Knowledge absorption	28.5	73
2.1 Education	61.0	[32]	5.3.1 Intellectual property payments, % total trade	0.3	83
2.1.1 Expenditure on education, % GDP	4.9	42	5.3.2 High-tech imports, % total trade	4.4	120
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	1.4	73
2.1.3 School life expectancy, years	15.0	54	5.3.4 FDI net inflows, % GDP	15.0	8
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	13.3	58	 Knowledge and technology outputs	14.7	85
2.2 Tertiary education	31.6	65	6.1 Knowledge creation	27.2	32
2.2.1 Tertiary enrolment, % gross	68.8	36	6.1.1 Patents by origin/bn PPP\$ GDP	1.7	44
2.2.2 Graduates in science and engineering, %	23.1	48	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	88
2.2.3 Tertiary inbound mobility, %	1.4	84	6.1.3 Utility models by origin/bn PPP\$ GDP	5.5	1
2.3 Research and development (R&D)	1.0	96	6.1.4 Scientific and technical articles/bn PPP\$ GDP	13.5	72
2.3.1 Researchers, FTE/mn pop.	331.0	81	6.1.5 Citable documents H-index	4.0	105
2.3.2 Gross expenditure on R&D, % GDP	0.1	100	6.2 Knowledge impact	11.1	118
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2.1 Labor productivity growth, %	n/a	n/a
2.3.4 QS university ranking, top 3*	0.0	72	6.2.2 New businesses/th pop. 15-64	5.9	25
			6.2.3 Software spending, % GDP	0.1	80
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	1.7	88
			6.2.5 High-tech manufacturing, %	3.8	104
 Infrastructure	35.6	92	6.3 Knowledge diffusion	5.9	119
3.1 Information and communication technologies (ICTs)	63.5	89	6.3.1 Intellectual property receipts, % total trade	0.0	88
3.1.1 ICT access*	78.1	88	6.3.2 Production and export complexity	19.2	107
3.1.2 ICT use*	62.3	67	6.3.3 High-tech exports, % total trade	0.0	125
3.1.3 Government's online service*	52.9	98	6.3.4 ICT services exports, % total trade	0.4	105
3.1.4 E-participation*	60.7	85	 Creative outputs	27.9	40
3.2 General infrastructure	28.7	67	7.1 Intangible assets	48.5	24
3.2.1 Electricity output, GWh/mn pop.	2,136.2	79	7.1.1 Intangible asset intensity, top 15, %	-42.5	78
3.2.2 Logistics performance*	14.9	114	7.1.2 Trademarks by origin/bn PPP\$ GDP	338.0	1
3.2.3 Gross capital formation, % GDP	39.0	7	7.1.3 Global brand value, top 5,000, % GDP	0.0	77
3.3 Ecological sustainability	14.5	126	7.1.4 Industrial designs by origin/bn PPP\$ GDP	15.6	4
3.3.1 GDP/unit of energy use	5.8	114	7.2 Creative goods and services	12.9	[73]
3.3.2 Environmental performance*	29.6	110	7.2.1 Cultural and creative services exports, % total trade	0.1	78
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.3	99	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 Printing and other media, % manufacturing	1.4	25
			7.2.5 Creative goods exports, % total trade	0.0	128
 Market sophistication	23.9	97	7.3 Online creativity	1.6	92
4.1 Credit	11.2	107	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.6	101
4.1.1 Finance for startups and scaleups*	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	2.1	69
4.1.2 Domestic credit to private sector, % GDP	45.8	74	7.3.3 GitHub commit pushes received/mn pop. 15-69	3.3	69
4.1.3 Loans from microfinance institutions, % GDP	0.5	39	7.3.4 Mobile app creation/bn PPP\$ GDP	0.3	89
4.2 Investment	n/a	[n/a]			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a			
4.2.4 Venture capital received, value, % GDP	n/a	n/a			
4.3 Trade, diversification, and market scale	36.5	107			
4.3.1 Applied tariff rate, weighted avg., %	5.3	93			
4.3.2 Domestic industry diversification	43.1	104			
4.3.3 Domestic market scale, bn PPP\$	43.2	109			

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Montenegro

60

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
72	51	Upper middle	EUR	0.6	13.3	21,387






		Score/ Value	Rank			Score/ Value	Rank
	Institutions	58.3	59		Business sophistication	29.5	58
1.1	Political environment	60.1	63	5.1	Knowledge workers	36.1	56
1.1.1	Political and operational stability*	70.9	53	5.1.1	Knowledge-intensive employment, %	36.7	40 ◆
1.1.2	Government effectiveness*	49.4	71	5.1.2	Firms offering formal training, %	15.8	91 ○ ◇
1.2	Regulatory environment	72.4	41	5.1.3	GERD performed by business, % GDP	0.2	54
1.2.1	Regulatory quality*	54.8	54	5.1.4	GERD financed by business, %	37.8	48
1.2.2	Rule of law*	47.6	59	5.1.5	Females employed w/advanced degrees, %	18.2	39 ◆
1.2.3	Cost of redundancy dismissal	11.2	36	5.2	Innovation linkages	20.7	87
1.3	Business environment	42.4	[80]	5.2.1	University-industry R&D collaboration†	42.8	71
1.3.1	Policies for doing business†	42.4	87	5.2.2	State of cluster development and depth†	41.7	97 ○
1.3.2	Entrepreneurship policies and culture*	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	0.0	53
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	42
				5.2.5	Patent families/bn PPP\$ GDP	0.0	101 ○ ◇
				5.3	Knowledge absorption	31.9	57
				5.3.1	Intellectual property payments, % total trade	0.2	92
				5.3.2	High-tech imports, % total trade	8.7	59
				5.3.3	ICT services imports, % total trade	2.9	17 ◆◆
				5.3.4	FDI net inflows, % GDP	9.1	10 ◆◆
				5.3.5	Research talent, % in businesses	12.6	59
	Human capital and research	32.2	61		Knowledge and technology outputs	19.4	72
2.1	Education	57.7	[48]	6.1	Knowledge creation	13.9	59
2.1.1	Expenditure on education, % GDP	n/a	n/a	6.1.1	Patents by origin/bn PPP\$ GDP	0.4	79
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.2	48
2.1.3	School life expectancy, years	15.1	51	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.1.4	PISA scales in reading, maths and science	421.9	55	6.1.4	Scientific and technical articles/bn PPP\$ GDP	32.8	28 ◆◆
2.1.5	Pupil-teacher ratio, secondary	14.4	67	6.1.5	Citable documents H-index	1.8	124 ○
2.2	Tertiary education	36.3	44	6.2	Knowledge impact	32.5	50
2.2.1	Tertiary enrolment, % gross	55.5	57	6.2.1	Labor productivity growth, %	n/a	n/a
2.2.2	Graduates in science and engineering, %	20.5	64	6.2.2	New businesses/th pop. 15-64	7.9	18 ◆◆
2.2.3	Tertiary inbound mobility, %	n/a	n/a	6.2.3	Software spending, % GDP	0.4	22 ◆◆
2.3	Research and development (R&D)	2.5	82	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	18.3	15 ◆◆
2.3.1	Researchers, FTE/mn pop.	746.8	61	6.2.5	High-tech manufacturing, %	10.3	88 ○
2.3.2	Gross expenditure on R&D, % GDP	0.4	72	6.3	Knowledge diffusion	11.7	97
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.3.1	Intellectual property receipts, % total trade	0.0	83
2.3.4	QS university ranking, top 3*	0.0	72 ○ ◇	6.3.2	Production and export complexity	n/a	n/a
				6.3.3	High-tech exports, % total trade	0.5	92
				6.3.4	ICT services exports, % total trade	3.4	35
	Infrastructure	51.1	44 ◆		Creative outputs	18.8	71
3.1	Information and communication technologies (ICTs)	68.5	79	7.1	Intangible assets	7.0	109 ○ ◇
3.1.1	ICT access*	92.9	25 ◆◆	7.1.1	Intangible asset intensity, top 15, %	-295.8	78 ○ ◇
3.1.2	ICT use*	72.1	52 ◆	7.1.2	Trademarks by origin/bn PPP\$ GDP	29.5	77
3.1.3	Government's online service*	54.1	96	7.1.3	Global brand value, top 5,000, % GDP	n/a	n/a
3.1.4	E-participation*	54.8	93	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.1	114 ○
3.2	General infrastructure	34.1	49	7.2	Creative goods and services	34.6	[19]
3.2.1	Electricity output, GWh/mn pop.	5,532.3	36 ◆	7.2.1	Cultural and creative services exports, % total trade	0.9	33
3.2.2	Logistics performance*	32.6	75	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
3.2.3	Gross capital formation, % GDP	29.3	27 ◆	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
3.3	Ecological sustainability	50.7	9 ◆◆	7.2.4	Printing and other media, % manufacturing	3.0	4 ◆◆
3.3.1	GDP/unit of energy use	10.9	60	7.2.5	Creative goods exports, % total trade	0.3	69
3.3.2	Environmental performance*	46.9	49	7.3	Online creativity	26.8	27 ◆◆
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	12.3	4 ◆◆	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1.7	83
				7.3.2	Country-code TLDs/th pop. 15-69	100.0	1 ◆◆
				7.3.3	GitHub commit pushes received/mn pop. 15-69	5.4	55
				7.3.4	Mobile app creation/bn PPP\$ GDP	0.3	87
	Market sophistication	36.7	53				
4.1	Credit	22.3	79				
4.1.1	Finance for startups and scaleups*	n/a	n/a				
4.1.2	Domestic credit to private sector, % GDP	60.0	57				
4.1.3	Loans from microfinance institutions, % GDP	1.6	19				
4.2	Investment	31.8	[24]				
4.2.1	Market capitalization, % GDP	84.9	21				
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a				
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a				
4.2.4	Venture capital received, value, % GDP	n/a	n/a				
4.3	Trade, diversification, and market scale	56.0	69				
4.3.1	Applied tariff rate, weighted avg., %	2.6	68				
4.3.2	Domestic industry diversification	84.8	62				
4.3.3	Domestic market scale, bn PPP\$	13.3	131 ○				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Morocco

67

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
56	87	Lower middle	NAWA	37.3	302.8	8,338








	Score/Value	Rank		Score/Value	Rank
 Institutions	51.1	85	 Business sophistication	21.9	94
1.1 Political environment	56.3	77	5.1 Knowledge workers	24.1	[82]
1.1.1 Political and operational stability*	63.6	81	5.1.1 Knowledge-intensive employment, %	6.9	116 ○
1.1.2 Government effectiveness*	49.1	72 ◆	5.1.2 Firms offering formal training, %	35.7	44
1.2 Regulatory environment	58.9	83	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	42.0	80 ◆	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	43.8	67 ◆	5.1.5 Females employed w/advanced degrees, %	n/a	n/a
1.2.3 Cost of redundancy dismissal	20.7	89	5.2 Innovation linkages	20.5	90
1.3 Business environment	38.1	90	5.2.1 University-industry R&D collaboration†	36.2	98
1.3.1 Policies for doing business†	59.6	40 ◆	5.2.2 State of cluster development and depth†	42.5	91
1.3.2 Entrepreneurship policies and culture*	16.7	61 ○	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	114 ○
			5.2.5 Patent families/bn PPP\$ GDP	0.0	71
 Human capital and research	26.0	83	5.3 Knowledge absorption	21.2	105
2.1 Education	53.1	62 ◆◆	5.3.1 Intellectual property payments, % total trade	0.3	78
2.1.1 Expenditure on education, % GDP	6.8	9 ◆◆	5.3.2 High-tech imports, % total trade	8.0	74
2.1.2 Government funding/pupil, secondary, % GDP/cap ○	36.4	5 ◆◆◆	5.3.3 ICT services imports, % total trade	1.1	85
2.1.3 School life expectancy, years	14.2	70 ◆	5.3.4 FDI net inflows, % GDP	2.0	75
2.1.4 PISA scales in reading, maths and science	367.9	74 ○	5.3.5 Research talent, % in businesses	7.0	64
2.1.5 Pupil-teacher ratio, secondary	20.0	94	 Knowledge and technology outputs	22.0	64
2.2 Tertiary education	22.5	85	6.1 Knowledge creation	11.6	68
2.2.1 Tertiary enrolment, % gross	40.6	75	6.1.1 Patents by origin/bn PPP\$ GDP	0.9	68
2.2.2 Graduates in science and engineering, %	20.4	65	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	51 ◆
2.2.3 Tertiary inbound mobility, %	2.1	76	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	2.4	83	6.1.4 Scientific and technical articles/bn PPP\$ GDP	17.4	56
2.3.1 Researchers, FTE/mn pop.	1,073.5	51 ◆	6.1.5 Citable documents H-index	11.0	68
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	6.2 Knowledge impact	31.7	53 ◆
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◆	6.2.1 Labor productivity growth, %	2.0	34 ●
2.3.4 QS university ranking, top 3*	0.0	72 ○ ◆	6.2.2 New businesses/th pop. 15-64	2.2	56 ◆
			6.2.3 Software spending, % GDP	0.2	63
 Infrastructure	36.3	89	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	4.0	66 ◆
3.1 Information and communication technologies (ICTs)	63.7	88	6.2.5 High-tech manufacturing, %	42.8	24 ◆◆
3.1.1 ICT access*	90.7	39 ◆◆	6.3 Knowledge diffusion	22.6	68
3.1.2 ICT use*	60.6	73 ◆	6.3.1 Intellectual property receipts, % total trade	0.0	84
3.1.3 Government's online service*	52.3	99	6.3.2 Production and export complexity	29.3	87
3.1.4 E-participation*	51.2	99	6.3.3 High-tech exports, % total trade	2.1	58
3.2 General infrastructure	22.8	91	6.3.4 ICT services exports, % total trade	4.4	23 ●
3.2.1 Electricity output, GWh/mn pop.	1,073.7	95	 Creative outputs	26.8	44 ◆
3.2.2 Logistics performance*	22.8	101 ○	7.1 Intangible assets	49.5	23 ◆◆
3.2.3 Gross capital formation, % GDP	28.1	32 ●	7.1.1 Intangible asset intensity, top 15, %	65.1	31
3.3 Ecological sustainability	22.5	81	7.1.2 Trademarks by origin/bn PPP\$ GDP	66.9	33 ◆◆
3.3.1 GDP/unit of energy use	12.3	47	7.1.3 Global brand value, top 5,000, % GDP	17.8	48
3.3.2 Environmental performance*	28.4	115 ○	7.1.4 Industrial designs by origin/bn PPP\$ GDP	10.4	9 ●◆
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.9	71	7.2 Creative goods and services	6.1	95
			7.2.1 Cultural and creative services exports, % total trade	0.4	58
 Market sophistication	30.6	74	7.2.2 National feature films/mn pop. 15-69	0.9	62
4.1 Credit	25.7	69	7.2.3 Entertainment and media market/th pop. 15-69	0.7	60 ○ ◆
4.1.1 Finance for startups and scaleups*	30.2	59	7.2.4 Printing and other media, % manufacturing	0.7	73
4.1.2 Domestic credit to private sector, % GDP	96.3	30 ●◆	7.2.5 Creative goods exports, % total trade	0.1	96
4.1.3 Loans from microfinance institutions, % GDP	0.8	32	7.3 Online creativity	2.2	83
4.2 Investment	7.2	64	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.6	87
4.2.1 Market capitalization, % GDP	54.5	35	7.3.2 Country-code TLDs/th pop. 15-69	1.2	81
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	83 ○	7.3.3 GitHub commit pushes received/mn pop. 15-69	1.6	91
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	73	7.3.4 Mobile app creation/bn PPP\$ GDP	4.3	58
4.2.4 Venture capital received, value, % GDP	0.0	70			
4.3 Trade, diversification, and market scale	58.8	59			
4.3.1 Applied tariff rate, weighted avg., %	3.6	80			
4.3.2 Domestic industry diversification	93.1	34			
4.3.3 Domestic market scale, bn PPP\$	302.8	56			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Myanmar

116

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
104	122	Lower middle	SEAO	54.8	237.0	4,426








		Score/ Value	Rank			Score/ Value	Rank
 Institutions		38.1	123	 Business sophistication		14.1	130
1.1	Political environment	35.9	127	5.1	Knowledge workers	7.1	126
1.1.1	Political and operational stability*	43.6	129	5.1.1	Knowledge-intensive employment, %	5.2	119
1.1.2	Government effectiveness*	28.2	124	5.1.2	Firms offering formal training, %	5.9	99
1.2	Regulatory environment	46.2	115	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	29.2	106	5.1.4	GERD financed by business, %	0.0	100
1.2.2	Rule of law*	15.5	125	5.1.5	Females employed w/advanced degrees, %	7.2	86
1.2.3	Cost of redundancy dismissal	23.1	100	5.2	Innovation linkages	11.4	128
1.3	Business environment	32.0	[105]	5.2.1	University-industry R&D collaboration†	20.8	126
1.3.1	Policies for doing business†	32.0	117	5.2.2	State of cluster development and depth†	31.8	123
1.3.2	Entrepreneurship policies and culture*	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	0.0	79
 Human capital and research		18.4	102	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	103
2.1	Education	24.1	126	5.2.5	Patent families/bn PPP\$ GDP	0.0	101
2.1.1	Expenditure on education, % GDP	2.1	124	5.3	Knowledge absorption	23.8	93
2.1.2	Government funding/pupil, secondary, % GDP/cap	11.3	95	5.3.1	Intellectual property payments, % total trade	0.3	80
2.1.3	School life expectancy, years	10.7	99	5.3.2	High-tech imports, % total trade	7.8	77
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	1.0	87
2.1.5	Pupil-teacher ratio, secondary	27.2	113	5.3.4	FDI net inflows, % GDP	2.5	58
2.2	Tertiary education	30.7	68	5.3.5	Research talent, % in businesses	n/a	n/a
2.2.1	Tertiary enrolment, % gross	18.8	98	 Knowledge and technology outputs		12.0	100
2.2.2	Graduates in science and engineering, %	33.7	12	6.1	Knowledge creation	2.7	[120]
2.2.3	Tertiary inbound mobility, %	0.0	111	6.1.1	Patents by origin/bn PPP\$ GDP	n/a	n/a
2.3	Research and development (R&D)	0.5	106	6.1.2	PCT patents by origin/bn PPP\$ GDP	n/a	n/a
2.3.1	Researchers, FTE/mn pop.	31.9	101	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	95	6.1.4	Scientific and technical articles/bn PPP\$ GDP	2.4	126
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	6.1.5	Citable documents H-index	2.7	121
2.3.4	QS university ranking, top 3*	0.0	72	6.2	Knowledge impact	21.8	82
 Infrastructure		21.4	128	6.2.1	Labor productivity growth, %	1.8	37
3.1	Information and communication technologies (ICTs)	26.0	[132]	6.2.2	New businesses/th pop. 15–64	0.4	102
3.1.1	ICT access*	n/a	n/a	6.2.3	Software spending, % GDP	n/a	n/a
3.1.2	ICT use*	n/a	n/a	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	0.8	114
3.1.3	Government's online service*	25.9	127	6.2.5	High-tech manufacturing, %	17.7	67
3.1.4	E-participation*	26.2	128	6.3	Knowledge diffusion	11.4	99
3.2	General infrastructure	20.7	106	6.3.1	Intellectual property receipts, % total trade	0.1	67
3.2.1	Electricity output, GWh/mn pop.	448.8	111	6.3.2	Production and export complexity	18.1	108
3.2.2	Logistics performance*	11.6	117	6.3.3	High-tech exports, % total trade	1.4	69
3.2.3	Gross capital formation, % GDP	32.3	15	6.3.4	ICT services exports, % total trade	0.4	110
3.3	Ecological sustainability	17.6	108	 Creative outputs		6.6	[106]
3.3.1	GDP/unit of energy use	12.2	48	7.1	Intangible assets	9.1	[105]
3.3.2	Environmental performance*	19.4	129	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.1	128	7.1.2	Trademarks by origin/bn PPP\$ GDP	24.0	88
 Market sophistication		25.1	93	7.1.3	Global brand value, top 5,000, % GDP	5.7	66
4.1	Credit	15.3	99	7.1.4	Industrial designs by origin/bn PPP\$ GDP	n/a	n/a
4.1.1	Finance for startups and scaleups*	n/a	n/a	7.2	Creative goods and services	7.9	[88]
4.1.2	Domestic credit to private sector, % GDP	27.4	101	7.2.1	Cultural and creative services exports, % total trade	0.3	64
4.1.3	Loans from microfinance institutions, % GDP	1.5	20	7.2.2	National feature films/mn pop. 15–69	n/a	n/a
4.2	Investment	5.3	73	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	Printing and other media, % manufacturing	0.4	89
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	85	7.2.5	Creative goods exports, % total trade	0.7	54
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	66	7.3	Online creativity	0.1	127
4.2.4	Venture capital received, value, % GDP	0.0	48	7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	127
4.3	Trade, diversification, and market scale	54.7	72	7.3.2	Country-code TLDs/th pop. 15–69	0.0	127
4.3.1	Applied tariff rate, weighted avg., %	1.8	57	7.3.3	GitHub commit pushes received/mn pop. 15–69	0.2	122
4.3.2	Domestic industry diversification	70.7	85	7.3.4	Mobile app creation/bn PPP\$ GDP	0.1	100
4.3.3	Domestic market scale, bn PPP\$	237.0	62				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Namibia

96

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
113	84	Upper middle	SSA	2.6	25.0	9,616








	Score/Value	Rank		Score/Value	Rank
 Institutions	61.7	49 ●	 Business sophistication	19.6	108 ◇
1.1 Political environment	60.8	62	5.1 Knowledge workers	18.2	104 ◇
1.1.1 Political and operational stability*	70.9	53	5.1.1 Knowledge-intensive employment, %	18.1	82
1.1.2 Government effectiveness*	50.8	66	5.1.2 Firms offering formal training, %	25.4	64
1.2 Regulatory environment	72.4	42 ●	5.1.3 GERD performed by business, % GDP	0.0	75
1.2.1 Regulatory quality*	42.2	79	5.1.4 GERD financed by business, %	11.1	73
1.2.2 Rule of law*	53.8	50 ● ◆	5.1.5 Females employed w/advanced degrees, %	7.4	84 ◇
1.2.3 Cost of redundancy dismissal	9.7	27 ●	5.2 Innovation linkages	20.6	89
1.3 Business environment	52.0	[53]	5.2.1 University-industry R&D collaboration†	39.5	83
1.3.1 Policies for doing business†	52.0	57	5.2.2 State of cluster development and depth†	42.5	90
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.1	44
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	46 ●
			5.2.5 Patent families/bn PPP\$ GDP	0.0	101 ○ ◇
 Human capital and research	29.2	72	5.3 Knowledge absorption	20.0	110 ◇
2.1 Education	73.7	[2]	5.3.1 Intellectual property payments, % total trade	0.0	111 ◇
2.1.1 Expenditure on education, % GDP	9.6	1 ● ◆	5.3.2 High-tech imports, % total trade	7.4	85
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	1.5	64
2.1.3 School life expectancy, years	n/a	n/a	5.3.4 FDI net inflows, % GDP	-0.4	122 ○ ◇
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	107 ◇	 Knowledge and technology outputs	9.5	113 ◇
2.2 Tertiary education	12.6	106 ◇	6.1 Knowledge creation	7.7	86
2.2.1 Tertiary enrolment, % gross	24.1	91 ◇	6.1.1 Patents by origin/bn PPP\$ GDP	0.4	83
2.2.2 Graduates in science and engineering, %	12.9	101 ○ ◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.4	35 ●
2.2.3 Tertiary inbound mobility, %	4.8	52	6.1.3 Utility models by origin/bn PPP\$ GDP	0.2	50
2.3 Research and development (R&D)	1.3	92	6.1.4 Scientific and technical articles/bn PPP\$ GDP	13.8	71
2.3.1 Researchers, FTE/mn pop.	149.5	86 ◇	6.1.5 Citable documents H-index	4.2	104
2.3.2 Gross expenditure on R&D, % GDP	0.3	73	6.2 Knowledge impact	7.5	120 ○ ◇
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2.1 Labor productivity growth, %	-3.7	114 ○ ◇
2.3.4 QS university ranking, top 3*	0.0	72 ○ ◇	6.2.2 New businesses/th pop. 15-64	0.6	93
			6.2.3 Software spending, % GDP	0.1	82
 Infrastructure	30.3	106 ◇	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	1.7	87
3.1 Information and communication technologies (ICTs)	51.4	101 ◇	6.2.5 High-tech manufacturing, %	4.7	99 ○ ◇
3.1.1 ICT access*	64.7	106 ◇	6.3 Knowledge diffusion	13.3	93
3.1.2 ICT use*	38.4	103 ◇	6.3.1 Intellectual property receipts, % total trade	0.0	80
3.1.3 Government's online service*	52.3	99 ◇	6.3.2 Production and export complexity	36.4	70
3.1.4 E-participation*	50.0	103 ◇	6.3.3 High-tech exports, % total trade	0.7	83
3.2 General infrastructure	10.7	129 ○ ◇	6.3.4 ICT services exports, % total trade	0.3	118 ○
3.2.1 Electricity output, GWh/mn pop.	420.0	113 ◇	 Creative outputs	5.1	113 ◇
3.2.2 Logistics performance*	n/a	n/a	7.1 Intangible assets	5.8	114 ◇
3.2.3 Gross capital formation, % GDP	17.0	111 ◇	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	28.9	55	7.1.2 Trademarks by origin/bn PPP\$ GDP	14.3	99 ◇
3.3.1 GDP/unit of energy use	11.8	52	7.1.3 Global brand value, top 5,000, % GDP	0.0	77 ○ ◇
3.3.2 Environmental performance*	50.9	37 ● ◆	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.4	55
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.7	76	7.2 Creative goods and services	1.6	[118]
			7.2.1 Cultural and creative services exports, % total trade	0.0	95
 Market sophistication	28.2	[81]	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	26.5	[67]	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 Printing and other media, % manufacturing	n/a	n/a
4.1.2 Domestic credit to private sector, % GDP	72.5	46 ●	7.2.5 Creative goods exports, % total trade	0.2	75
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	7.2	52
4.2 Investment	7.0	[65]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	8.6	43 ●
4.2.1 Market capitalization, % GDP	18.8	61	7.3.2 Country-code TLDs/th pop. 15-69	0.8	91
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.3 GitHub commit pushes received/mn pop. 15-69	n/a	n/a
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	12.2	32 ●
4.2.4 Venture capital received, value, % GDP	n/a	n/a			
4.3 Trade, diversification, and market scale	51.0	79			
4.3.1 Applied tariff rate, weighted avg., %	1.3	14 ●			
4.3.2 Domestic industry diversification	60.9	96			
4.3.3 Domestic market scale, bn PPP\$	25.0	127 ○			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Nepal

111








Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
111	106	Lower middle	CSA	29.7	123.2	4,215

	Score/Value	Rank		Score/Value	Rank
 Institutions	41.3	117	 Business sophistication	22.3	[91]
1.1 Political environment	43.8	119	5.1 Knowledge workers	20.9	[93]
1.1.1 Political and operational stability*	58.2	103	5.1.1 Knowledge-intensive employment, %	13.2	97
1.1.2 Government effectiveness*	29.4	121 ○ ◇	5.1.2 Firms offering formal training, %	31.9	52 ●
1.2 Regulatory environment	46.2	114	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	27.6	112	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	33.3	91	5.1.5 Females employed w/advanced degrees, %	2.9	100
1.2.3 Cost of redundancy dismissal	27.2	109	5.2 Innovation linkages	18.6	103
1.3 Business environment	34.0	[100]	5.2.1 University-industry R&D collaboration†	31.5	113
1.3.1 Policies for doing business†	34.0	109	5.2.2 State of cluster development and depth†	37.3	112
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	84
			5.2.5 Patent families/bn PPP\$ GDP	0.0	82
 Human capital and research	11.5	123 ○ ◇	5.3 Knowledge absorption	27.4	[79]
2.1 Education	31.3	116	5.3.1 Intellectual property payments, % total trade	n/a	n/a
2.1.1 Expenditure on education, % GDP	4.4	64 ●	5.3.2 High-tech imports, % total trade	11.1	24 ●
2.1.2 Government funding/pupil, secondary, % GDP/cap	9.2	98 ○	5.3.3 ICT services imports, % total trade	0.2	127 ○ ◇
2.1.3 School life expectancy, years	12.9	84	5.3.4 FDI net inflows, % GDP	0.4	116
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	30.4	118 ○ ◇	 Knowledge and technology outputs	7.6	[119]
2.2 Tertiary education	3.2	124 ○ ◇	6.1 Knowledge creation	9.9	[74]
2.2.1 Tertiary enrolment, % gross	13.5	107	6.1.1 Patents by origin/bn PPP\$ GDP	0.2	99
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, %	0.0	112 ○ ◇	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	0.0	[120]	6.1.4 Scientific and technical articles/bn PPP\$ GDP	15.0	64 ●
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index	7.5	85
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	6.2 Knowledge impact	4.1	125 ○ ◇
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2.1 Labor productivity growth, %	n/a	n/a
2.3.4 QS university ranking, top 3*	0.0	72 ○ ◇	6.2.2 New businesses/th pop. 15-64	1.4	74
			6.2.3 Software spending, % GDP	0.0	116 ○ ◇
 Infrastructure	28.9	108	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	0.8	112
3.1 Information and communication technologies (ICTs)	42.8	117	6.2.5 High-tech manufacturing, %	6.8	96
3.1.1 ICT access*	63.0	112	6.3 Knowledge diffusion	8.7	[107]
3.1.2 ICT use*	31.2	111	6.3.1 Intellectual property receipts, % total trade	n/a	n/a
3.1.3 Government's online service*	40.0	114	6.3.2 Production and export complexity	n/a	n/a
3.1.4 E-participation*	36.9	114	6.3.3 High-tech exports, % total trade	0.1	124 ○
3.2 General infrastructure	29.6	64 ●	6.3.4 ICT services exports, % total trade	2.3	58 ●
3.2.1 Electricity output, GWh/mn pop.	216.0	117 ○	 Creative outputs	7.7	101
3.2.2 Logistics performance*	21.4	105	7.1 Intangible assets	10.0	100
3.2.3 Gross capital formation, % GDP	41.9	4 ● ◆	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	14.3	127 ○ ◇	7.1.2 Trademarks by origin/bn PPP\$ GDP	40.7	62 ●
3.3.1 GDP/unit of energy use	6.3	110	7.1.3 Global brand value, top 5,000, % GDP	0.0	77 ○ ◇
3.3.2 Environmental performance*	28.3	117	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.2	110
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.2	116	7.2 Creative goods and services	7.7	[89]
			7.2.1 Cultural and creative services exports, % total trade	n/a	n/a
 Market sophistication	34.2	59 ●	7.2.2 National feature films/mn pop. 15-69	2.6	41 ◆
4.1 Credit	65.0	4 ● ◆	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 Printing and other media, % manufacturing	0.4	88
4.1.2 Domestic credit to private sector, % GDP	87.9	35 ● ◆	7.2.5 Creative goods exports, % total trade	0.3	71
4.1.3 Loans from microfinance institutions, % GDP	6.7	4 ● ◆	7.3 Online creativity	3.1	71
4.2 Investment	1.2	[108]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.5	106
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	1.2	80
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.3 GitHub commit pushes received/mn pop. 15-69	2.3	81
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	88	7.3.4 Mobile app creation/bn PPP\$ GDP	8.4	44 ●
4.2.4 Venture capital received, value, % GDP	0.0	94			
4.3 Trade, diversification, and market scale	36.5	108			
4.3.1 Applied tariff rate, weighted avg., %	11.6	125 ○ ◇			
4.3.2 Domestic industry diversification	82.0	65 ○			
4.3.3 Domestic market scale, bn PPP\$	123.2	81			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Netherlands

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
6	10	High	EUR	17.2	1,079.2	61,816








	Score/Value	Rank		Score/Value	Rank
 Institutions	86.9	4 ●◆	 Business sophistication	56.8	10
1.1 Political environment	86.6	10	5.1 Knowledge workers	64.7	14
1.1.1 Political and operational stability*	83.6	16	5.1.1 Knowledge-intensive employment, %	52.4	5 ●
1.1.2 Government effectiveness*	89.6	6 ●	5.1.2 Firms offering formal training, %	54.1	15
1.2 Regulatory environment	87.3	15	5.1.3 GERD performed by business, % GDP	1.5	16
1.2.1 Regulatory quality*	88.7	8	5.1.4 GERD financed by business, %	57.6	16
1.2.2 Rule of law*	91.7	11	5.1.5 Females employed w/advanced degrees, %	22.2	26
1.2.3 Cost of redundancy dismissal	15.9	65 ○	5.2 Innovation linkages	53.7	11
1.3 Business environment	86.8	3 ●◆	5.2.1 University-industry R&D collaboration†	70.1	4 ●
1.3.1 Policies for doing business†	76.3	9	5.2.2 State of cluster development and depth†	68.5	8
1.3.2 Entrepreneurship policies and culture*	97.3	4 ◆	5.2.3 GERD financed by abroad, % GDP	0.2	16
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	23
			5.2.5 Patent families/bn PPP\$ GDP	4.4	9
 Human capital and research	57.4	14	5.3 Knowledge absorption	51.9	12
2.1 Education	63.8	17	5.3.1 Intellectual property payments, % total trade	7.9	1 ●◆
2.1.1 Expenditure on education, % GDP	5.4	32	5.3.2 High-tech imports, % total trade	13.6	18
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.9	33	5.3.3 ICT services imports, % total trade	1.8	44
2.1.3 School life expectancy, years	18.6	10	5.3.4 FDI net inflows, % GDP	-24.2	132 ○◇
2.1.4 PISA scales in reading, maths and science	502.5	15	5.3.5 Research talent, % in businesses	70.5	6 ◆
2.1.5 Pupil-teacher ratio, secondary	14.2	64 ○◇	 Knowledge and technology outputs	57.9	5 ●
2.2 Tertiary education	40.1	35	6.1 Knowledge creation	68.6	6 ●
2.2.1 Tertiary enrolment, % gross	87.1	13	6.1.1 Patents by origin/bn PPP\$ GDP	8.5	12
2.2.2 Graduates in science and engineering, %	18.8	79 ○◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	3.8	9
2.2.3 Tertiary inbound mobility, %	11.7	19	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	68.3	10	6.1.4 Scientific and technical articles/bn PPP\$ GDP	44.2	16
2.3.1 Researchers, FTE/mn pop.	5,911.7	8	6.1.5 Citable documents H-index	69.8	6 ●
2.3.2 Gross expenditure on R&D, % GDP	2.3	15	6.2 Knowledge impact	39.7	26
2.3.3 Global corporate R&D investors, top 3, mn USD	81.7	9	6.2.1 Labor productivity growth, %	0.0	89 ○
2.3.4 QS university ranking, top 3*	68.1	13	6.2.2 New businesses/th pop. 15-64	3.1	43 ○
			6.2.3 Software spending, % GDP	0.5	12
 Infrastructure	60.1	14	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	9.0	31
3.1 Information and communication technologies (ICTs)	90.7	9	6.2.5 High-tech manufacturing, %	49.8	12
3.1.1 ICT access*	93.8	17	6.3 Knowledge diffusion	65.4	4 ●
3.1.2 ICT use*	82.0	17	6.3.1 Intellectual property receipts, % total trade	7.7	1 ●◆
3.1.3 Government's online service*	90.6	12	6.3.2 Production and export complexity	67.7	25
3.1.4 E-participation*	96.4	9	6.3.3 High-tech exports, % total trade	13.0	12
3.2 General infrastructure	52.0	22	6.3.4 ICT services exports, % total trade	3.6	30
3.2.1 Electricity output, GWh/mn pop.	7,022.9	27	 Creative outputs	49.4	10
3.2.2 Logistics performance*	91.6	6	7.1 Intangible assets	50.8	21
3.2.3 Gross capital formation, % GDP	22.5	74 ○	7.1.1 Intangible asset intensity, top 15, %	92.1	2 ●◆
3.3 Ecological sustainability	37.8	36	7.1.2 Trademarks by origin/bn PPP\$ GDP	50.2	47 ○
3.3.1 GDP/unit of energy use	13.0	38	7.1.3 Global brand value, top 5,000, % GDP	111.4	17
3.3.2 Environmental performance*	62.6	11	7.1.4 Industrial designs by origin/bn PPP\$ GDP	4.2	30
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	2.5	35	7.2 Creative goods and services	35.7	17
			7.2.1 Cultural and creative services exports, % total trade	2.3	8
 Market sophistication	50.7	18	7.2.2 National feature films/mn pop. 15-69	2.8	40 ○
4.1 Credit	49.0	22	7.2.3 Entertainment and media market/th pop. 15-69	48.5	17
4.1.1 Finance for startups and scaleups*	60.3	3 ●◆	7.2.4 Printing and other media, % manufacturing	0.9	56 ○
4.1.2 Domestic credit to private sector, % GDP	100.9	28	7.2.5 Creative goods exports, % total trade	3.8	15
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	60.5	3 ●◆
4.2 Investment	33.9	23	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	80.9	6 ●◆
4.2.1 Market capitalization, % GDP	109.9	12	7.3.2 Country-code TLDs/th pop. 15-69	100.0	1 ●◆
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.3	16	7.3.3 GitHub commit pushes received/mn pop. 15-69	49.5	9
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	27	7.3.4 Mobile app creation/bn PPP\$ GDP	11.4	35
4.2.4 Venture capital received, value, % GDP	0.0	21			
4.3 Trade, diversification, and market scale	69.2	20			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	92.9	36			
4.3.3 Domestic market scale, bn PPP\$	1,079.2	26			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

New Zealand








24

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
28	23	High	SEAO	4.9	235.0	45,880

	Score/Value	Rank		Score/Value	Rank
 Institutions	83.3	7 ●	 Business sophistication	43.8	31 ◇
1.1 Political environment	90.1	4 ●	5.1 Knowledge workers	50.0	[31]
1.1.1 Political and operational stability*	96.4	2 ●◆	5.1.1 Knowledge-intensive employment, %	n/a	n/a
1.1.2 Government effectiveness*	83.9	14	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	96.7	2 ●◆	5.1.3 GERD performed by business, % GDP	⊙	0.8
1.2.1 Regulatory quality*	91.8	2 ●	5.1.4 GERD financed by business, %	⊙	49.9
1.2.2 Rule of law*	94.9	3 ●	5.1.5 Females employed w/advanced degrees, %	⊙	21.5
1.2.3 Cost of redundancy dismissal	8.0	1 ●	5.2 Innovation linkages	37.8	28 ◇
1.3 Business environment	63.2	[27]	5.2.1 University-industry R&D collaboration†	55.5	31
1.3.1 Policies for doing business†	63.2	32	5.2.2 State of cluster development and depth†	48.7	60 ◇
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	20
			5.2.5 Patent families/bn PPP\$ GDP	1.3	24 ◇
 Human capital and research	54.9	18	5.3 Knowledge absorption	43.8	28
2.1 Education	65.5	11	5.3.1 Intellectual property payments, % total trade	1.6	18
2.1.1 Expenditure on education, % GDP	⊙	6.0	5.3.2 High-tech imports, % total trade	10.4	36
2.1.2 Government funding/pupil, secondary, % GDP/cap	18.2	63 ○◇	5.3.3 ICT services imports, % total trade	3.2	15
2.1.3 School life expectancy, years	20.3	2 ●◆	5.3.4 FDI net inflows, % GDP	1.5	85 ○
2.1.4 PISA scales in reading, maths and science	502.9	13	5.3.5 Research talent, % in businesses	⊙	35.7
2.1.5 Pupil-teacher ratio, secondary	14.6	69 ○◇	 Knowledge and technology outputs	36.0	29 ◇
2.2 Tertiary education	51.3	9	6.1 Knowledge creation	37.7	25
2.2.1 Tertiary enrolment, % gross	80.3	21	6.1.1 Patents by origin/bn PPP\$ GDP	1.6	47 ◇
2.2.2 Graduates in science and engineering, %	⊙	23.0	6.1.2 PCT patents by origin/bn PPP\$ GDP	1.6	20
2.2.3 Tertiary inbound mobility, %	20.8	6 ●◆	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	48.0	24	6.1.4 Scientific and technical articles/bn PPP\$ GDP	50.5	10
2.3.1 Researchers, FTE/mn pop.	⊙	5,854.1	6.1.5 Citable documents H-index	35.2	27
2.3.2 Gross expenditure on R&D, % GDP	⊙	1.4	29		
2.3.3 Global corporate R&D investors, top 3, mn USD	47.6	31	6.2 Knowledge impact	36.8	34
2.3.4 QS university ranking, top 3*	49.8	19	6.2.1 Labor productivity growth, %	0.8	64 ○
			6.2.2 New businesses/th pop. 15-64	17.9	5 ●◆
 Infrastructure	57.9	21	6.2.3 Software spending, % GDP	0.3	51
3.1 Information and communication technologies (ICTs)	90.2	12	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	4.9	58
3.1.1 ICT access*	93.2	23	6.2.5 High-tech manufacturing, %	16.6	71 ○◇
3.1.2 ICT use*	76.0	36 ◇	6.3 Knowledge diffusion	33.4	47
3.1.3 Government's online service*	92.9	10	6.3.1 Intellectual property receipts, % total trade	1.5	16
3.1.4 E-participation*	98.8	4 ●	6.3.2 Production and export complexity	47.1	49 ◇
3.2 General infrastructure	52.8	20	6.3.3 High-tech exports, % total trade	2.5	55
3.2.1 Electricity output, GWh/mn pop.	8,839.5	16	6.3.4 ICT services exports, % total trade	2.0	63
3.2.2 Logistics performance*	85.1	15	 Creative outputs	38.4	22
3.2.3 Gross capital formation, % GDP	22.5	73 ○	7.1 Intangible assets	44.9	27
3.3 Ecological sustainability	30.8	52	7.1.1 Intangible asset intensity, top 15, %	64.4	33
3.3.1 GDP/unit of energy use	9.9	71 ○	7.1.2 Trademarks by origin/bn PPP\$ GDP	104.8	10 ◆
3.3.2 Environmental performance*	56.7	26	7.1.3 Global brand value, top 5,000, % GDP	32.9	43 ◇
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	1.7	57	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.6	52
 Market sophistication	45.7	24	7.2 Creative goods and services	28.9	32
4.1 Credit	61.6	[6]	7.2.1 Cultural and creative services exports, % total trade	0.5	52
4.1.1 Finance for startups and scaleups*	n/a	n/a	7.2.2 National feature films/mn pop. 15-69	9.3	4 ●
4.1.2 Domestic credit to private sector, % GDP	161.3	9	7.2.3 Entertainment and media market/th pop. 15-69	49.4	14
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.2.4 Printing and other media, % manufacturing	1.4	27
4.2 Investment	17.8	36 ◇	7.2.5 Creative goods exports, % total trade	0.4	63 ○
4.2.1 Market capitalization, % GDP	51.3	37	7.3 Online creativity	34.9	19
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.1	28 ◇	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	32.6	19
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	20	7.3.2 Country-code TLDs/th pop. 15-69	63.2	9 ●
4.2.4 Venture capital received, value, % GDP	0.0	55 ○◇	7.3.3 GitHub commit pushes received/mn pop. 15-69	36.9	18
4.3 Trade, diversification, and market scale	57.7	63	7.3.4 Mobile app creation/bn PPP\$ GDP	7.0	51 ◇
4.3.1 Applied tariff rate, weighted avg., %	0.8	9 ●			
4.3.2 Domestic industry diversification	73.5	82 ○◇			
4.3.3 Domestic market scale, bn PPP\$	235.0	63			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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\$
126	119	Low	SSA	25.1	34.0	1,355








		Score/ Value	Rank			Score/ Value	Rank
	Institutions	52.0	79 ●		Business sophistication	19.7	[106]
1.1	Political environment	45.5	111	5.1	Knowledge workers	17.5	[106]
1.1.1	Political and operational stability*	54.5	116	5.1.1	Knowledge-intensive employment, %	15.3	89 ●
1.1.2	Government effectiveness*	36.4	106	5.1.2	Firms offering formal training, %	27.5	59 ●
1.2	Regulatory environment	58.6	86	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	26.4	114	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	31.9	93	5.1.5	Females employed w/advanced degrees, %	0.7	121
1.2.3	Cost of redundancy dismissal	14.0	54 ●	5.2	Innovation linkages	1.4	[131]
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 and depth [†]	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	110
				5.2.5	Patent families/bn PPP\$ GDP	0.0	101 ○ ◇
				5.3	Knowledge absorption	40.2	36 ● ◆
				5.3.1	Intellectual property payments, % total trade	0.0	121
				5.3.2	High-tech imports, % total trade	20.9	8 ● ◆
				5.3.3	ICT services imports, % total trade	2.4	28 ● ◆
				5.3.4	FDI net inflows, % GDP	3.9	26 ●
				5.3.5	Research talent, % in businesses	n/a	n/a
	Human capital and research	9.5	130		Knowledge and technology outputs	10.2	109
2.1	Education	20.5	128	6.1	Knowledge creation	2.3	121
2.1.1	Expenditure on education, % GDP	3.8	87	6.1.1	Patents by origin/bn PPP\$ GDP	0.3	91
2.1.2	Government funding/pupil, secondary, % GDP/cap	11.7	93	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	101 ○ ◇
2.1.3	School life expectancy, years	6.4	117 ○ ◇	6.1.3	Utility models by origin/bn PPP\$ GDP	0.0	78 ○ ◇
2.1.4	PISA scales in reading, maths and science	n/a	n/a	6.1.4	Scientific and technical articles/bn PPP\$ GDP	5.4	112 ○ ◇
2.1.5	Pupil-teacher ratio, secondary	29.7	117	6.1.5	Citable documents H-index	2.8	120
2.2	Tertiary education	8.1	111	6.2	Knowledge impact	16.7	101
2.2.1	Tertiary enrolment, % gross	4.4	127 ○ ◇	6.2.1	Labor productivity growth, %	1.8	41 ●
2.2.2	Graduates in science and engineering, %	12.3	102	6.2.2	New businesses/th pop. 15-64	0.1	120
2.2.3	Tertiary inbound mobility, %	5.4	46 ●	6.2.3	Software spending, % GDP	0.0	113
2.3	Research and development (R&D)	0.0	119	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	0.4	125
2.3.1	Researchers, FTE/mn pop.	26.5	104	6.2.5	High-tech manufacturing, %	15.8	73 ● ◆
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	6.3	Knowledge diffusion	11.5	98
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.3.1	Intellectual property receipts, % total trade	0.0	109
2.3.4	QS university ranking, top 3*	0.0	72 ○ ◇	6.3.2	Production and export complexity	n/a	n/a
				6.3.3	High-tech exports, % total trade	0.4	94 ● ◆
				6.3.4	ICT services exports, % total trade	3.7	29 ● ◆
	Infrastructure	20.8	129		Creative outputs	0.3	[131]
3.1	Information and communication technologies (ICTs)	26.7	131 ○ ◇	7.1	Intangible assets	0.1	[132]
3.1.1	ICT access*	34.6	131 ○ ◇	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.1.2	ICT use*	13.0	130 ○ ◇	7.1.2	Trademarks by origin/bn PPP\$ GDP	3.0	128 ○ ◇
3.1.3	Government's online service*	29.4	124	7.1.3	Global brand value, top 5,000, % GDP	n/a	n/a
3.1.4	E-participation*	29.8	126	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.0	119
3.2	General infrastructure	16.0	118	7.2	Creative goods and services	0.8	[125]
3.2.1	Electricity output, GWh/mn pop.	26.6	130 ○ ◇	7.2.1	Cultural and creative services exports, % total trade	0.1	91
3.2.2	Logistics performance*	0.9	123 ○ ◇	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
3.2.3	Gross capital formation, % GDP	31.7	17 ●	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
3.3	Ecological sustainability	19.7	95	7.2.4	Printing and other media, % manufacturing	n/a	n/a
3.3.1	GDP/unit of energy use	8.5	87	7.2.5	Creative goods exports, % total trade	0.0	109
3.3.2	Environmental performance*	37.7	80 ● ◆	7.3	Online creativity	0.3	117
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.1	123	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.9	98 ● ◆
				7.3.2	Country-code TLDs/th pop. 15-69	0.0	130
	Market sophistication	17.8	116	7.3.3	GitHub commit pushes received/mn pop. 15-69	0.0	131 ○ ◇
4.1	Credit	4.5	125	7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	n/a
4.1.1	Finance for startups and scaleups*	n/a	n/a				
4.1.2	Domestic credit to private sector, % GDP	11.7	124				
4.1.3	Loans from microfinance institutions, % GDP	0.5	38				
4.2	Investment	13.3	[45]				
4.2.1	Market capitalization, % GDP	n/a	n/a				
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a				
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.1	28 ● ◆				
4.2.4	Venture capital received, value, % GDP	0.0	76				
4.3	Trade, diversification, and market scale	35.7	109				
4.3.1	Applied tariff rate, weighted avg., %	8.1	105				
4.3.2	Domestic industry diversification	58.6	98				
4.3.3	Domestic market scale, bn PPP\$	34.0	121				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

North Macedonia

66

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
77	60	Upper middle	EUR	2.1	37.4	18,069








	Score/Value	Rank		Score/Value	Rank
 Institutions	50.3	88	 Business sophistication	29.1	59
1.1 Political environment	63.6	53	5.1 Knowledge workers	35.1	57
1.1.1 Political and operational stability*	74.5	42	5.1.1 Knowledge-intensive employment, %	31.2	49
1.1.2 Government effectiveness*	52.7	62	5.1.2 Firms offering formal training, %	39.0	35
1.2 Regulatory environment	69.1	53	5.1.3 GERD performed by business, % GDP	0.1	62
1.2.1 Regulatory quality*	57.6	47	5.1.4 GERD financed by business, %	23.6	64
1.2.2 Rule of law*	44.4	64	5.1.5 Females employed w/advanced degrees, %	15.8	46
1.2.3 Cost of redundancy dismissal	14.4	57	5.2 Innovation linkages	17.1	113 ○
1.3 Business environment	18.3	126 ○ ◇	5.2.1 University-industry R&D collaboration†	33.7	106 ○
1.3.1 Policies for doing business†	32.6	112 ○	5.2.2 State of cluster development and depth†	41.7	98
1.3.2 Entrepreneurship policies and culture*	4.0	71 ○ ◇	5.2.3 GERD financed by abroad, % GDP	0.0	61
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP ○	0.0	111 ○
			5.2.5 Patent families/bn PPP\$ GDP	0.1	52
 Human capital and research	28.4	75	5.3 Knowledge absorption	35.0	50
2.1 Education	56.6	[53]	5.3.1 Intellectual property payments, % total trade	2.1	13 ● ◆
2.1.1 Expenditure on education, % GDP	n/a	n/a	5.3.2 High-tech imports, % total trade	6.6	98
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	1.2	78
2.1.3 School life expectancy, years	13.5	77	5.3.4 FDI net inflows, % GDP	3.2	41
2.1.4 PISA scales in reading, maths and science	400.1	67 ○	5.3.5 Research talent, % in businesses	27.9	43
2.1.5 Pupil-teacher ratio, secondary	8.3	13 ● ◆	 Knowledge and technology outputs	24.5	57
2.2 Tertiary education	26.1	77	6.1 Knowledge creation	9.8	76
2.2.1 Tertiary enrolment, % gross	43.1	72	6.1.1 Patents by origin/bn PPP\$ GDP	1.4	55
2.2.2 Graduates in science and engineering, %	20.6	62	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	56
2.2.3 Tertiary inbound mobility, %	5.2	49	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	2.6	81	6.1.4 Scientific and technical articles/bn PPP\$ GDP	13.9	70
2.3.1 Researchers, FTE/mn pop.	786.8	58	6.1.5 Citable documents H-index	6.2	90
2.3.2 Gross expenditure on R&D, % GDP	0.4	70	6.2 Knowledge impact	36.8	33 ●
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2.1 Labor productivity growth, %	0.1	86
2.3.4 QS university ranking, top 3*	0.0	72 ○ ◇	6.2.2 New businesses/th pop. 15-64	3.5	40
			6.2.3 Software spending, % GDP	0.1	78
 Infrastructure	49.2	49	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	18.2	16 ● ◆
3.1 Information and communication technologies (ICTs)	75.4	61	6.2.5 High-tech manufacturing, %	47.0	16 ● ◆
3.1.1 ICT access*	81.5	80	6.3 Knowledge diffusion	27.0	54
3.1.2 ICT use*	62.5	65	6.3.1 Intellectual property receipts, % total trade	0.1	48
3.1.3 Government's online service*	74.1	58	6.3.2 Production and export complexity	42.6	57
3.1.4 E-participation*	83.3	38 ●	6.3.3 High-tech exports, % total trade	2.9	49
3.2 General infrastructure	21.4	100	6.3.4 ICT services exports, % total trade	3.5	33 ●
3.2.1 Electricity output, GWh/mn pop.	2,572.1	70	 Creative outputs	10.9	93
3.2.2 Logistics performance*	30.2	79	7.1 Intangible assets	7.2	108 ○
3.2.3 Gross capital formation, % GDP	n/a	n/a	7.1.1 Intangible asset intensity, top 15, %	-22.8	76 ○ ◇
3.3 Ecological sustainability	50.9	8 ● ◆	7.1.2 Trademarks by origin/bn PPP\$ GDP	n/a	n/a
3.3.1 GDP/unit of energy use	11.4	56	7.1.3 Global brand value, top 5,000, % GDP	0.0	77 ○ ◇
3.3.2 Environmental performance*	54.3	32 ● ◆	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.2	64
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	11.0	5 ● ◆	7.2 Creative goods and services	23.1	52
			7.2.1 Cultural and creative services exports, % total trade	1.0	31 ●
 Market sophistication	42.6	34 ● ◆	7.2.2 National feature films/mn pop. 15-69	3.8	32 ● ◆
4.1 Credit	25.3	71	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	56	7.2.4 Printing and other media, % manufacturing	2.0	13 ●
4.1.2 Domestic credit to private sector, % GDP	56.2	62	7.2.5 Creative goods exports, % total trade	0.1	86
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	6.3	56
4.2 Investment	n/a	[n/a]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	6.9	46
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	5.5	53
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.3 GitHub commit pushes received/mn pop. 15-69	6.2	51
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	6.6	53
4.2.4 Venture capital received, value, % GDP	n/a	n/a			
4.3 Trade, diversification, and market scale	59.9	52			
4.3.1 Applied tariff rate, weighted avg., %	1.7	55			
4.3.2 Domestic industry diversification	90.3	44			
4.3.3 Domestic market scale, bn PPP\$	37.4	116 ○			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ○ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Norway







22

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
29	14	High	EUR	5.5	378.4	69,859

		Score/ Value	Rank			Score/ Value	Rank
 Institutions		87.1	3 ●◆	 Business sophistication		52.0	21
1.1	Political environment	90.3	3 ●	5.1	Knowledge workers	62.7	17
1.1.1	Political and operational stability*	89.1	7	5.1.1	Knowledge-intensive employment, %	52.6	4 ●
1.1.2	Government effectiveness*	91.4	4 ●◆	5.1.2	Firms offering formal training, %	n/a	n/a
1.2	Regulatory environment	95.6	4 ●	5.1.3	GERD performed by business, % GDP	1.2	18
1.2.1	Regulatory quality*	87.3	9	5.1.4	GERD financed by business, %	43.2	38 ◇
1.2.2	Rule of law*	97.5	2 ●◆	5.1.5	Females employed w/advanced degrees, %	27.2	11
1.2.3	Cost of redundancy dismissal	8.7	20	5.2	Innovation linkages	47.9	17
1.3	Business environment	75.6	10	5.2.1	University-industry R&D collaboration†	⊙ 61.7	21
1.3.1	Policies for doing business†	⊙ 70.7	18	5.2.2	State of cluster development and depth†	⊙ 64.6	16
1.3.2	Entrepreneurship policies and culture*	80.5	6	5.2.3	GERD financed by abroad, % GDP	0.2	23
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	18
				5.2.5	Patent families/bn PPP\$ GDP	1.9	19
				5.3	Knowledge absorption	45.3	26
				5.3.1	Intellectual property payments, % total trade	0.5	68 ○◇
				5.3.2	High-tech imports, % total trade	8.1	71 ○
				5.3.3	ICT services imports, % total trade	4.6	7 ●◆
				5.3.4	FDI net inflows, % GDP	0.6	114 ○
				5.3.5	Research talent, % in businesses	51.0	23
 Human capital and research		53.6	19	 Knowledge and technology outputs		39.2	25
2.1	Education	72.4	3 ●◆	6.1	Knowledge creation	46.1	15
2.1.1	Expenditure on education, % GDP	⊙ 7.6	4 ●◆	6.1.1	Patents by origin/bn PPP\$ GDP	4.3	21
2.1.2	Government funding/pupil, secondary, % GDP/cap	25.7	19	6.1.2	PCT patents by origin/bn PPP\$ GDP	1.9	17
2.1.3	School life expectancy, years	18.2	12	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.1.4	PISA scales in reading, maths and science	496.9	22	6.1.4	Scientific and technical articles/bn PPP\$ GDP	50.0	11
2.1.5	Pupil-teacher ratio, secondary	8.9	18 ◆	6.1.5	Citable documents H-index	42.1	20
2.2	Tertiary education	35.3	47	6.2	Knowledge impact	41.5	20
2.2.1	Tertiary enrolment, % gross	83.2	18	6.2.1	Labor productivity growth, %	0.7	72 ○
2.2.2	Graduates in science and engineering, %	21.2	59 ○	6.2.2	New businesses/th pop. 15-64	9.4	15
2.2.3	Tertiary inbound mobility, %	4.3	55 ○◇	6.2.3	Software spending, % GDP	0.5	15
2.3	Research and development (R&D)	53.1	20	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	7.3	36
2.3.1	Researchers, FTE/mn pop.	6,699.1	6 ●	6.2.5	High-tech manufacturing, %	37.1	33
2.3.2	Gross expenditure on R&D, % GDP	2.3	16	6.3	Knowledge diffusion	30.2	50 ◇
2.3.3	Global corporate R&D investors, top 3, mn USD	55.5	25	6.3.1	Intellectual property receipts, % total trade	0.3	31 ◇
2.3.4	QS university ranking, top 3*	44.5	25	6.3.2	Production and export complexity	54.7	41 ◇
				6.3.3	High-tech exports, % total trade	3.5	47
				6.3.4	ICT services exports, % total trade	2.1	61 ○
 Infrastructure		66.5	2 ●◆	 Creative outputs		34.6	30 ◇
3.1	Information and communication technologies (ICTs)	88.9	16	7.1	Intangible assets	32.9	55 ◇
3.1.1	ICT access*	91.6	33	7.1.1	Intangible asset intensity, top 15, %	63.9	35
3.1.2	ICT use*	86.0	8 ●	7.1.2	Trademarks by origin/bn PPP\$ GDP	31.2	74 ○◇
3.1.3	Government's online service*	87.6	19	7.1.3	Global brand value, top 5,000, % GDP	60.8	31
3.1.4	E-participation*	90.5	18	7.1.4	Industrial designs by origin/bn PPP\$ GDP	1.4	57
3.2	General infrastructure	72.5	2 ●◆	7.2	Creative goods and services	27.9	35 ◇
3.2.1	Electricity output, GWh/mn pop.	28,494.4	1 ●◆	7.2.1	Cultural and creative services exports, % total trade	0.6	46
3.2.2	Logistics performance*	76.7	21	7.2.2	National feature films/mn pop. 15-69	5.5	20
3.2.3	Gross capital formation, % GDP	28.2	30	7.2.3	Entertainment and media market/th pop. 15-69	68.7	5
3.3	Ecological sustainability	38.2	34	7.2.4	Printing and other media, % manufacturing	1.0	49 ○
3.3.1	GDP/unit of energy use	11.5	55	7.2.5	Creative goods exports, % total trade	0.7	55
3.3.2	Environmental performance*	59.3	20	7.3	Online creativity	44.7	12
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	4.0	25	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	49.6	15
				7.3.2	Country-code TLDs/th pop. 15-69	62.3	12
				7.3.3	GitHub commit pushes received/mn pop. 15-69	54.2	6 ●
				7.3.4	Mobile app creation/bn PPP\$ GDP	12.6	29
 Market sophistication		44.6	28				
4.1	Credit	56.7	9				
4.1.1	Finance for startups and scaleups*	50.0	13				
4.1.2	Domestic credit to private sector, % GDP	166.0	6 ●				
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a				
4.2	Investment	17.6	37 ◇				
4.2.1	Market capitalization, % GDP	⊙ 68.8	25				
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.1	29 ◇				
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.1	32				
4.2.4	Venture capital received, value, % GDP	0.0	39 ◇				
4.3	Trade, diversification, and market scale	59.5	56				
4.3.1	Applied tariff rate, weighted avg., %	2.8	70 ○◇				
4.3.2	Domestic industry diversification	88.3	50				
4.3.3	Domestic market scale, bn PPP\$	378.4	50				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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	62	High	NAWA	5.2	147.8	32,327








	Score/Value	Rank		Score/Value	Rank
 Institutions	59.0	57	 Business sophistication	21.6	97
1.1 Political environment	62.7	55	5.1 Knowledge workers	18.6	103
1.1.1 Political and operational stability*	72.7	46	5.1.1 Knowledge-intensive employment, %	21.4	73
1.1.2 Government effectiveness*	52.8	61	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	59.3	80	5.1.3 GERD performed by business, % GDP	0.1	65
1.2.1 Regulatory quality*	56.4	50	5.1.4 GERD financed by business, %	31.8	56
1.2.2 Rule of law*	62.2	40	5.1.5 Females employed w/advanced degrees, %	0.9	118
1.2.3 Cost of redundancy dismissal	n/a	n/a	5.2 Innovation linkages	26.2	50
1.3 Business environment	55.1	46	5.2.1 University-industry R&D collaboration†	51.5	39
1.3.1 Policies for doing business‡	70.3	19	5.2.2 State of cluster development and depth†	62.5	21
1.3.2 Entrepreneurship policies and culture*	39.9	39	5.2.3 GERD financed by abroad, % GDP	0.0	86
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	31
			5.2.5 Patent families/bn PPP\$ GDP	0.0	95
 Human capital and research	38.9	40	5.3 Knowledge absorption	19.8	113
2.1 Education	66.2	10	5.3.1 Intellectual property payments, % total trade	n/a	n/a
2.1.1 Expenditure on education, % GDP	5.4	29	5.3.2 High-tech imports, % total trade	5.5	115
2.1.2 Government funding/pupil, secondary, % GDP/cap	37.6	3	5.3.3 ICT services imports, % total trade	0.6	104
2.1.3 School life expectancy, years	14.6	60	5.3.4 FDI net inflows, % GDP	5.1	19
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	11.3	42	 Knowledge and technology outputs	12.7	94
2.2 Tertiary education	45.4	23	6.1 Knowledge creation	7.1	91
2.2.1 Tertiary enrolment, % gross	45.5	70	6.1.1 Patents by origin/bn PPP\$ GDP	0.2	96
2.2.2 Graduates in science and engineering, %	39.0	1	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	68
2.2.3 Tertiary inbound mobility, %	2.9	69	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	5.1	71	6.1.4 Scientific and technical articles/bn PPP\$ GDP	12.6	75
2.3.1 Researchers, FTE/mn pop.	334.9	80	6.1.5 Citable documents H-index	7.6	84
2.3.2 Gross expenditure on R&D, % GDP	0.4	71	6.2 Knowledge impact	14.3	110
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2.1 Labor productivity growth, %	-2.3	112
2.3.4 QS university ranking, top 3*	10.1	62	6.2.2 New businesses/th pop. 15-64	1.5	70
			6.2.3 Software spending, % GDP	0.1	99
 Infrastructure	46.9	56	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	4.7	59
3.1 Information and communication technologies (ICTs)	83.1	33	6.2.5 High-tech manufacturing, %	17.0	70
3.1.1 ICT access*	94.2	15	6.3 Knowledge diffusion	16.9	83
3.1.2 ICT use*	69.5	57	6.3.1 Intellectual property receipts, % total trade	n/a	n/a
3.1.3 Government's online service*	85.3	24	6.3.2 Production and export complexity	31.2	82
3.1.4 E-participation*	83.3	38	6.3.3 High-tech exports, % total trade	0.8	80
3.2 General infrastructure	39.1	40	6.3.4 ICT services exports, % total trade	0.6	95
3.2.1 Electricity output, GWh/mn pop.	7,698.8	23	 Creative outputs	15.4	80
3.2.2 Logistics performance*	53.5	41	7.1 Intangible assets	25.2	67
3.2.3 Gross capital formation, % GDP	20.5	90	7.1.1 Intangible asset intensity, top 15, %	32.2	66
3.3 Ecological sustainability	18.5	100	7.1.2 Trademarks by origin/bn PPP\$ GDP	56.9	42
3.3.1 GDP/unit of energy use	6.1	111	7.1.3 Global brand value, top 5,000, % GDP	8.5	60
3.3.2 Environmental performance*	30.7	104	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.1	111
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	1.9	51	7.2 Creative goods and services	6.0	[96]
			7.2.1 Cultural and creative services exports, % total trade	n/a	n/a
 Market sophistication	31.2	71	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	30.4	55	7.2.3 Entertainment and media market/th pop. 15-69	3.4	49
4.1.1 Finance for startups and scaleups*	37.2	45	7.2.4 Printing and other media, % manufacturing	0.5	85
4.1.2 Domestic credit to private sector, % GDP	65.1	53	7.2.5 Creative goods exports, % total trade	0.4	66
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	5.2	62
4.2 Investment	3.9	88	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.6	86
4.2.1 Market capitalization, % GDP	20.7	59	7.3.2 Country-code TLDs/th pop. 15-69	0.3	106
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	45	7.3.3 GitHub commit pushes received/mn pop. 15-69	0.8	107
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	91	7.3.4 Mobile app creation/bn PPP\$ GDP	18.1	16
4.2.4 Venture capital received, value, % GDP	0.0	86			
4.3 Trade, diversification, and market scale	59.2	57			
4.3.1 Applied tariff rate, weighted avg., %	1.7	54			
4.3.2 Domestic industry diversification	85.5	60			
4.3.3 Domestic market scale, bn PPP\$	147.8	76			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Pakistan

87

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
69	111	Lower middle	CSA	225.2	1,157.5	5,447








	Score/Value	Rank		Score/Value	Rank
 Institutions	41.2	118 ○	 Business sophistication	24.0	81
1.1 Political environment	47.2	104	5.1 Knowledge workers	18.8	[101]
1.1.1 Political and operational stability*	56.4	108	5.1.1 Knowledge-intensive employment, %	⊙ 11.8	102
1.1.2 Government effectiveness*	37.9	102	5.1.2 Firms offering formal training, %	⊙ 32.0	49
1.2 Regulatory environment	44.8	118 ○	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	27.0	113	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	28.1	106	5.1.5 Females employed w/advanced degrees, %	⊙ 1.7	108
1.2.3 Cost of redundancy dismissal	27.2	109	5.2 Innovation linkages	24.6	60
1.3 Business environment	31.7	107	5.2.1 University-industry R&D collaboration†	55.0	32 ● ◆
1.3.1 Policies for doing business†	54.8	50	5.2.2 State of cluster development and depth†	56.1	35 ● ◆
1.3.2 Entrepreneurship policies and culture*	⊙ 8.6	68 ○	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	90
 Human capital and research	16.0	113	5.3 Knowledge absorption	28.6	71
2.1 Education	31.3	117	5.3.1 Intellectual property payments, % total trade	0.4	73
2.1.1 Expenditure on education, % GDP	⊙ 2.5	116 ○	5.3.2 High-tech imports, % total trade	12.1	22 ●
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊙ 16.0	76	5.3.3 ICT services imports, % total trade	1.2	80
2.1.3 School life expectancy, years	8.7	114 ○ ◇	5.3.4 FDI net inflows, % GDP	0.7	108
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	17.0	84	 Knowledge and technology outputs	19.7	70
2.2 Tertiary education	5.6	[118]	6.1 Knowledge creation	17.0	[54]
2.2.1 Tertiary enrolment, % gross	12.2	108	6.1.1 Patents by origin/bn PPP\$ GDP	0.3	87
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	n/a	n/a
2.3 Research and development (R&D)	11.1	53	6.1.4 Scientific and technical articles/bn PPP\$ GDP	21.7	40 ● ◆
2.3.1 Researchers, FTE/mn pop.	⊙ 382.9	76	6.1.5 Citable documents H-index	18.3	46 ● ◆
2.3.2 Gross expenditure on R&D, % GDP	⊙ 0.2	90	6.2 Knowledge impact	23.4	77
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2.1 Labor productivity growth, %	1.3	55
2.3.4 QS university ranking, top 3*	29.5	42 ● ◆	6.2.2 New businesses/th pop. 15-64	0.1	117 ○
			6.2.3 Software spending, % GDP	0.3	37 ●
 Infrastructure	27.6	114	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	2.1	83
3.1 Information and communication technologies (ICTs)	53.5	98	6.2.5 High-tech manufacturing, %	⊙ 21.1	60
3.1.1 ICT access*	64.2	108	6.3 Knowledge diffusion	18.7	77
3.1.2 ICT use*	34.3	108	6.3.1 Intellectual property receipts, % total trade	0.0	91
3.1.3 Government's online service*	62.9	82	6.3.2 Production and export complexity	26.0	91
3.1.4 E-participation*	52.4	96	6.3.3 High-tech exports, % total trade	0.9	77
3.2 General infrastructure	12.1	127 ○ ◇	6.3.4 ICT services exports, % total trade	4.4	22 ●
3.2.1 Electricity output, GWh/mn pop.	⊙ 615.6	106	 Creative outputs	19.3	67
3.2.2 Logistics performance*	17.2	110 ○	7.1 Intangible assets	34.3	51
3.2.3 Gross capital formation, % GDP	15.2	119 ○ ◇	7.1.1 Intangible asset intensity, top 15, %	61.6	39
3.3 Ecological sustainability	17.1	111	7.1.2 Trademarks by origin/bn PPP\$ GDP	33.9	66
3.3.1 GDP/unit of energy use	9.3	77	7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a
3.3.2 Environmental performance*	24.6	126 ○ ◇	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.3	92
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.5	82	7.2 Creative goods and services	3.2	108
			7.2.1 Cultural and creative services exports, % total trade	0.1	79
 Market sophistication	23.6	100	7.2.2 National feature films/mn pop. 15-69	0.2	77 ○ ◇
4.1 Credit	14.1	102	7.2.3 Entertainment and media market/th pop. 15-69	0.3	61 ○ ◇
4.1.1 Finance for startups and scaleups*	⊙ 29.5	62	7.2.4 Printing and other media, % manufacturing	⊙ 0.6	77
4.1.2 Domestic credit to private sector, % GDP	17.2	113	7.2.5 Creative goods exports, % total trade	0.1	104
4.1.3 Loans from microfinance institutions, % GDP	0.6	37	7.3 Online creativity	5.5	60 ◆
4.2 Investment	3.5	92	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.5	105
4.2.1 Market capitalization, % GDP	⊙ 15.2	65	7.3.2 Country-code TLDs/th pop. 15-69	0.2	112
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	79	7.3.3 GitHub commit pushes received/mn pop. 15-69	0.9	105
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	68	7.3.4 Mobile app creation/bn PPP\$ GDP	20.2	12 ● ◆
4.2.4 Venture capital received, value, % GDP	⊙ 0.0	79			
4.3 Trade, diversification, and market scale	53.2	75			
4.3.1 Applied tariff rate, weighted avg., %	8.7	110			
4.3.2 Domestic industry diversification	⊙ 89.8	45			
4.3.3 Domestic market scale, bn PPP\$	1,157.5	23 ●			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Panama

81

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
80	83	Upper middle	LCN	4.4	134.0	30,889








	Score/Value	Rank		Score/Value	Rank
 Institutions	55.2	70	 Business sophistication	20.0	105
1.1 Political environment	61.1	60	5.1 Knowledge workers	18.9	100
1.1.1 Political and operational stability*	70.9	53	5.1.1 Knowledge-intensive employment, %	23.9	64
1.1.2 Government effectiveness*	51.2	64	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	63.4	69	5.1.3 GERD performed by business, % GDP	⊙	0.0
1.2.1 Regulatory quality*	52.9	56	5.1.4 GERD financed by business, %	⊙	1.5
1.2.2 Rule of law*	40.7	73	5.1.5 Females employed w/advanced degrees, %	11.7	65
1.2.3 Cost of redundancy dismissal	18.1	77	5.2 Innovation linkages	19.7	95
1.3 Business environment	41.1	85	5.2.1 University-industry R&D collaboration†	35.7	99
1.3.1 Policies for doing business†	47.6	71	5.2.2 State of cluster development and depth†	46.5	71
1.3.2 Entrepreneurship policies and culture*	34.6	45	5.2.3 GERD financed by abroad, % GDP	⊙	0.1
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	96
			5.2.5 Patent families/bn PPP\$ GDP	0.1	54
 Human capital and research	20.8	94	5.3 Knowledge absorption	21.4	103
2.1 Education	35.4	109	5.3.1 Intellectual property payments, % total trade	0.2	94
2.1.1 Expenditure on education, % GDP	3.9	80	5.3.2 High-tech imports, % total trade	⊙	7.7
2.1.2 Government funding/pupil, secondary, % GDP/cap	⊙	9.2	5.3.3 ICT services imports, % total trade	0.5	111
2.1.3 School life expectancy, years	⊙	12.9	5.3.4 FDI net inflows, % GDP	3.6	31
2.1.4 PISA scales in reading, maths and science	364.8	75	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	⊙	13.6			
2.2 Tertiary education	25.2	81	 Knowledge and technology outputs	14.6	86
2.2.1 Tertiary enrolment, % gross	⊙	47.8	6.1 Knowledge creation	4.6	108
2.2.2 Graduates in science and engineering, %	⊙	15.4	6.1.1 Patents by origin/bn PPP\$ GDP	0.2	100
2.2.3 Tertiary inbound mobility, %	n/a	n/a	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	66
2.3 Research and development (R&D)	1.8	89	6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	69
2.3.1 Researchers, FTE/mn pop.	⊙	39.1	6.1.4 Scientific and technical articles/bn PPP\$ GDP	5.5	111
2.3.2 Gross expenditure on R&D, % GDP	⊙	0.1	6.1.5 Citable documents H-index	11.6	65
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2 Knowledge impact	12.0	114
2.3.4 QS university ranking, top 3*	3.9	71	6.2.1 Labor productivity growth, %	n/a	n/a
			6.2.2 New businesses/th pop. 15-64	4.2	34
			6.2.3 Software spending, % GDP	0.2	69
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	2.0	84
			6.2.5 High-tech manufacturing, %	⊙	7.5
			6.3 Knowledge diffusion	27.0	53
			6.3.1 Intellectual property receipts, % total trade	0.1	68
			6.3.2 Production and export complexity	47.2	48
			6.3.3 High-tech exports, % total trade	⊙	5.1
			6.3.4 ICT services exports, % total trade	1.7	72
 Infrastructure	48.6	50	 Creative outputs	20.1	62
3.1 Information and communication technologies (ICTs)	64.7	87	7.1 Intangible assets	17.1	86
3.1.1 ICT access*	83.1	77	7.1.1 Intangible asset intensity, top 15, %	-2.0	74
3.1.2 ICT use*	55.2	86	7.1.2 Trademarks by origin/bn PPP\$ GDP	46.8	52
3.1.3 Government's online service*	62.4	83	7.1.3 Global brand value, top 5,000, % GDP	12.5	55
3.1.4 E-participation*	58.3	88	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.0	121
3.2 General infrastructure	39.8	39	7.2 Creative goods and services	36.2	[16]
3.2.1 Electricity output, GWh/mn pop.	⊙	2,741.2	7.2.1 Cultural and creative services exports, % total trade	0.4	62
3.2.2 Logistics performance*	57.2	37	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
3.2.3 Gross capital formation, % GDP	32.5	13	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
3.3 Ecological sustainability	41.3	29	7.2.4 Printing and other media, % manufacturing	⊙	2.5
3.3.1 GDP/unit of energy use	24.3	6	7.2.5 Creative goods exports, % total trade	⊙	2.9
3.3.2 Environmental performance*	50.5	40	7.3 Online creativity	9.9	44
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.2	106	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	32.1	20
			7.3.2 Country-code TLDs/th pop. 15-69	1.2	82
			7.3.3 GitHub commit pushes received/mn pop. 15-69	1.8	88
			7.3.4 Mobile app creation/bn PPP\$ GDP	4.4	57
 Market sophistication	25.7	89			
4.1 Credit	33.1	42			
4.1.1 Finance for startups and scaleups*	26.5	64			
4.1.2 Domestic credit to private sector, % GDP	105.9	24			
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a			
4.2 Investment	5.0	78			
4.2.1 Market capitalization, % GDP	25.2	54			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	88			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	83			
4.2.4 Venture capital received, value, % GDP	0.0	56			
4.3 Trade, diversification, and market scale	39.1	102			
4.3.1 Applied tariff rate, weighted avg., %	5.8	95			
4.3.2 Domestic industry diversification	⊙	51.9			
4.3.3 Domestic market scale, bn PPP\$	134.0	78			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Paraguay

91

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
84	94	Upper middle	LCN	7.2	100.9	13,724








	Score/Value	Rank		Score/Value	Rank
 Institutions	42.7	115	 Business sophistication	23.1	86
1.1 Political environment	51.7	95	5.1 Knowledge workers	22.5	88
1.1.1 Political and operational stability*	63.6	81	5.1.1 Knowledge-intensive employment, %	17.9	84
1.1.2 Government effectiveness*	39.7	96	5.1.2 Firms offering formal training, %	46.4	23
1.2 Regulatory environment	47.6	112	5.1.3 GERD performed by business, % GDP	0.0	93
1.2.1 Regulatory quality*	39.9	87	5.1.4 GERD financed by business, %	0.2	98
1.2.2 Rule of law*	35.3	88	5.1.5 Females employed w/advanced degrees, %	9.5	76
1.2.3 Cost of redundancy dismissal	29.4	118	5.2 Innovation linkages	19.1	100
1.3 Business environment	28.8	114	5.2.1 University-industry R&D collaboration†	26.8	122
1.3.1 Policies for doing business†	46.2	78	5.2.2 State of cluster development and depth†	40.5	102
1.3.2 Entrepreneurship policies and culture*	11.4	67	5.2.3 GERD financed by abroad, % GDP	0.0	63
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	n/a	n/a
			5.2.5 Patent families/bn PPP\$ GDP	0.2	47
 Human capital and research	19.2	[100]	5.3 Knowledge absorption	27.9	76
2.1 Education	37.8	[105]	5.3.1 Intellectual property payments, % total trade	0.1	97
2.1.1 Expenditure on education, % GDP	3.3	100	5.3.2 High-tech imports, % total trade	19.4	10
2.1.2 Government funding/pupil, secondary, % GDP/cap	15.0	82	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	1.4	88
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	18.4	89	 Knowledge and technology outputs	11.0	105
2.2 Tertiary education	n/a	[n/a]	6.1 Knowledge creation	2.1	122
2.2.1 Tertiary enrolment, % gross	n/a	n/a	6.1.1 Patents by origin/bn PPP\$ GDP	0.2	104
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	0.1	63
2.3 Research and development (R&D)	0.7	101	6.1.4 Scientific and technical articles/bn PPP\$ GDP	2.4	125
2.3.1 Researchers, FTE/mn pop.	155.6	85	6.1.5 Citable documents H-index	3.2	116
2.3.2 Gross expenditure on R&D, % GDP	0.1	99	6.2 Knowledge impact	16.9	100
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2.1 Labor productivity growth, %	0.4	75
2.3.4 QS university ranking, top 3*	0.0	72	6.2.2 New businesses/th pop. 15-64	0.0	121
			6.2.3 Software spending, % GDP	0.1	102
 Infrastructure	41.1	76	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	5.2	54
3.1 Information and communication technologies (ICTs)	67.1	84	6.2.5 High-tech manufacturing, %	n/a	n/a
3.1.1 ICT access*	73.0	92	6.3 Knowledge diffusion	14.0	92
3.1.2 ICT use*	49.8	94	6.3.1 Intellectual property receipts, % total trade	n/a	n/a
3.1.3 Government's online service*	70.6	65	6.3.2 Production and export complexity	31.1	83
3.1.4 E-participation*	75.0	57	6.3.3 High-tech exports, % total trade	0.5	89
3.2 General infrastructure	31.0	62	6.3.4 ICT services exports, % total trade	0.1	128
3.2.1 Electricity output, GWh/mn pop.	6,617.1	29	 Creative outputs	18.1	74
3.2.2 Logistics performance*	34.0	73	7.1 Intangible assets	35.3	49
3.2.3 Gross capital formation, % GDP	20.8	88	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	25.2	73	7.1.2 Trademarks by origin/bn PPP\$ GDP	131.5	5
3.3.1 GDP/unit of energy use	12.1	50	7.1.3 Global brand value, top 5,000, % GDP	13.1	54
3.3.2 Environmental performance*	40.9	68	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.3	95
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.4	92	7.2 Creative goods and services	0.6	[127]
			7.2.1 Cultural and creative services exports, % total trade	0.0	110
 Market sophistication	27.7	82	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	17.5	93	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.1 Finance for startups and scaleups*	17.6	73	7.2.4 Printing and other media, % manufacturing	n/a	n/a
4.1.2 Domestic credit to private sector, % GDP	49.7	72	7.2.5 Creative goods exports, % total trade	0.1	101
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	1.1	98
4.2 Investment	n/a	[n/a]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.6	84
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	1.5	75
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.3 GitHub commit pushes received/mn pop. 15-69	1.3	94
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	0.1	98
4.2.4 Venture capital received, value, % GDP	n/a	n/a			
4.3 Trade, diversification, and market scale	37.9	104			
4.3.1 Applied tariff rate, weighted avg., %	4.0	84			
4.3.2 Domestic industry diversification	n/a	n/a			
4.3.3 Domestic market scale, bn PPP\$	100.9	87			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Peru

65

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
81	52	Upper middle	LCN	33.4	453.7	13,410


	Score/ Value	Rank		Score/ Value	Rank
 Institutions	58.0	61	 Business sophistication	32.1	49
1.1 Political environment	53.2	87	5.1 Knowledge workers	46.1	[38]
1.1.1 Political and operational stability*	61.8	87	5.1.1 Knowledge-intensive employment, %	14.1	91 ◊
1.1.2 Government effectiveness*	44.6	85	5.1.2 Firms offering formal training, %	65.9	6 ●◆
1.2 Regulatory environment	70.4	48	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	58.1	45	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	37.2	81	5.1.5 Females employed w/advanced degrees, %	11.3	67
1.2.3 Cost of redundancy dismissal	11.4	37 ●	5.2 Innovation linkages	19.4	97
1.3 Business environment	50.4	56	5.2.1 University-industry R&D collaboration†	32.7	109 ◊
1.3.1 Policies for doing business†	46.5	75	5.2.2 State of cluster development and depth†	42.8	88
1.3.2 Entrepreneurship policies and culture*	54.4	29 ◊	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	125 ◊
			5.2.5 Patent families/bn PPP\$ GDP	0.0	80
 Human capital and research	36.8	47	5.3 Knowledge absorption	30.8	62
2.1 Education	45.3	80	5.3.1 Intellectual property payments, % total trade	0.7	59 ◊
2.1.1 Expenditure on education, % GDP	4.2	69	5.3.2 High-tech imports, % total trade	10.0	43
2.1.2 Government funding/pupil, secondary, % GDP/cap	16.6	74	5.3.3 ICT services imports, % total trade	1.6	58 ◊
2.1.3 School life expectancy, years	15.0	53 ◊	5.3.4 FDI net inflows, % GDP	2.3	65
2.1.4 PISA scales in reading, maths and science	401.5	66 ◊	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	13.8	63	 Knowledge and technology outputs	13.7	90
2.2 Tertiary education	57.2	5 ●◆	6.1 Knowledge creation	9.7	77
2.2.1 Tertiary enrolment, % gross	70.7	32 ●	6.1.1 Patents by origin/bn PPP\$ GDP	0.3	88
2.2.2 Graduates in science and engineering, %	29.6	18 ●◆	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	67
2.2.3 Tertiary inbound mobility, %	n/a	n/a	6.1.3 Utility models by origin/bn PPP\$ GDP	1.0	22 ●
2.3 Research and development (R&D)	7.8	64	6.1.4 Scientific and technical articles/bn PPP\$ GDP	5.8	108 ◊
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index	14.4	56
2.3.2 Gross expenditure on R&D, % GDP	0.2	93	6.2 Knowledge impact	22.5	80
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ◊	6.2.1 Labor productivity growth, %	0.4	77
2.3.4 QS university ranking, top 3*	18.1	53	6.2.2 New businesses/th pop. 15-64	3.8	36
			6.2.3 Software spending, % GDP	0.2	57
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	4.1	64
			6.2.5 High-tech manufacturing, %	12.6	81
 Infrastructure	40.5	79	6.3 Knowledge diffusion	8.9	106 ◊
3.1 Information and communication technologies (ICTs)	68.1	81	6.3.1 Intellectual property receipts, % total trade	0.1	71 ◊
3.1.1 ICT access*	70.4	98 ◊	6.3.2 Production and export complexity	23.0	96 ◊
3.1.2 ICT use*	50.5	92	6.3.3 High-tech exports, % total trade	0.4	93
3.1.3 Government's online service*	75.3	52	6.3.4 ICT services exports, % total trade	0.3	112 ◊
3.1.4 E-participation*	76.2	55	 Creative outputs	19.5	65
3.2 General infrastructure	21.7	98	7.1 Intangible assets	31.3	57
3.2.1 Electricity output, GWh/mn pop.	1,605.4	90	7.1.1 Intangible asset intensity, top 15, %	55.9	46
3.2.2 Logistics performance*	29.8	81	7.1.2 Trademarks by origin/bn PPP\$ GDP	66.0	35 ●
3.2.3 Gross capital formation, % GDP	21.2	83	7.1.3 Global brand value, top 5,000, % GDP	7.2	63
3.3 Ecological sustainability	31.6	51	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.2	102 ◊
3.3.1 GDP/unit of energy use	15.4	23 ●	7.2 Creative goods and services	12.6	74
3.3.2 Environmental performance*	39.8	72	7.2.1 Cultural and creative services exports, % total trade	0.1	84
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	1.9	50	7.2.2 National feature films/mn pop. 15-69	0.2	76 ◊
			7.2.3 Entertainment and media market/th pop. 15-69	7.1	38
			7.2.4 Printing and other media, % manufacturing	2.0	14 ●
			7.2.5 Creative goods exports, % total trade	0.2	74
 Market sophistication	40.2	40	7.3 Online creativity	2.8	75
4.1 Credit	51.5	14 ●◆	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	5.1	52
4.1.1 Finance for startups and scaleups*	34.9	49 ◊	7.3.2 Country-code TLDs/th pop. 15-69	1.7	73
4.1.2 Domestic credit to private sector, % GDP	55.1	63	7.3.3 GitHub commit pushes received/mn pop. 15-69	3.7	67
4.1.3 Loans from microfinance institutions, % GDP	6.9	1 ●◆	7.3.4 Mobile app creation/bn PPP\$ GDP	0.7	78
4.2 Investment	4.7	82			
4.2.1 Market capitalization, % GDP	42.8	41			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	90 ◊			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	101 ◊			
4.2.4 Venture capital received, value, % GDP	0.0	71			
4.3 Trade, diversification, and market scale	64.4	31 ●			
4.3.1 Applied tariff rate, weighted avg., %	0.7	6 ●◆			
4.3.2 Domestic industry diversification	87.5	52			
4.3.3 Domestic market scale, bn PPP\$	453.7	47			

NOTES: ● indicates a strength; ◊ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Philippines

59

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
51	76	Lower middle	SEAO	111.0	983.1	8,900








	Score/Value	Rank		Score/Value	Rank
 Institutions	48.7	90	 Business sophistication	36.9	39
1.1 Political environment	56.4	76	5.1 Knowledge workers	38.2	51
1.1.1 Political and operational stability*	61.8	87	5.1.1 Knowledge-intensive employment, %	18.5	80
1.1.2 Government effectiveness*	51.0	65	5.1.2 Firms offering formal training, %	59.8	9
1.2 Regulatory environment	50.1	107	5.1.3 GERD performed by business, % GDP	0.1	68
1.2.1 Regulatory quality*	45.7	72	5.1.4 GERD financed by business, %	38.0	47
1.2.2 Rule of law*	31.8	95	5.1.5 Females employed w/advanced degrees, %	13.1	58
1.2.3 Cost of redundancy dismissal	27.4	115	5.2 Innovation linkages	20.5	91
1.3 Business environment	39.4	[87]	5.2.1 University-industry R&D collaboration†	44.4	64
1.3.1 Policies for doing business†	39.4	96	5.2.2 State of cluster development and depth†	46.6	70
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.0	89
Human capital and research	25.0	86	5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	52
2.1 Education	33.4	112	5.2.5 Patent families/bn PPP\$ GDP	0.0	87
2.1.1 Expenditure on education, % GDP	3.9	83	5.3 Knowledge absorption	51.9	13
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.1 Intellectual property payments, % total trade	0.7	58
2.1.3 School life expectancy, years	13.1	81	5.3.2 High-tech imports, % total trade	30.6	3
2.1.4 PISA scales in reading, maths and science	349.7	77	5.3.3 ICT services imports, % total trade	1.7	50
2.1.5 Pupil-teacher ratio, secondary	24.6	104	5.3.4 FDI net inflows, % GDP	2.3	66
2.2 Tertiary education	33.4	59	5.3.5 Research talent, % in businesses	51.8	22
2.2.1 Tertiary enrolment, % gross	35.5	79	Knowledge and technology outputs	30.8	41
2.2.2 Graduates in science and engineering, %	22.8	52	6.1 Knowledge creation	11.4	69
2.2.3 Tertiary inbound mobility, %	n/a	n/a	6.1.1 Patents by origin/bn PPP\$ GDP	0.5	75
2.3 Research and development (R&D)	8.0	63	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	76
2.3.1 Researchers, FTE/mn pop.	173.6	84	6.1.3 Utility models by origin/bn PPP\$ GDP	1.5	15
2.3.2 Gross expenditure on R&D, % GDP	0.3	75	6.1.4 Scientific and technical articles/bn PPP\$ GDP	2.5	122
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.1.5 Citable documents H-index	14.8	55
2.3.4 QS university ranking, top 3*	20.3	48	6.2 Knowledge impact	29.6	59
Infrastructure	38.7	81	6.2.1 Labor productivity growth, %	2.2	32
3.1 Information and communication technologies (ICTs)	66.2	85	6.2.2 New businesses/th pop. 15-64	0.2	111
3.1.1 ICT access*	69.4	100	6.2.3 Software spending, % GDP	0.2	61
3.1.2 ICT use*	47.6	95	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	4.5	60
3.1.3 Government's online service*	72.9	60	6.2.5 High-tech manufacturing, %	38.7	28
3.1.4 E-participation*	75.0	57	6.3 Knowledge diffusion	51.5	14
3.2 General infrastructure	23.1	88	6.3.1 Intellectual property receipts, % total trade	0.0	82
3.2.1 Electricity output, GWh/mn pop.	980.8	97	6.3.2 Production and export complexity	63.9	28
3.2.2 Logistics performance*	39.5	59	6.3.3 High-tech exports, % total trade	39.7	2
3.2.3 Gross capital formation, % GDP	19.8	93	6.3.4 ICT services exports, % total trade	6.3	14
3.3 Ecological sustainability	26.8	59	Creative outputs	20.5	58
3.3.1 GDP/unit of energy use	15.4	24	7.1 Intangible assets	30.0	61
3.3.2 Environmental performance*	28.9	113	7.1.1 Intangible asset intensity, top 15, %	60.4	41
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	1.3	64	7.1.2 Trademarks by origin/bn PPP\$ GDP	33.7	69
Market sophistication	29.2	78	7.1.3 Global brand value, top 5,000, % GDP	41.8	39
4.1 Credit	9.3	115	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.7	75
4.1.1 Finance for startups and scaleups*	n/a	n/a	7.2 Creative goods and services	20.3	56
4.1.2 Domestic credit to private sector, % GDP	52.1	68	7.2.1 Cultural and creative services exports, % total trade	0.1	83
4.1.3 Loans from microfinance institutions, % GDP	0.0	56	7.2.2 National feature films/mn pop. 15-69	1.0	60
4.2 Investment	10.6	55	7.2.3 Entertainment and media market/th pop. 15-69	4.5	47
4.2.1 Market capitalization, % GDP	74.3	24	7.2.4 Printing and other media, % manufacturing	0.7	71
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	70	7.2.5 Creative goods exports, % total trade	6.3	10
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	75	7.3 Online creativity	1.9	87
4.2.4 Venture capital received, value, % GDP	0.0	52	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.3	90
4.3 Trade, diversification, and market scale	67.8	22	7.3.2 Country-code TLDs/th pop. 15-69	0.4	101
4.3.1 Applied tariff rate, weighted avg., %	1.7	52	7.3.3 GitHub commit pushes received/mn pop. 15-69	2.1	85
4.3.2 Domestic industry diversification	92.2	39	7.3.4 Mobile app creation/bn PPP\$ GDP	3.7	62
4.3.3 Domestic market scale, bn PPP\$	983.1	28			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Poland

38

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
36	41	High	EUR	37.8	1,412.3	37,323








		Score/ Value	Rank			Score/ Value	Rank
	Institutions	56.3	65		Business sophistication	37.2	38
1.1	Political environment	67.1	45	5.1	Knowledge workers	47.9	35
1.1.1	Political and operational stability*	76.4	37	5.1.1	Knowledge-intensive employment, %	41.4	29
1.1.2	Government effectiveness*	57.8	50	5.1.2	Firms offering formal training, %	21.7	74
1.2	Regulatory environment	71.1	46	5.1.3	GERD performed by business, % GDP	0.9	27
1.2.1	Regulatory quality*	67.1	36	5.1.4	GERD financed by business, %	50.7	28
1.2.2	Rule of law*	60.1	43	5.1.5	Females employed w/advanced degrees, %	22.3	25
1.2.3	Cost of redundancy dismissal	18.8	79	5.2	Innovation linkages	23.0	66
1.3	Business environment	30.6	109	5.2.1	University-industry R&D collaboration†	37.1	94
1.3.1	Policies for doing business†	27.1	122	5.2.2	State of cluster development and depth†	45.9	74
1.3.2	Entrepreneurship policies and culture*	34.1	48	5.2.3	GERD financed by abroad, % GDP	0.1	38
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	77
				5.2.5	Patent families/bn PPP\$ GDP	0.3	36
	Human capital and research	42.5	36	5.3	Knowledge absorption	40.8	33
2.1	Education	61.1	31	5.3.1	Intellectual property payments, % total trade	1.2	32
2.1.1	Expenditure on education, % GDP	4.6	58	5.3.2	High-tech imports, % total trade	10.3	38
2.1.2	Government funding/pupil, secondary, % GDP/cap	20.8	49	5.3.3	ICT services imports, % total trade	1.9	42
2.1.3	School life expectancy, years	16.0	36	5.3.4	FDI net inflows, % GDP	2.9	46
2.1.4	PISA scales in reading, maths and science	512.8	9	5.3.5	Research talent, % in businesses	50.8	25
2.1.5	Pupil-teacher ratio, secondary	9.1	20		Knowledge and technology outputs	31.8	38
2.2	Tertiary education	29.7	70	6.1	Knowledge creation	24.4	38
2.2.1	Tertiary enrolment, % gross	69.2	35	6.1.1	Patents by origin/bn PPP\$ GDP	3.5	23
2.2.2	Graduates in science and engineering, %	19.4	72	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.3	42
2.2.3	Tertiary inbound mobility, %	3.9	58	6.1.3	Utility models by origin/bn PPP\$ GDP	0.6	33
2.3	Research and development (R&D)	36.8	32	6.1.4	Scientific and technical articles/bn PPP\$ GDP	28.0	31
2.3.1	Researchers, FTE/mn pop.	3,292.2	29	6.1.5	Citable documents H-index	36.8	26
2.3.2	Gross expenditure on R&D, % GDP	1.4	31	6.2	Knowledge impact	33.5	43
2.3.3	Global corporate R&D investors, top 3, mn USD	48.2	30	6.2.1	Labor productivity growth, %	20.0	20
2.3.4	QS university ranking, top 3*	30.5	41	6.2.2	New businesses/th pop. 15-64	1.6	67
				6.2.3	Software spending, % GDP	0.3	47
	Infrastructure	51.9	43	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	8.3	34
3.1	Information and communication technologies (ICTs)	86.4	22	6.2.5	High-tech manufacturing, %	34.1	39
3.1.1	ICT access*	90.3	42	6.3	Knowledge diffusion	37.4	35
3.1.2	ICT use*	73.0	48	6.3.1	Intellectual property receipts, % total trade	0.3	38
3.1.3	Government's online service*	85.9	22	6.3.2	Production and export complexity	67.0	27
3.1.4	E-participation*	96.4	9	6.3.3	High-tech exports, % total trade	6.4	31
3.2	General infrastructure	37.1	43	6.3.4	ICT services exports, % total trade	3.0	44
3.2.1	Electricity output, GWh/mn pop.	4,097.0	51		Creative outputs	29.8	38
3.2.2	Logistics performance*	69.3	27	7.1	Intangible assets	38.6	39
3.2.3	Gross capital formation, % GDP	18.3	106	7.1.1	Intangible asset intensity, top 15, %	70.0	23
3.3	Ecological sustainability	32.2	48	7.1.2	Trademarks by origin/bn PPP\$ GDP	33.9	67
3.3.1	GDP/unit of energy use	12.1	49	7.1.3	Global brand value, top 5,000, % GDP	42.6	38
3.3.2	Environmental performance*	50.6	39	7.1.4	Industrial designs by origin/bn PPP\$ GDP	5.2	23
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	2.2	40	7.2	Creative goods and services	25.7	45
	Market sophistication	33.5	61	7.2.1	Cultural and creative services exports, % total trade	1.1	25
4.1	Credit	22.2	81	7.2.2	National feature films/mn pop. 15-69	1.5	52
4.1.1	Finance for startups and scaleups*	45.9	23	7.2.3	Entertainment and media market/th pop. 15-69	11.2	32
4.1.2	Domestic credit to private sector, % GDP	50.0	70	7.2.4	Printing and other media, % manufacturing	1.2	35
4.1.3	Loans from microfinance institutions, % GDP	0.2	50	7.2.5	Creative goods exports, % total trade	4.8	13
4.2	Investment	4.6	83	7.3	Online creativity	16.4	34
4.2.1	Market capitalization, % GDP	27.5	50	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	7.2	45
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	67	7.3.2	Country-code TLDs/th pop. 15-69	26.7	26
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	80	7.3.3	GitHub commit pushes received/mn pop. 15-69	20.3	32
4.2.4	Venture capital received, value, % GDP	0.0	74	7.3.4	Mobile app creation/bn PPP\$ GDP	11.2	37
4.3	Trade, diversification, and market scale	73.7	15				
4.3.1	Applied tariff rate, weighted avg., %	1.5	20				
4.3.2	Domestic industry diversification	99.0	6				
4.3.3	Domestic market scale, bn PPP\$	1,412.3	19				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Portugal








32

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
31	32	High	EUR	10.2	376.1	36,543

		Score/ Value	Rank			Score/ Value	Rank
 Institutions		62.5	47	 Business sophistication		38.6	34
1.1	Political environment	77.7	25	5.1	Knowledge workers	50.1	30
1.1.1	Political and operational stability*	83.6	16	5.1.1	Knowledge-intensive employment, %	42.7	26
1.1.2	Government effectiveness*	71.7	31	5.1.2	Firms offering formal training, %	29.0	58 ○
1.2	Regulatory environment	76.7	34	5.1.3	GERD performed by business, % GDP	0.9	24
1.2.1	Regulatory quality*	65.7	38	5.1.4	GERD financed by business, %	52.2	26
1.2.2	Rule of law*	76.8	23	5.1.5	Females employed w/advanced degrees, %	21.1	28
1.2.3	Cost of redundancy dismissal	17.0	69 ○	5.2	Innovation linkages	30.6	38
1.3	Business environment	33.0	102 ○ ◇	5.2.1	University-industry R&D collaboration†	55.5	30
1.3.1	Policies for doing business†	49.5	64 ○	5.2.2	State of cluster development and depth†	53.1	41
1.3.2	Entrepreneurship policies and culture*	16.5	62 ○ ◇	5.2.3	GERD financed by abroad, % GDP	0.1	34
 Human capital and research		49.4	22	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	57
2.1	Education	63.7	18 ●	5.2.5	Patent families/bn PPP\$ GDP	0.6	30
2.1.1	Expenditure on education, % GDP	4.7	53 ○	5.3	Knowledge absorption	35.2	49
2.1.2	Government funding/pupil, secondary, % GDP/cap	27.4	15 ● ◆	5.3.1	Intellectual property payments, % total trade	0.9	46
2.1.3	School life expectancy, years	16.9	19 ●	5.3.2	High-tech imports, % total trade	9.4	48
2.1.4	PISA scales in reading, maths and science	492.0	26	5.3.3	ICT services imports, % total trade	1.5	65
2.1.5	Pupil-teacher ratio, secondary	9.2	21	5.3.4	FDI net inflows, % GDP	3.2	40
2.2	Tertiary education	44.0	27	5.3.5	Research talent, % in businesses	41.3	33
2.2.1	Tertiary enrolment, % gross	67.9	39	 Knowledge and technology outputs		33.3	35
2.2.2	Graduates in science and engineering, %	27.8	28	6.1	Knowledge creation	29.4	31
2.2.3	Tertiary inbound mobility, %	9.7	27	6.1.1	Patents by origin/bn PPP\$ GDP	2.7	27
2.3	Research and development (R&D)	40.3	27	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.7	30
2.3.1	Researchers, FTE/mn pop.	5,214.8	15 ●	6.1.3	Utility models by origin/bn PPP\$ GDP	0.2	54 ○
2.3.2	Gross expenditure on R&D, % GDP	1.6	24	6.1.4	Scientific and technical articles/bn PPP\$ GDP	53.4	9 ● ◆
2.3.3	Global corporate R&D investors, top 3, mn USD	45.4	34	6.1.5	Citable documents H-index	33.1	30
2.3.4	QS university ranking, top 3*	30.9	40	6.2	Knowledge impact	39.5	27
 Infrastructure		53.4	39	6.2.1	Labor productivity growth, %	-0.3	96 ○
3.1	Information and communication technologies (ICTs)	82.4	36	6.2.2	New businesses/th pop. 15-64	5.5	27
3.1.1	ICT access*	90.7	40	6.2.3	Software spending, % GDP	0.6	6 ● ◆
3.1.2	ICT use*	73.2	47 ○	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	13.6	22
3.1.3	Government's online service*	83.5	35	6.2.5	High-tech manufacturing, %	30.5	42
3.1.4	E-participation*	82.1	41	6.3	Knowledge diffusion	30.9	49
3.2	General infrastructure	41.1	37	6.3.1	Intellectual property receipts, % total trade	0.1	49
3.2.1	Electricity output, GWh/mn pop.	5,070.9	42	6.3.2	Production and export complexity	56.5	38
3.2.2	Logistics performance*	74.0	23	6.3.3	High-tech exports, % total trade	3.9	44
3.2.3	Gross capital formation, % GDP	19.6	95 ○	6.3.4	ICT services exports, % total trade	3.0	46
3.3	Ecological sustainability	36.8	38	 Creative outputs		38.1	25
3.3.1	GDP/unit of energy use	15.7	20 ●	7.1	Intangible assets	51.2	19 ●
3.3.2	Environmental performance*	50.4	41	7.1.1	Intangible asset intensity, top 15, %	55.2	47 ○
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	2.5	34	7.1.2	Trademarks by origin/bn PPP\$ GDP	97.7	14 ● ◆
 Market sophistication		38.8	42	7.1.3	Global brand value, top 5,000, % GDP	44.7	37
4.1	Credit	40.1	29	7.1.4	Industrial designs by origin/bn PPP\$ GDP	7.1	15 ●
4.1.1	Finance for startups and scaleups*	42.4	34 ○	7.2	Creative goods and services	23.6	51
4.1.2	Domestic credit to private sector, % GDP	101.2	26	7.2.1	Cultural and creative services exports, % total trade	0.7	41
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.2	National feature films/mn pop. 15-69	5.1	22
4.2	Investment	10.1	57 ○	7.2.3	Entertainment and media market/th pop. 15-69	32.4	22
4.2.1	Market capitalization, % GDP	29.1	48 ○	7.2.4	Printing and other media, % manufacturing	1.1	41
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.1	33	7.2.5	Creative goods exports, % total trade	1.6	35
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	38	7.3	Online creativity	26.5	28
4.2.4	Venture capital received, value, % GDP	0.0	64 ○	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	19.6	29
4.3	Trade, diversification, and market scale	66.2	27	7.3.2	Country-code TLDs/th pop. 15-69	59.6	14 ●
4.3.1	Applied tariff rate, weighted avg., %	1.5	20	7.3.3	GitHub commit pushes received/mn pop. 15-69	19.2	34
4.3.2	Domestic industry diversification	100.0	1 ●	7.3.4	Mobile app creation/bn PPP\$ GDP	7.4	50
4.3.3	Domestic market scale, bn PPP\$	376.1	51				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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\$
67	38	High	NAWA	2.9	273.9	100,037

		Score/ Value	Rank			Score/ Value	Rank
	Institutions	74.1	25		Business sophistication	25.4	73
1.1	Political environment	72.8	36	5.1	Knowledge workers	15.5	110
1.1.1	Political and operational stability*	76.4	37	5.1.1	Knowledge-intensive employment, %	21.9	70
1.1.2	Government effectiveness*	69.3	34	5.1.2	Firms offering formal training, %	n/a	n/a
1.2	Regulatory environment	69.5	52	5.1.3	GERD performed by business, % GDP	0.1	67
1.2.1	Regulatory quality*	66.2	37	5.1.4	GERD financed by business, %	9.3	76
1.2.2	Rule of law*	72.0	28	5.1.5	Females employed w/advanced degrees, %	5.3	92
1.2.3	Cost of redundancy dismissal	23.2	101	5.2	Innovation linkages	28.0	45
1.3	Business environment	80.1	7	5.2.1	University-industry R&D collaboration†	66.8	12
1.3.1	Policies for doing business†	74.5	12	5.2.2	State of cluster development and depth†	54.8	38
1.3.2	Entrepreneurship policies and culture*	85.7	5	5.2.3	GERD financed by abroad, % GDP	0.0	90
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	30
				5.2.5	Patent families/bn PPP\$ GDP	0.0	78
	Human capital and research	34.5	56	5.3	Knowledge absorption	32.9	56
2.1	Education	45.9	76	5.3.1	Intellectual property payments, % total trade	0.0	122
2.1.1	Expenditure on education, % GDP	3.2	103	5.3.2	High-tech imports, % total trade	7.4	83
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3	ICT services imports, % total trade	4.5	8
2.1.3	School life expectancy, years	12.6	86	5.3.4	FDI net inflows, % GDP	-1.5	125
2.1.4	PISA scales in reading, maths and science	413.5	60	5.3.5	Research talent, % in businesses	16.1	56
2.1.5	Pupil-teacher ratio, secondary	11.5	45				
2.2	Tertiary education	50.3	10		Knowledge and technology outputs	19.7	69
2.2.1	Tertiary enrolment, % gross	20.8	96	6.1	Knowledge creation	8.6	83
2.2.2	Graduates in science and engineering, %	21.1	60	6.1.1	Patents by origin/bn PPP\$ GDP	0.3	85
2.2.3	Tertiary inbound mobility, %	37.5	1	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	64
2.3	Research and development (R&D)	7.2	65	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1	Researchers, FTE/mn pop.	577.3	64	6.1.4	Scientific and technical articles/bn PPP\$ GDP	13.4	73
2.3.2	Gross expenditure on R&D, % GDP	0.5	60	6.1.5	Citable documents H-index	11.3	66
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	6.2	Knowledge impact	32.1	51
2.3.4	QS university ranking, top 3*	13.6	58	6.2.1	Labor productivity growth, %	0.1	87
				6.2.2	New businesses/th pop. 15-64	6.3	23
	Infrastructure	57.1	29	6.2.3	Software spending, % GDP	0.3	33
3.1	Information and communication technologies (ICTs)	75.4	60	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	3.5	69
3.1.1	ICT access*	95.1	11	6.2.5	High-tech manufacturing, %	37.7	31
3.1.2	ICT use*	75.2	41	6.3	Knowledge diffusion	18.4	78
3.1.3	Government's online service*	65.9	76	6.3.1	Intellectual property receipts, % total trade	0.0	113
3.1.4	E-participation*	65.5	77	6.3.2	Production and export complexity	31.8	79
3.2	General infrastructure	76.2	1	6.3.3	High-tech exports, % total trade	1.0	73
3.2.1	Electricity output, GWh/mn pop.	17,621.9	5	6.3.4	ICT services exports, % total trade	3.4	34
3.2.2	Logistics performance*	66.0	29				
3.2.3	Gross capital formation, % GDP	n/a	n/a		Creative outputs	20.4	59
3.3	Ecological sustainability	19.6	97	7.1	Intangible assets	34.8	50
3.3.1	GDP/unit of energy use	6.1	112	7.1.1	Intangible asset intensity, top 15, %	42.2	61
3.3.2	Environmental performance*	33.0	97	7.1.2	Trademarks by origin/bn PPP\$ GDP	4.9	118
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	2.1	47	7.1.3	Global brand value, top 5,000, % GDP	106.5	19
				7.1.4	Industrial designs by origin/bn PPP\$ GDP	n/a	n/a
	Market sophistication	37.7	47	7.2	Creative goods and services	10.1	82
4.1	Credit	49.5	19	7.2.1	Cultural and creative services exports, % total trade	0.4	60
4.1.1	Finance for startups and scaleups*	46.3	21	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
4.1.2	Domestic credit to private sector, % GDP	138.9	15	7.2.3	Entertainment and media market/th pop. 15-69	11.7	31
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.4	Printing and other media, % manufacturing	0.8	59
4.2	Investment	10.6	54	7.2.5	Creative goods exports, % total trade	0.0	112
4.2.1	Market capitalization, % GDP	98.1	16	7.3	Online creativity	2.0	86
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	48	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	3.5	59
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	98	7.3.2	Country-code TLDs/th pop. 15-69	2.5	65
4.2.4	Venture capital received, value, % GDP	0.0	96	7.3.3	GitHub commit pushes received/mn pop. 15-69	1.7	90
4.3	Trade, diversification, and market scale	53.0	76	7.3.4	Mobile app creation/bn PPP\$ GDP	0.5	84
4.3.1	Applied tariff rate, weighted avg., %	3.5	78				
4.3.2	Domestic industry diversification	76.1	74				
4.3.3	Domestic market scale, bn PPP\$	273.9	60				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Republic of Korea

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
4	16	High	SEAO	51.3	2,503.4	48,309

		Score/ Value	Rank			Score/ Value	Rank
	Institutions	70.5	31		Business sophistication	58.0	9
1.1	Political environment	81.9	18	5.1	Knowledge workers	75.2	3 ●◆
1.1.1	Political and operational stability*	83.6	16	5.1.1	Knowledge-intensive employment, %	39.2	32 ◇
1.1.2	Government effectiveness*	80.2	18	5.1.2	Firms offering formal training, %	n/a	n/a
1.2	Regulatory environment	67.7	59 ◇	5.1.3	GERD performed by business, % GDP	3.8	2 ●◆
1.2.1	Regulatory quality*	70.7	32 ◇	5.1.4	GERD financed by business, %	76.6	4 ◆
1.2.2	Rule of law*	76.8	24	5.1.5	Females employed w/advanced degrees, %	20.7	30
1.2.3	Cost of redundancy dismissal	27.4	111 ○◇	5.2	Innovation linkages	47.9	18
1.3	Business environment	61.9	31	5.2.1	University-industry R&D collaboration†	65.7	14
1.3.1	Policies for doing business†	54.0	52 ◇	5.2.2	State of cluster development and depth†	62.8	20
1.3.2	Entrepreneurship policies and culture*	69.8	14	5.2.3	GERD financed by abroad, % GDP	0.0	72 ○◇
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	34 ◇
				5.2.5	Patent families/bn PPP\$ GDP	11.4	2 ●◆
				5.3	Knowledge absorption	50.9	14
				5.3.1	Intellectual property payments, % total trade	1.6	20
				5.3.2	High-tech imports, % total trade	18.4	12
				5.3.3	ICT services imports, % total trade	0.7	97 ○◇
				5.3.4	FDI net inflows, % GDP	0.6	112 ○◇
				5.3.5	Research talent, % in businesses	81.8	1 ●◆
	Human capital and research	66.4	1 ●◆		Knowledge and technology outputs	54.7	10
2.1	Education	65.1	13	6.1	Knowledge creation	67.0	8
2.1.1	Expenditure on education, % GDP	4.5	61	6.1.1	Patents by origin/bn PPP\$ GDP	77.9	1 ●◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	31.0	9 ◆	6.1.2	PCT patents by origin/bn PPP\$ GDP	8.3	1 ●◆
2.1.3	School life expectancy, years	16.5	25	6.1.3	Utility models by origin/bn PPP\$ GDP	2.0	10
2.1.4	PISA scales in reading, maths and science	519.7	6	6.1.4	Scientific and technical articles/bn PPP\$ GDP	31.6	29
2.1.5	Pupil-teacher ratio, secondary	11.9	49	6.1.5	Citable documents H-index	45.9	17
2.2	Tertiary education	47.3	18	6.2	Knowledge impact	42.1	18
2.2.1	Tertiary enrolment, % gross	98.4	4 ◆	6.2.1	Labor productivity growth, %	1.6	45
2.2.2	Graduates in science and engineering, %	29.6	19 ◆	6.2.2	New businesses/th pop. 15-64	n/a	n/a
2.2.3	Tertiary inbound mobility, %	3.3	66 ○◇	6.2.3	Software spending, % GDP	0.2	66 ◇
2.3	Research and development (R&D)	86.8	1 ●◆	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	5.6	51
2.3.1	Researchers, FTE/mn pop.	8,713.6	1 ●◆	6.2.5	High-tech manufacturing, %	56.3	8
2.3.2	Gross expenditure on R&D, % GDP	4.8	2 ●◆	6.3	Knowledge diffusion	55.1	11
2.3.3	Global corporate R&D investors, top 3, mn USD	90.4	4 ●	6.3.1	Intellectual property receipts, % total trade	1.2	18
2.3.4	QS university ranking, top 3*	75.7	9	6.3.2	Production and export complexity	89.7	4 ◆
				6.3.3	High-tech exports, % total trade	28.8	6 ◆
				6.3.4	ICT services exports, % total trade	1.2	84 ○
	Infrastructure	60.3	13		Creative outputs	55.1	4 ●◆
3.1	Information and communication technologies (ICTs)	95.6	1 ●◆	7.1	Intangible assets	85.7	1 ●◆
3.1.1	ICT access*	95.0	12	7.1.1	Intangible asset intensity, top 15, %	63.8	36
3.1.2	ICT use*	87.4	4 ●◆	7.1.2	Trademarks by origin/bn PPP\$ GDP	116.2	7 ◆
3.1.3	Government's online service*	100.0	1 ●◆	7.1.3	Global brand value, top 5,000, % GDP	203.4	5 ◆
3.1.4	E-participation*	100.0	1 ●	7.1.4	Industrial designs by origin/bn PPP\$ GDP	27.6	1 ●◆
3.2	General infrastructure	58.7	9	7.2	Creative goods and services	33.9	20
3.2.1	Electricity output, GWh/mn pop.	11,243.0	13	7.2.1	Cultural and creative services exports, % total trade	0.8	37
3.2.2	Logistics performance*	72.6	25	7.2.2	National feature films/mn pop. 15-69	8.1	11
3.2.3	Gross capital formation, % GDP	32.4	14 ◆	7.2.3	Entertainment and media market/th pop. 15-69	50.7	13
3.3	Ecological sustainability	26.7	60 ◇	7.2.4	Printing and other media, % manufacturing	0.3	95 ○◇
3.3.1	GDP/unit of energy use	7.7	97 ○	7.2.5	Creative goods exports, % total trade	5.0	12 ◆
3.3.2	Environmental performance*	46.9	49 ◇	7.3	Online creativity	15.1	37 ◇
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	2.4	37	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	8.7	42 ◇
				7.3.2	Country-code TLDs/th pop. 15-69	8.0	43 ◇
				7.3.3	GitHub commit pushes received/mn pop. 15-69	25.5	27
				7.3.4	Mobile app creation/bn PPP\$ GDP	18.3	14
	Market sophistication	48.0	21				
4.1	Credit	54.8	12				
4.1.1	Finance for startups and scaleups*	46.7	20				
4.1.2	Domestic credit to private sector, % GDP	164.8	7				
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a				
4.2	Investment	16.6	39 ◇				
4.2.1	Market capitalization, % GDP	101.6	15				
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.1	34 ◇				
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	65 ○◇				
4.2.4	Venture capital received, value, % GDP	0.0	45 ◇				
4.3	Trade, diversification, and market scale	72.7	17				
4.3.1	Applied tariff rate, weighted avg., %	5.5	94 ○◇				
4.3.2	Domestic industry diversification	97.3	16				
4.3.3	Domestic market scale, bn PPP\$	2,503.4	14				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Republic of Moldova

56

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
46	78	Upper middle	EUR	4.0	36.9	14,258

Institutions		Score/Value	Rank
1.1 Political environment		47.3	98
1.1.1	Political and operational stability*	52.7	92
1.1.2	Government effectiveness*	65.5	74
1.2 Regulatory environment		39.9	95
1.2.1	Regulatory quality*	54.8	95
1.2.2	Rule of law*	46.0	71
1.2.3	Cost of redundancy dismissal	35.4	87
1.2.3	Cost of redundancy dismissal	23.7	102
1.3 Business environment		34.4	[97]
1.3.1	Policies for doing business [†]	34.4	107 ○
1.3.2	Entrepreneurship policies and culture*	n/a	n/a

Human capital and research		Score/Value	Rank
2.1 Education		31.8	62
2.1.1	Expenditure on education, % GDP	57.1	51
2.1.2	Government funding/pupil, secondary, % GDP/cap	6.4	13 ● ◆
2.1.3	Government funding/pupil, secondary, % GDP/cap	24.8	23 ●
2.1.3	School life expectancy, years	14.4	64
2.1.4	PISA scales in reading, maths and science	424.4	51
2.1.5	Pupil-teacher ratio, secondary	10.4	33
2.2 Tertiary education		36.3	45
2.2.1	Tertiary enrolment, % gross	58.0	54
2.2.2	Graduates in science and engineering, %	25.4	38
2.2.3	Tertiary inbound mobility, %	6.6	39
2.3 Research and development (R&D)		2.2	86
2.3.1	Researchers, FTE/mn pop.	788.6	57
2.3.2	Gross expenditure on R&D, % GDP	0.2	85
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◆
2.3.4	QS university ranking, top 3*	0.0	72 ○ ◆

Infrastructure		Score/Value	Rank
3.1 Information and communication technologies (ICTs)		38.3	84
3.1.1	ICT access*	72.2	68
3.1.1	ICT access*	79.2	87
3.1.2	ICT use*	58.2	78
3.1.3	Government's online service*	75.3	52
3.1.4	E-participation*	76.2	55
3.2 General infrastructure		21.3	102
3.2.1	Electricity output, GWh/mn pop.	2,358.8	74
3.2.2	Logistics performance*	19.1	106 ○ ◆
3.2.3	Gross capital formation, % GDP	24.3	58
3.3 Ecological sustainability		21.3	88
3.3.1	GDP/unit of energy use	7.7	98
3.3.2	Environmental performance*	42.7	62
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.4	87

Market sophistication		Score/Value	Rank
4.1 Credit		34.3	58
4.1.1	Finance for startups and scaleups*	38.6	33 ◆
4.1.2	Domestic credit to private sector, % GDP	n/a	n/a
4.1.2	Domestic credit to private sector, % GDP	27.8	100
4.1.3	Loans from microfinance institutions, % GDP	4.7	5 ● ◆
4.2 Investment		8.1	[58]
4.2.1	Market capitalization, % GDP	n/a	n/a
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	○	0.0 52
4.2.4	Venture capital received, value, % GDP	○	0.0 54
4.3 Trade, diversification, and market scale		56.2	68
4.3.1	Applied tariff rate, weighted avg., %	1.3	14 ●
4.3.2	Domestic industry diversification	76.1	75
4.3.3	Domestic market scale, bn PPP\$	36.9	118 ○

Business sophistication		Score/Value	Rank
5.1 Knowledge workers		24.8	79
5.1.1	Knowledge-intensive employment, %	32.4	63
5.1.2	Firms offering formal training, %	31.3	48
5.1.3	Firms offering formal training, %	38.1	37
5.1.3	GERD performed by business, % GDP	○	0.0 74 ○
5.1.4	GERD financed by business, %	○	15.5 71
5.1.5	Females employed w/advanced degrees, %	15.4	48
5.2 Innovation linkages		16.3	116 ○
5.2.1	University-industry R&D collaboration [†]	35.4	101 ○
5.2.2	State of cluster development and depth [†]	35.5	114 ○ ◆
5.2.3	GERD financed by abroad, % GDP	○	0.0 71
5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	○	0.0 78
5.2.5	Patent families/bn PPP\$ GDP	0.1	58
5.3 Knowledge absorption		25.6	88
5.3.1	Intellectual property payments, % total trade	0.6	66
5.3.2	High-tech imports, % total trade	8.8	57
5.3.3	ICT services imports, % total trade	1.8	47
5.3.4	FDI net inflows, % GDP	2.7	53
5.3.5	Research talent, % in businesses	○	6.2 67 ○

Knowledge and technology outputs		Score/Value	Rank
6.1 Knowledge creation		26.8	49
6.1.1	Patents by origin/bn PPP\$ GDP	27.1	33 ◆
6.1.1	Patents by origin/bn PPP\$ GDP	2.5	30
6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	75
6.1.3	Utility models by origin/bn PPP\$ GDP	4.5	1 ● ◆
6.1.4	Scientific and technical articles/bn PPP\$ GDP	7.3	103
6.1.5	Citable documents H-index	5.1	95
6.2 Knowledge impact		28.0	64
6.2.1	Labor productivity growth, %	2.9	19 ●
6.2.2	New businesses/th pop. 15-64	n/a	n/a
6.2.3	Software spending, % GDP	0.1	87
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	2.6	78
6.2.5	High-tech manufacturing, %	19.9	64
6.3 Knowledge diffusion		25.4	57
6.3.1	Intellectual property receipts, % total trade	0.0	74
6.3.2	Production and export complexity	38.0	66
6.3.3	High-tech exports, % total trade	0.8	81
6.3.4	ICT services exports, % total trade	6.7	13 ● ◆







Creative outputs		Score/Value	Rank
7.1 Intangible assets		27.0	43
7.1.1	Intangible asset intensity, top 15, %	44.8	29
7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
7.1.2	Trademarks by origin/bn PPP\$ GDP	114.8	8 ● ◆
7.1.3	Global brand value, top 5,000, % GDP	0.0	77 ○ ◆
7.1.4	Industrial designs by origin/bn PPP\$ GDP	8.0	13 ● ◆
7.2 Creative goods and services		12.1	[76]
7.2.1	Cultural and creative services exports, % total trade	0.9	34
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	Printing and other media, % manufacturing	0.7	74
7.2.5	Creative goods exports, % total trade	0.1	98
7.3 Online creativity		6.6	54
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	2.0	76
7.3.2	Country-code TLDs/th pop. 15-69	2.9	64
7.3.3	GitHub commit pushes received/mn pop. 15-69	5.5	53
7.3.4	Mobile app creation/bn PPP\$ GDP	15.8	22 ● ◆

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ○ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Romania

49

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
43	56	Upper middle	EUR	19.1	653.9	33,833

	Score/Value	Rank		Score/Value	Rank
 Institutions	54.1	75	 Business sophistication	31.4	51
1.1 Political environment	57.9	71	5.1 Knowledge workers	35.1	58
1.1.1 Political and operational stability*	70.9	53	5.1.1 Knowledge-intensive employment, %	27.2	53
1.1.2 Government effectiveness*	45.0	84	5.1.2 Firms offering formal training, %	20.5	78 ○
1.2 Regulatory environment	77.5	32 ◆	5.1.3 GERD performed by business, % GDP	0.3	49
1.2.1 Regulatory quality*	54.5	55	5.1.4 GERD financed by business, %	54.6	21 ◆
1.2.2 Rule of law*	55.6	47 ◆	5.1.5 Females employed w/advanced degrees, %	12.7	61
1.2.3 Cost of redundancy dismissal	8.0	1 ●◆	5.2 Innovation linkages	20.1	92
1.3 Business environment	26.8	116 ○◇	5.2.1 University-industry R&D collaboration†	39.5	82
1.3.1 Policies for doing business†	32.2	114 ○	5.2.2 State of cluster development and depth†	46.5	72
1.3.2 Entrepreneurship policies and culture*	21.4	58 ○	5.2.3 GERD financed by abroad, % GDP	0.1	47
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	93
			5.2.5 Patent families/bn PPP\$ GDP	0.1	63
 Human capital and research	29.0	74	5.3 Knowledge absorption	38.9	40
2.1 Education	45.8	77	5.3.1 Intellectual property payments, % total trade	0.9	45
2.1.1 Expenditure on education, % GDP	3.3	99 ○	5.3.2 High-tech imports, % total trade	10.9	27
2.1.2 Government funding/pupil, secondary, % GDP/cap	17.6	66	5.3.3 ICT services imports, % total trade	3.2	14 ●◆
2.1.3 School life expectancy, years	14.2	68	5.3.4 FDI net inflows, % GDP	2.5	59
2.1.4 PISA scales in reading, maths and science	427.8	49	5.3.5 Research talent, % in businesses	27.2	47
2.1.5 Pupil-teacher ratio, secondary	11.8	47			
2.2 Tertiary education	38.0	41	 Knowledge and technology outputs	34.8	31 ◆
2.2.1 Tertiary enrolment, % gross	51.4	63	6.1 Knowledge creation	11.0	72
2.2.2 Graduates in science and engineering, %	29.1	22 ◆	6.1.1 Patents by origin/bn PPP\$ GDP	1.5	50
2.2.3 Tertiary inbound mobility, %	5.7	44	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	79
2.3 Research and development (R&D)	3.2	78	6.1.3 Utility models by origin/bn PPP\$ GDP	0.1	57
2.3.1 Researchers, FTE/mn pop.	952.9	52	6.1.4 Scientific and technical articles/bn PPP\$ GDP	15.3	63
2.3.2 Gross expenditure on R&D, % GDP	0.5	64	6.1.5 Citable documents H-index	18.9	43
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○◇	6.2 Knowledge impact	48.6	8 ●◆
2.3.4 QS university ranking, top 3*	0.0	72 ○◇	6.2.1 Labor productivity growth, %	5.5	4 ●◆
			6.2.2 New businesses/th pop. 15-64	6.2	24
			6.2.3 Software spending, % GDP	0.3	49
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	17.1	17 ●
			6.2.5 High-tech manufacturing, %	43.5	23 ◆
			6.3 Knowledge diffusion	44.8	24 ●◆
			6.3.1 Intellectual property receipts, % total trade	0.1	53
			6.3.2 Production and export complexity	69.8	22 ●◆
			6.3.3 High-tech exports, % total trade	7.1	26
			6.3.4 ICT services exports, % total trade	7.1	11 ●◆
			 Creative outputs	20.7	57
			7.1 Intangible assets	28.5	63
			7.1.1 Intangible asset intensity, top 15, %	49.8	51
			7.1.2 Trademarks by origin/bn PPP\$ GDP	41.1	59
			7.1.3 Global brand value, top 5,000, % GDP	18.4	47
			7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.5	53
			7.2 Creative goods and services	16.9	63
			7.2.1 Cultural and creative services exports, % total trade	1.8	15 ●◆
			7.2.2 National feature films/mn pop. 15-69	1.6	51
			7.2.3 Entertainment and media market/th pop. 15-69	6.8	39
			7.2.4 Printing and other media, % manufacturing	0.9	51
			7.2.5 Creative goods exports, % total trade	0.9	47
			7.3 Online creativity	8.9	46
			7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	4.8	53
			7.3.2 Country-code TLDs/th pop. 15-69	13.4	36
			7.3.3 GitHub commit pushes received/mn pop. 15-69	9.9	45 ◆
			7.3.4 Mobile app creation/bn PPP\$ GDP	7.5	49
 Market sophistication	33.2	63			
4.1 Credit	30.5	54			
4.1.1 Finance for startups and scaleups*	34.6	50			
4.1.2 Domestic credit to private sector, % GDP	26.1	105 ○			
4.1.3 Loans from microfinance institutions, % GDP	3.4	9 ●			
4.2 Investment	2.3	101 ○			
4.2.1 Market capitalization, % GDP	9.8	75 ○			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	75 ○			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	81 ○			
4.2.4 Venture capital received, value, % GDP	0.0	95 ○			
4.3 Trade, diversification, and market scale	66.8	25			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	95.6	23			
4.3.3 Domestic market scale, bn PPP\$	653.9	35			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Russian Federation

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
50	46	Upper middle	EUR	145.9	4,447.5	30,431

	Score/Value	Rank
Institutions	48.7	89
1.1 Political environment	57.0	74
1.1.1 Political and operational stability*	63.6	81
1.1.2 Government effectiveness*	50.4	68
1.2 Regulatory environment	55.9	91
1.2.1 Regulatory quality*	34.0	98 ◊
1.2.2 Rule of law*	26.4	108 ◊
1.2.3 Cost of redundancy dismissal	17.3	73
1.3 Business environment	33.3	101 ◊
1.3.1 Policies for doing business [†]	42.1	88
1.3.2 Entrepreneurship policies and culture*	24.6	56

	Score/Value	Rank
Human capital and research	47.0	27 ◆
2.1 Education	54.8	[58]
2.1.1 Expenditure on education, % GDP	4.7	52
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a
2.1.3 School life expectancy, years	15.8	40
2.1.4 PISA scales in reading, maths and science	481.3	31 ◆
2.1.5 Pupil-teacher ratio, secondary	n/a	n/a
2.2 Tertiary education	48.1	16 ◆◆
2.2.1 Tertiary enrolment, % gross	86.4	16 ◆◆
2.2.2 Graduates in science and engineering, %	31.4	14 ◆◆
2.2.3 Tertiary inbound mobility, %	5.0	50
2.3 Research and development (R&D)	38.1	29 ◆
2.3.1 Researchers, FTE/mn pop.	2,721.7	32 ◆
2.3.2 Gross expenditure on R&D, % GDP	1.1	38 ◆
2.3.3 Global corporate R&D investors, top 3, mn USD	40.9	36 ◆
2.3.4 QS university ranking, top 3*	47.9	22 ◆◆

	Score/Value	Rank
Infrastructure	44.3	62
3.1 Information and communication technologies (ICTs)	83.1	34 ◆
3.1.1 ICT access*	86.6	65
3.1.2 ICT use*	76.9	31 ◆
3.1.3 Government's online service*	81.8	39
3.1.4 E-participation*	86.9	27
3.2 General infrastructure	33.9	51
3.2.1 Electricity output, GWh/mn pop.	7,519.9	25 ◆
3.2.2 Logistics performance*	33.0	74
3.2.3 Gross capital formation, % GDP	23.5	63
3.3 Ecological sustainability	16.1	122 ◊
3.3.1 GDP/unit of energy use	4.9	122 ◊
3.3.2 Environmental performance*	37.5	82
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.2	103 ◊

	Score/Value	Rank
Market sophistication	37.4	48
4.1 Credit	18.6	90
4.1.1 Finance for startups and scaleups*	29.6	61 ◊
4.1.2 Domestic credit to private sector, % GDP	60.0	58
4.1.3 Loans from microfinance institutions, % GDP	0.3	47 ◊
4.2 Investment	5.0	77
4.2.1 Market capitalization, % GDP	42.8	40
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	72
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	100 ◊
4.2.4 Venture capital received, value, % GDP	0.0	75
4.3 Trade, diversification, and market scale	88.6	5 ◆◆
4.3.1 Applied tariff rate, weighted avg., %	4.1	85
4.3.2 Domestic industry diversification	92.1	42
4.3.3 Domestic market scale, bn PPP\$	4,447.5	1 ◆◆

	Score/Value	Rank
Business sophistication	35.4	44
5.1 Knowledge workers	43.1	43
5.1.1 Knowledge-intensive employment, %	45.9	20 ◆◆
5.1.2 Firms offering formal training, %	11.8	95 ◊
5.1.3 GERD performed by business, % GDP	0.6	35
5.1.4 GERD financed by business, %	29.2	61
5.1.5 Females employed w/advanced degrees, %	26.5	13 ◆◆
5.2 Innovation linkages	22.1	70
5.2.1 University-industry R&D collaboration [†]	46.5	56
5.2.2 State of cluster development and depth [†]	49.1	54
5.2.3 GERD financed by abroad, % GDP	0.0	64
5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	73
5.2.5 Patent families/bn PPP\$ GDP	0.2	45
5.3 Knowledge absorption	40.9	32 ◆
5.3.1 Intellectual property payments, % total trade	1.7	17 ◆◆
5.3.2 High-tech imports, % total trade	9.8	44
5.3.3 ICT services imports, % total trade	1.7	49
5.3.4 FDI net inflows, % GDP	1.0	101 ◊
5.3.5 Research talent, % in businesses	46.5	30 ◆

	Score/Value	Rank
Knowledge and technology outputs	26.6	51
6.1 Knowledge creation	30.2	30 ◆
6.1.1 Patents by origin/bn PPP\$ GDP	5.9	17 ◆◆
6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	46
6.1.3 Utility models by origin/bn PPP\$ GDP	2.2	9
6.1.4 Scientific and technical articles/bn PPP\$ GDP	10.3	85
6.1.5 Citable documents H-index	37.7	25 ◆
6.2 Knowledge impact	26.1	70
6.2.1 Labor productivity growth, %	2.0	35
6.2.2 New businesses/th pop. 15-64	2.3	55
6.2.3 Software spending, % GDP	0.3	39
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	1.0	105 ◊
6.2.5 High-tech manufacturing, %	22.8	56
6.3 Knowledge diffusion	23.6	65
6.3.1 Intellectual property receipts, % total trade	0.3	37 ◆
6.3.2 Production and export complexity	44.5	52
6.3.3 High-tech exports, % total trade	1.9	60
6.3.4 ICT services exports, % total trade	1.7	70

	Score/Value	Rank
Creative outputs	25.3	48
7.1 Intangible assets	40.0	35
7.1.1 Intangible asset intensity, top 15, %	56.7	45
7.1.2 Trademarks by origin/bn PPP\$ GDP	83.3	18 ◆
7.1.3 Global brand value, top 5,000, % GDP	47.0	35
7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.2	63
7.2 Creative goods and services	10.8	80
7.2.1 Cultural and creative services exports, % total trade	1.1	27
7.2.2 National feature films/mn pop. 15-69	1.2	55
7.2.3 Entertainment and media market/th pop. 15-69	6.5	42
7.2.4 Printing and other media, % manufacturing	0.6	76 ◊
7.2.5 Creative goods exports, % total trade	0.4	67
7.3 Online creativity	10.4	43
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.4	60
7.3.2 Country-code TLDs/th pop. 15-69	13.8	35
7.3.3 GitHub commit pushes received/mn pop. 15-69	10.9	42 ◆
7.3.4 Mobile app creation/bn PPP\$ GDP	13.5	26

NOTES: ◆ indicates a strength; ◊ a weakness; ◆ an income group strength; ◊ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Rwanda

105

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
123	91	Low	SSA	13.3	31.2	2,410








		Score/ Value	Rank			Score/ Value	Rank
Institutions		68.8	33	Business sophistication		19.0	113
1.1	Political environment	66.7	47	5.1	Knowledge workers	12.2	115
1.1.1	Political and operational stability*	76.4	37	5.1.1	Knowledge-intensive employment, %	7.1	114
1.1.2	Government effectiveness*	57.1	53	5.1.2	Firms offering formal training, %	35.9	42
1.2	Regulatory environment	65.2	65	5.1.3	GERD performed by business, % GDP	0.0	73
1.2.1	Regulatory quality*	48.8	65	5.1.4	GERD financed by business, %	0.6	96
1.2.2	Rule of law*	48.9	58	5.1.5	Females employed w/advanced degrees, %	3.3	99
1.2.3	Cost of redundancy dismissal	17.3	70	5.2	Innovation linkages	26.9	47
1.3	Business environment	74.6	[12]	5.2.1	University-industry R&D collaboration†	34.6	102
1.3.1	Policies for doing business†	74.6	11	5.2.2	State of cluster development and depth†	44.7	78
1.3.2	Entrepreneurship policies and culture*	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	0.2	17
Human capital and research		17.6	106	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	29
2.1	Education	42.9	87	5.2.5	Patent families/bn PPP\$ GDP	0.0	101
2.1.1	Expenditure on education, % GDP	3.8	88	5.3	Knowledge absorption	18.0	123
2.1.2	Government funding/pupil, secondary, % GDP/cap	21.4	44	5.3.1	Intellectual property payments, % total trade	0.0	118
2.1.3	School life expectancy, years	11.2	95	5.3.2	High-tech imports, % total trade	8.4	66
2.1.4	PISA scales in reading, maths and science	n/a	n/a	5.3.3	ICT services imports, % total trade	0.6	105
2.1.5	Pupil-teacher ratio, secondary	16.6	81	5.3.4	FDI net inflows, % GDP	2.4	60
2.2	Tertiary education	7.6	114	5.3.5	Research talent, % in businesses	5.6	68
2.2.1	Tertiary enrolment, % gross	6.2	121	Knowledge and technology outputs		9.8	111
2.2.2	Graduates in science and engineering, %	13.0	100	6.1	Knowledge creation	7.5	87
2.2.3	Tertiary inbound mobility, %	3.6	61	6.1.1	Patents by origin/bn PPP\$ GDP	0.2	95
2.3	Research and development (R&D)	2.4	84	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	101
2.3.1	Researchers, FTE/mn pop.	58.8	94	6.1.3	Utility models by origin/bn PPP\$ GDP	0.2	51
2.3.2	Gross expenditure on R&D, % GDP	0.8	48	6.1.4	Scientific and technical articles/bn PPP\$ GDP	19.6	47
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	6.1.5	Citable documents H-index	3.4	111
2.3.4	QS university ranking, top 3*	0.0	72	6.2	Knowledge impact	16.7	102
Infrastructure		34.6	95	6.2.1	Labor productivity growth, %	1.8	38
3.1	Information and communication technologies (ICTs)	54.2	96	6.2.2	New businesses/th pop. 15-64	2.2	57
3.1.1	ICT access*	63.2	111	6.2.3	Software spending, % GDP	0.1	103
3.1.2	ICT use*	28.8	115	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	0.4	124
3.1.3	Government's online service*	61.8	85	6.2.5	High-tech manufacturing, %	7.3	93
3.1.4	E-participation*	63.1	82	6.3	Knowledge diffusion	5.2	121
3.2	General infrastructure	25.4	77	6.3.1	Intellectual property receipts, % total trade	0.0	93
3.2.1	Electricity output, GWh/mn pop.	75.2	129	6.3.2	Production and export complexity	n/a	n/a
3.2.2	Logistics performance*	42.8	56	6.3.3	High-tech exports, % total trade	0.5	90
3.2.3	Gross capital formation, % GDP	24.1	60	6.3.4	ICT services exports, % total trade	0.7	94
3.3	Ecological sustainability	24.3	76	Creative outputs		1.9	126
3.3.1	GDP/unit of energy use	14.1	31	7.1	Intangible assets	3.2	119
3.3.2	Environmental performance*	32.8	98	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.2	114	7.1.2	Trademarks by origin/bn PPP\$ GDP	13.8	102
Market sophistication		17.9	115	7.1.3	Global brand value, top 5,000, % GDP	0.0	77
4.1	Credit	8.9	116	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.2	104
4.1.1	Finance for startups and scaleups*	n/a	n/a	7.2	Creative goods and services	0.8	[126]
4.1.2	Domestic credit to private sector, % GDP	24.7	109	7.2.1	Cultural and creative services exports, % total trade	0.0	100
4.1.3	Loans from microfinance institutions, % GDP	0.7	34	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
4.2	Investment	18.4	35	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	31.0	47	7.2.4	Printing and other media, % manufacturing	n/a	n/a
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.2.5	Creative goods exports, % total trade	0.1	99
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.1	17	7.3	Online creativity	0.5	110
4.2.4	Venture capital received, value, % GDP	0.0	41	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.2	118
4.3	Trade, diversification, and market scale	26.5	119	7.3.2	Country-code TLDs/th pop. 15-69	0.2	111
4.3.1	Applied tariff rate, weighted avg., %	10.2	119	7.3.3	GitHub commit pushes received/mn pop. 15-69	1.2	97
4.3.2	Domestic industry diversification	45.0	103	7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	n/a
4.3.3	Domestic market scale, bn PPP\$	31.2	122				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Saudi Arabia

51

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
65	37	High	NAWA	35.3	1,734.2	48,908







		Score/ Value	Rank			Score/ Value	Rank
	Institutions	60.6	50		Business sophistication	31.0	[53]
1.1	Political environment	52.8	90	5.1	Knowledge workers	n/a	[n/a]
1.1.1	Political and operational stability*	52.7	120	5.1.1	Knowledge-intensive employment, %	n/a	n/a
1.1.2	Government effectiveness*	52.8	60	5.1.2	Firms offering formal training, %	n/a	n/a
1.2	Regulatory environment	60.4	79	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	51.5	59	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	52.3	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	33.9	33
1.3	Business environment	68.8	22	5.2.1	University-industry R&D collaboration†	53.8	33
1.3.1	Policies for doing business†	72.0	15	5.2.2	State of cluster development and depth†	65.7	13
1.3.2	Entrepreneurship policies and culture*	65.5	17	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	64
				5.2.5	Patent families/bn PPP\$ GDP	0.3	40
	Human capital and research	45.6	30	5.3	Knowledge absorption	28.1	[75]
2.1	Education	61.9	25	5.3.1	Intellectual property payments, % total trade	n/a	n/a
2.1.1	Expenditure on education, % GDP	7.8	3	5.3.2	High-tech imports, % total trade	8.7	58
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3	ICT services imports, % total trade	0.8	94
2.1.3	School life expectancy, years	16.1	34	5.3.4	FDI net inflows, % GDP	0.6	110
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	13.0	56				
2.2	Tertiary education	34.8	49		Knowledge and technology outputs	21.0	65
2.2.1	Tertiary enrolment, % gross	70.6	34	6.1	Knowledge creation	18.7	50
2.2.2	Graduates in science and engineering, %	23.3	45	6.1.1	Patents by origin/bn PPP\$ GDP	1.3	58
2.2.3	Tertiary inbound mobility, %	4.3	54	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.5	34
2.3	Research and development (R&D)	40.2	28	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1	Researchers, FTE/mn pop.	453.2	71	6.1.4	Scientific and technical articles/bn PPP\$ GDP	21.1	42
2.3.2	Gross expenditure on R&D, % GDP	0.5	62	6.1.5	Citable documents H-index	25.8	37
2.3.3	Global corporate R&D investors, top 3, mn USD	65.9	18	6.2	Knowledge impact	19.0	97
2.3.4	QS university ranking, top 3*	47.4	23	6.2.1	Labor productivity growth, %	-3.8	115
				6.2.2	New businesses/th pop. 15-64	0.6	89
				6.2.3	Software spending, % GDP	0.3	36
	Infrastructure	48.0	53	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	1.4	96
3.1	Information and communication technologies (ICTs)	80.1	47	6.2.5	High-tech manufacturing, %	36.0	36
3.1.1	ICT access*	97.0	6	6.3	Knowledge diffusion	25.3	59
3.1.2	ICT use*	82.9	13	6.3.1	Intellectual property receipts, % total trade	n/a	n/a
3.1.3	Government's online service*	68.8	71	6.3.2	Production and export complexity	56.2	39
3.1.4	E-participation*	71.4	66	6.3.3	High-tech exports, % total trade	0.7	82
3.2	General infrastructure	44.7	28	6.3.4	ICT services exports, % total trade	0.8	90
3.2.1	Electricity output, GWh/mn pop.	11,250.1	12				
3.2.2	Logistics performance*	44.7	54		Creative outputs	19.5	66
3.2.3	Gross capital formation, % GDP	24.9	55	7.1	Intangible assets	32.2	56
3.3	Ecological sustainability	19.2	99	7.1.1	Intangible asset intensity, top 15, %	64.9	32
3.3.1	GDP/unit of energy use	7.5	99	7.1.2	Trademarks by origin/bn PPP\$ GDP	12.5	103
3.3.2	Environmental performance*	37.9	79	7.1.3	Global brand value, top 5,000, % GDP	105.4	20
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.4	95	7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.3	93
	Market sophistication	47.0	22	7.2	Creative goods and services	12.1	75
4.1	Credit	32.4	44	7.2.1	Cultural and creative services exports, % total trade	0.0	98
4.1.1	Finance for startups and scaleups*	45.6	25	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
4.1.2	Domestic credit to private sector, % GDP	54.0	66	7.2.3	Entertainment and media market/th pop. 15-69	16.5	28
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.4	Printing and other media, % manufacturing	1.2	38
4.2	Investment	42.4	14	7.2.5	Creative goods exports, % total trade	0.2	73
4.2.1	Market capitalization, % GDP	237.9	4	7.3	Online creativity	1.7	89
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	49	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	2.7	68
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	74	7.3.2	Country-code TLDs/th pop. 15-69	0.9	90
4.2.4	Venture capital received, value, % GDP	0.0	7	7.3.3	GitHub commit pushes received/mn pop. 15-69	1.3	95
4.3	Trade, diversification, and market scale	66.3	26	7.3.4	Mobile app creation/bn PPP\$ GDP	1.8	74
4.3.1	Applied tariff rate, weighted avg., %	4.2	87				
4.3.2	Domestic industry diversification	87.3	53				
4.3.3	Domestic market scale, bn PPP\$	1,734.2	17				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Senegal








99

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
105	93	Lower middle	SSA	17.2	63.6	3,699

	Score/Value	Rank		Score/Value	Rank
 Institutions	58.1	60	 Business sophistication	16.6	124
1.1 Political environment	61.3	59	5.1 Knowledge workers	6.2	127
1.1.1 Political and operational stability*	72.7	46	5.1.1 Knowledge-intensive employment, %	4.6	120
1.1.2 Government effectiveness*	49.9	70	5.1.2 Firms offering formal training, %	17.4	87
1.2 Regulatory environment	62.9	72	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	39.7	88	5.1.4 GERD financed by business, %	2.1	88
1.2.2 Rule of law*	38.9	77	5.1.5 Females employed w/advanced degrees, %	1.0	116
1.2.3 Cost of redundancy dismissal	14.8	59	5.2 Innovation linkages	18.8	101
1.3 Business environment	50.1	[58]	5.2.1 University-industry R&D collaboration†	43.0	70
1.3.1 Policies for doing business†	50.1	62	5.2.2 State of cluster development and depth†	39.8	106
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.0	51
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	106
			5.2.5 Patent families/bn PPP\$ GDP	0.0	81
 Human capital and research	18.2	103	5.3 Knowledge absorption	24.6	90
2.1 Education	39.1	99	5.3.1 Intellectual property payments, % total trade	0.1	100
2.1.1 Expenditure on education, % GDP	5.5	26	5.3.2 High-tech imports, % total trade	6.3	105
2.1.2 Government funding/pupil, secondary, % GDP/cap	20.5	52	5.3.3 ICT services imports, % total trade	1.4	67
2.1.3 School life expectancy, years	9.0	112	5.3.4 FDI net inflows, % GDP	4.7	20
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	102	 Knowledge and technology outputs	12.4	97
2.2 Tertiary education	12.8	104	6.1 Knowledge creation	4.5	112
2.2.1 Tertiary enrolment, % gross	14.0	105	6.1.1 Patents by origin/bn PPP\$ GDP	0.2	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	77
2.2.3 Tertiary inbound mobility, %	7.0	36	6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	68
2.3 Research and development (R&D)	2.8	80	6.1.4 Scientific and technical articles/bn PPP\$ GDP	9.5	92
2.3.1 Researchers, FTE/mn pop.	564.3	65	6.1.5 Citable documents H-index	5.8	92
2.3.2 Gross expenditure on R&D, % GDP	0.6	55	6.2 Knowledge impact	22.0	81
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2.1 Labor productivity growth, %	1.5	49
2.3.4 QS university ranking, top 3*	0.0	72	6.2.2 New businesses/th pop. 15-64	0.5	97
			6.2.3 Software spending, % GDP	0.2	68
 Infrastructure	30.4	105	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	1.3	100
3.1 Information and communication technologies (ICTs)	48.6	105	6.2.5 High-tech manufacturing, %	22.1	59
3.1.1 ICT access*	63.8	109	6.3 Knowledge diffusion	10.9	100
3.1.2 ICT use*	36.9	106	6.3.1 Intellectual property receipts, % total trade	0.1	63
3.1.3 Government's online service*	49.4	107	6.3.2 Production and export complexity	22.8	97
3.1.4 E-participation*	44.0	110	6.3.3 High-tech exports, % total trade	0.1	118
3.2 General infrastructure	20.8	104	6.3.4 ICT services exports, % total trade	2.1	62
3.2.1 Electricity output, GWh/mn pop.	319.6	116	 Creative outputs	5.3	112
3.2.2 Logistics performance*	9.3	119	7.1 Intangible assets	4.6	116
3.2.3 Gross capital formation, % GDP	34.1	10	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	21.9	83	7.1.2 Trademarks by origin/bn PPP\$ GDP	9.2	111
3.3.1 GDP/unit of energy use	11.5	54	7.1.3 Global brand value, top 5,000, % GDP	14.5	52
3.3.2 Environmental performance*	33.9	96	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.6	83
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.2	111	7.2 Creative goods and services	11.8	[78]
			7.2.1 Cultural and creative services exports, % total trade	0.8	36
 Market sophistication	31.2	69	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1 Credit	28.8	57	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 Printing and other media, % manufacturing	0.7	67
4.1.2 Domestic credit to private sector, % GDP	29.2	95	7.2.5 Creative goods exports, % total trade	0.0	110
4.1.3 Loans from microfinance institutions, % GDP	3.3	10	7.3 Online creativity	0.4	111
4.2 Investment	25.4	29	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.0	94
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	0.2	110
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	78	7.3.3 GitHub commit pushes received/mn pop. 15-69	0.5	111
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	33	7.3.4 Mobile app creation/bn PPP\$ GDP	0.0	110
4.2.4 Venture capital received, value, % GDP	0.0	12			
4.3 Trade, diversification, and market scale	39.5	101			
4.3.1 Applied tariff rate, weighted avg., %	9.1	112			
4.3.2 Domestic industry diversification	76.0	76			
4.3.3 Domestic market scale, bn PPP\$	63.6	95			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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\$
58	55	Upper middle	EUR	8.7	146.6	21,243

	Score/ Value	Rank		Score/ Value	Rank
 Institutions	60.3	53	 Business sophistication	27.5	65
1.1 Political environment	59.7	65	5.1 Knowledge workers	29.2	69
1.1.1 Political and operational stability*	69.1	63	5.1.1 Knowledge-intensive employment, %	28.3	51
1.1.2 Government effectiveness*	50.4	69	5.1.2 Firms offering formal training, %	38.3	36
1.2 Regulatory environment	72.3	43	5.1.3 GERD performed by business, % GDP	0.3	47
1.2.1 Regulatory quality*	47.9	67	5.1.4 GERD financed by business, %	2.1	87 ◯ ◇
1.2.2 Rule of law*	41.3	72	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	22.0	73
1.3 Business environment	49.0	[62]	5.2.1 University-industry R&D collaboration†	41.5	74
1.3.1 Policies for doing business†	49.0	65	5.2.2 State of cluster development and depth†	43.3	85
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.1	39
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	82
			5.2.5 Patent families/bn PPP\$ GDP	0.1	49
 Human capital and research	35.5	52	5.3 Knowledge absorption	31.4	59
2.1 Education	56.9	52	5.3.1 Intellectual property payments, % total trade	1.1	34
2.1.1 Expenditure on education, % GDP	3.6	92 ◯	5.3.2 High-tech imports, % total trade	7.1	92
2.1.2 Government funding/pupil, secondary, % GDP/cap	32.4	8 ● ◆	5.3.3 ICT services imports, % total trade	2.2	33
2.1.3 School life expectancy, years	14.4	65	5.3.4 FDI net inflows, % GDP	7.6	13 ● ◆
2.1.4 PISA scales in reading, maths and science	442.5	44	5.3.5 Research talent, % in businesses	9.9	62 ◯
2.1.5 Pupil-teacher ratio, secondary	7.6	6 ● ◆	 Knowledge and technology outputs	30.3	42
2.2 Tertiary education	42.6	29 ◆	6.1 Knowledge creation	20.6	44
2.2.1 Tertiary enrolment, % gross	68.1	38	6.1.1 Patents by origin/bn PPP\$ GDP	1.1	61
2.2.2 Graduates in science and engineering, %	30.5	16 ◆	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	57
2.2.3 Tertiary inbound mobility, %	4.7	53	6.1.3 Utility models by origin/bn PPP\$ GDP	0.6	32
2.3 Research and development (R&D)	6.9	66	6.1.4 Scientific and technical articles/bn PPP\$ GDP	43.7	17 ● ◆
2.3.1 Researchers, FTE/mn pop.	2,167.1	39 ◆	6.1.5 Citable documents H-index	15.5	53
2.3.2 Gross expenditure on R&D, % GDP	0.9	44	6.2 Knowledge impact	34.5	41
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ◯ ◇	6.2.1 Labor productivity growth, %	2.4	29
2.3.4 QS university ranking, top 3*	0.0	72 ◯ ◇	6.2.2 New businesses/th pop. 15-64	2.0	60
			6.2.3 Software spending, % GDP	0.0	106 ◯ ◇
 Infrastructure	53.6	38 ◆	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	24.4	4 ● ◆
3.1 Information and communication technologies (ICTs)	81.1	43	6.2.5 High-tech manufacturing, %	24.4	51
3.1.1 ICT access*	91.3	35	6.3 Knowledge diffusion	35.8	41 ◆
3.1.2 ICT use*	71.7	53	6.3.1 Intellectual property receipts, % total trade	0.2	40 ◆
3.1.3 Government's online service*	79.4	42	6.3.2 Production and export complexity	59.2	34
3.1.4 E-participation*	82.1	41	6.3.3 High-tech exports, % total trade	2.5	54
3.2 General infrastructure	32.2	57	6.3.4 ICT services exports, % total trade	5.9	17 ● ◆
3.2.1 Electricity output, GWh/mn pop.	5,405.2	40 ◆	 Creative outputs	17.1	76
3.2.2 Logistics performance*	36.7	64	7.1 Intangible assets	21.6	74
3.2.3 Gross capital formation, % GDP	24.4	57	7.1.1 Intangible asset intensity, top 15, %	35.4	64 ◯
3.3 Ecological sustainability	47.5	16 ● ◆	7.1.2 Trademarks by origin/bn PPP\$ GDP	30.9	76
3.3.1 GDP/unit of energy use	7.9	93	7.1.3 Global brand value, top 5,000, % GDP	0.0	77 ◯ ◇
3.3.2 Environmental performance*	43.9	59	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.2	61
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	12.8	2 ● ◆	7.2 Creative goods and services	18.2	59
			7.2.1 Cultural and creative services exports, % total trade	1.8	13 ● ◆
 Market sophistication	27.5	[83]	7.2.2 National feature films/mn pop. 15-69	0.6	65 ◯
4.1 Credit	15.8	[97]	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 Printing and other media, % manufacturing	1.0	48
4.1.2 Domestic credit to private sector, % GDP	45.5	75	7.2.5 Creative goods exports, % total trade	0.6	61
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	6.8	53
4.2 Investment	3.0	[94]	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.5	88
4.2.1 Market capitalization, % GDP	8.2	76 ◯	7.3.2 Country-code TLDs/th pop. 15-69	5.7	51
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.3 GitHub commit pushes received/mn pop. 15-69	7.6	49
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	12.3	30
4.2.4 Venture capital received, value, % GDP	n/a	n/a			
4.3 Trade, diversification, and market scale	63.7	35			
4.3.1 Applied tariff rate, weighted avg., %	1.4	19 ●			
4.3.2 Domestic industry diversification	97.2	18			
4.3.3 Domestic market scale, bn PPP\$	146.6	77			

NOTES: ● indicates a strength; ◯ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Singapore

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
14	1	High	SEAO	5.9	615.3	107,677

Institutions		Score/Value	Rank
Institutions		95.9	1 ●◆
1.1	Political environment	100.0	1 ●◆
1.1.1	Political and operational stability*	100.0	1 ●◆
1.1.2	Government effectiveness*	100.0	1 ●◆
1.2	Regulatory environment	98.7	1 ●◆
1.2.1	Regulatory quality*	100.0	1 ●◆
1.2.2	Rule of law*	94.9	4
1.2.3	Cost of redundancy dismissal	8.0	1 ●
1.3	Business environment	89.0	[2]
1.3.1	Policies for doing business†	89.0	3 ●◆
1.3.2	Entrepreneurship policies and culture*	n/a	n/a

Human capital and research		Score/Value	Rank
Human capital and research		61.5	7
2.1	Education	59.0	43
2.1.1	Expenditure on education, % GDP	2.5	117 ○◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	20.5	53 ○
2.1.3	School life expectancy, years	16.5	24
2.1.4	PISA scales in reading, maths and science	556.5	2 ●◆
2.1.5	Pupil-teacher ratio, secondary	11.3	43
2.2	Tertiary education	66.3	2 ●◆
2.2.1	Tertiary enrolment, % gross	91.1	10
2.2.2	Graduates in science and engineering, %	35.4	9 ◆
2.2.3	Tertiary inbound mobility, %	19.2	7
2.3	Research and development (R&D)	59.2	17
2.3.1	Researchers, FTE/mn pop.	7,287.3	5 ◆
2.3.2	Gross expenditure on R&D, % GDP	1.9	19
2.3.3	Global corporate R&D investors, top 3, mn USD	49.2	28
2.3.4	QS university ranking, top 3*	69.4	12

Infrastructure		Score/Value	Rank
Infrastructure		61.4	11
3.1	Information and communication technologies (ICTs)	92.5	6
3.1.1	ICT access*	99.6	1 ●◆
3.1.2	ICT use*	76.4	32 ○◇
3.1.3	Government's online service*	96.5	5
3.1.4	E-participation*	97.6	6
3.2	General infrastructure	56.0	12
3.2.1	Electricity output, GWh/mn pop.	9,388.4	15
3.2.2	Logistics performance*	90.7	7
3.2.3	Gross capital formation, % GDP	23.2	66 ○
3.3	Ecological sustainability	35.5	41
3.3.1	GDP/unit of energy use	15.7	21
3.3.2	Environmental performance*	50.9	37
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	1.9	52

Market sophistication		Score/Value	Rank
Market sophistication		68.4	4 ◆
4.1	Credit	50.3	[17]
4.1.1	Finance for startups and scaleups*	n/a	n/a
4.1.2	Domestic credit to private sector, % GDP	132.7	17
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a
4.2	Investment	92.5	3 ●◆
4.2.1	Market capitalization, % GDP	187.0	6 ◆
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	1.0	1 ●◆
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.3	1 ●◆
4.2.4	Venture capital received, value, % GDP	0.0	1 ●◆
4.3	Trade, diversification, and market scale	62.4	43
4.3.1	Applied tariff rate, weighted avg., %	0.0	3 ●◆
4.3.2	Domestic industry diversification	73.8	80 ○◇
4.3.3	Domestic market scale, bn PPP\$	615.3	37








Business sophistication		Score/Value	Rank
Business sophistication		65.7	2 ●◆
5.1	Knowledge workers	69.6	6
5.1.1	Knowledge-intensive employment, %	59.9	2 ●◆
5.1.2	Firms offering formal training, %	n/a	n/a
5.1.3	GERD performed by business, % GDP	1.2	21
5.1.4	GERD financed by business, %	55.3	20
5.1.5	Females employed w/advanced degrees, %	28.1	6
5.2	Innovation linkages	54.3	10
5.2.1	University-industry R&D collaboration†	68.8	7
5.2.2	State of cluster development and depth†	67.6	10
5.2.3	GERD financed by abroad, % GDP	0.1	37
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
5.3	Knowledge absorption	73.3	1 ●◆
5.3.1	Intellectual property payments, % total trade	2.9	9
5.3.2	High-tech imports, % total trade	24.9	6 ◆
5.3.3	ICT services imports, % total trade	3.2	13
5.3.4	FDI net inflows, % GDP	26.7	5 ◆
5.3.5	Research talent, % in businesses	52.2	21

Knowledge and technology outputs		Score/Value	Rank
Knowledge and technology outputs		49.3	13
6.1	Knowledge creation	38.8	24
6.1.1	Patents by origin/bn PPP\$ GDP	3.2	25
6.1.2	PCT patents by origin/bn PPP\$ GDP	2.6	12
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
6.1.4	Scientific and technical articles/bn PPP\$ GDP	27.8	32
6.1.5	Citable documents H-index	39.0	22
6.2	Knowledge impact	50.0	7 ◆
6.2.1	Labor productivity growth, %	2.9	18 ◆
6.2.2	New businesses/th pop. 15-64	10.0	14
6.2.3	Software spending, % GDP	0.3	50 ○
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	5.8	47
6.2.5	High-tech manufacturing, %	74.7	1 ●◆
6.3	Knowledge diffusion	59.1	8
6.3.1	Intellectual property receipts, % total trade	1.4	17
6.3.2	Production and export complexity	88.5	5
6.3.3	High-tech exports, % total trade	29.4	5 ◆
6.3.4	ICT services exports, % total trade	2.8	47

Creative outputs		Score/Value	Rank
Creative outputs		38.5	21
7.1	Intangible assets	34.1	53 ○
7.1.1	Intangible asset intensity, top 15, %	46.2	55 ○◇
7.1.2	Trademarks by origin/bn PPP\$ GDP	22.9	89 ○◇
7.1.3	Global brand value, top 5,000, % GDP	134.9	11
7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.7	76 ○
7.2	Creative goods and services	40.4	8
7.2.1	Cultural and creative services exports, % total trade	4.6	1 ●◆
7.2.2	National feature films/mn pop. 15-69	1.7	49 ○◇
7.2.3	Entertainment and media market/th pop. 15-69	40.2	20
7.2.4	Printing and other media, % manufacturing	0.5	84 ○◇
7.2.5	Creative goods exports, % total trade	3.8	16
7.3	Online creativity	45.6	9
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	28.3	23
7.3.2	Country-code TLDs/th pop. 15-69	12.0	37 ○
7.3.3	GitHub commit pushes received/mn pop. 15-69	100.0	1 ●◆
7.3.4	Mobile app creation/bn PPP\$ GDP	42.0	4 ◆

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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\$
45	54	High	EUR	5.5	194.1	35,547








	Score/Value	Rank		Score/Value	Rank
 Institutions	55.5	68	 Business sophistication	33.3	45
1.1 Political environment	72.5	37	5.1 Knowledge workers	46.7	36
1.1.1 Political and operational stability*	83.6	16	5.1.1 Knowledge-intensive employment, %	37.6	37
1.1.2 Government effectiveness*	61.4	43	5.1.2 Firms offering formal training, %	43.3	27
1.2 Regulatory environment	71.4	45	5.1.3 GERD performed by business, % GDP	0.5	40
1.2.1 Regulatory quality*	64.5	39	5.1.4 GERD financed by business, %	43.7	36
1.2.2 Rule of law*	63.7	38	5.1.5 Females employed w/advanced degrees, %	18.4	37
1.2.3 Cost of redundancy dismissal	18.8	81	5.2 Innovation linkages	22.3	69
1.3 Business environment	22.5	122	5.2.1 University-industry R&D collaboration†	37.5	92
1.3.1 Policies for doing business†	36.4	102	5.2.2 State of cluster development and depth†	44.6	79
1.3.2 Entrepreneurship policies and culture*	8.6	69	5.2.3 GERD financed by abroad, % GDP	0.1	30
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	112
			5.2.5 Patent families/bn PPP\$ GDP	0.1	50
 Human capital and research	33.1	59	5.3 Knowledge absorption	31.0	61
2.1 Education	52.8	64	5.3.1 Intellectual property payments, % total trade	0.7	57
2.1.1 Expenditure on education, % GDP	4.0	77	5.3.2 High-tech imports, % total trade	12.3	21
2.1.2 Government funding/pupil, secondary, % GDP/cap	20.5	54	5.3.3 ICT services imports, % total trade	1.3	75
2.1.3 School life expectancy, years	14.5	61	5.3.4 FDI net inflows, % GDP	1.3	90
2.1.4 PISA scales in reading, maths and science	469.4	38	5.3.5 Research talent, % in businesses	24.6	50
2.1.5 Pupil-teacher ratio, secondary	11.0	39			
2.2 Tertiary education	32.1	63	 Knowledge and technology outputs	36.1	28
2.2.1 Tertiary enrolment, % gross	46.4	69	6.1 Knowledge creation	22.6	43
2.2.2 Graduates in science and engineering, %	22.2	55	6.1.1 Patents by origin/bn PPP\$ GDP	1.5	52
2.2.3 Tertiary inbound mobility, %	9.0	29	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	53
2.3 Research and development (R&D)	14.4	48	6.1.3 Utility models by origin/bn PPP\$ GDP	1.9	12
2.3.1 Researchers, FTE/mn pop.	3,164.3	30	6.1.4 Scientific and technical articles/bn PPP\$ GDP	26.9	34
2.3.2 Gross expenditure on R&D, % GDP	0.9	43	6.1.5 Citable documents H-index	17.0	50
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2 Knowledge impact	48.2	10
2.3.4 QS university ranking, top 3*	16.8	55	6.2.1 Labor productivity growth, %	1.0	61
			6.2.2 New businesses/th pop. 15-64	5.1	29
			6.2.3 Software spending, % GDP	0.3	41
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	22.2	11
			6.2.5 High-tech manufacturing, %	61.5	3
 Infrastructure	52.5	41	6.3 Knowledge diffusion	37.6	34
3.1 Information and communication technologies (ICTs)	75.9	56	6.3.1 Intellectual property receipts, % total trade	0.1	72
3.1.1 ICT access*	90.0	45	6.3.2 Production and export complexity	75.6	14
3.1.2 ICT use*	71.5	54	6.3.3 High-tech exports, % total trade	8.8	21
3.1.3 Government's online service*	71.8	63	6.3.4 ICT services exports, % total trade	1.9	66
3.1.4 E-participation*	70.2	70			
3.2 General infrastructure	31.2	60	 Creative outputs	18.8	70
3.2.1 Electricity output, GWh/mn pop.	5,183.2	41	7.1 Intangible assets	14.6	90
3.2.2 Logistics performance*	45.6	51	7.1.1 Intangible asset intensity, top 15, %	-114.2	78
3.2.3 Gross capital formation, % GDP	18.6	101	7.1.2 Trademarks by origin/bn PPP\$ GDP	56.6	43
3.3 Ecological sustainability	50.3	11	7.1.3 Global brand value, top 5,000, % GDP	2.7	74
3.3.1 GDP/unit of energy use	10.8	63	7.1.4 Industrial designs by origin/bn PPP\$ GDP	2.7	39
3.3.2 Environmental performance*	60.0	18	7.2 Creative goods and services	31.5	23
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	10.1	7	7.2.1 Cultural and creative services exports, % total trade	0.3	65
			7.2.2 National feature films/mn pop. 15-69	5.7	19
			7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
			7.2.4 Printing and other media, % manufacturing	0.5	82
			7.2.5 Creative goods exports, % total trade	6.9	9
 Market sophistication	31.2	70	7.3 Online creativity	14.7	38
4.1 Credit	33.6	41	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.3	61
4.1.1 Finance for startups and scaleups*	42.9	32	7.3.2 Country-code TLDs/th pop. 15-69	31.8	22
4.1.2 Domestic credit to private sector, % GDP	67.2	51	7.3.3 GitHub commit pushes received/mn pop. 15-69	14.9	36
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	8.9	43
4.2 Investment	2.0	104			
4.2.1 Market capitalization, % GDP	5.6	77			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	66			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	86			
4.2.4 Venture capital received, value, % GDP	0.0	83			
4.3 Trade, diversification, and market scale	58.0	62			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	79.4	70			
4.3.3 Domestic market scale, bn PPP\$	194.1	69			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Slovenia

33

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
35	30	High	EUR	2.1	90.9	43,206








		Score/Value	Rank			Score/Value	Rank
 Institutions		67.4	37	 Business sophistication		46.2	29
1.1	Political environment	77.4	26	5.1	Knowledge workers	63.7	15 ●
1.1.1	Political and operational stability*	80.0	30	5.1.1	Knowledge-intensive employment, %	47.5	14 ●
1.1.2	Government effectiveness*	74.8	25	5.1.2	Firms offering formal training, %	44.0	25
1.2	Regulatory environment	82.8	25	5.1.3	GERD performed by business, % GDP	1.6	14
1.2.1	Regulatory quality*	68.0	34	5.1.4	GERD financed by business, %	61.5	13
1.2.2	Rule of law*	73.7	26	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	36.8	31
1.3	Business environment	42.0	83 ○	5.2.1	University-industry R&D collaboration†	50.3	46
1.3.1	Policies for doing business†	46.0	80 ○ ◇	5.2.2	State of cluster development and depth†	47.7	68
1.3.2	Entrepreneurship policies and culture*	38.0	42	5.2.3	GERD financed by abroad, % GDP	0.3	10 ●
 Human capital and research		47.7	25	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	40
2.1	Education	61.6	29	5.2.5	Patent families/bn PPP\$ GDP	1.1	25
2.1.1	Expenditure on education, % GDP	4.9	43 ○	5.3	Knowledge absorption	38.0	43
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.5	32	5.3.1	Intellectual property payments, % total trade	0.6	64
2.1.3	School life expectancy, years	17.7	15	5.3.2	High-tech imports, % total trade	7.0	93 ○
2.1.4	PISA scales in reading, maths and science	503.7	11	5.3.3	ICT services imports, % total trade	1.8	45
2.1.5	Pupil-teacher ratio, secondary	14.8	73 ◇	5.3.4	FDI net inflows, % GDP	2.6	57
2.2	Tertiary education	44.5	26	5.3.5	Research talent, % in businesses	60.7	11
2.2.1	Tertiary enrolment, % gross	77.9	23	 Knowledge and technology outputs		38.5	26
2.2.2	Graduates in science and engineering, %	28.6	23	6.1	Knowledge creation	39.6	23
2.2.3	Tertiary inbound mobility, %	6.7	38	6.1.1	Patents by origin/bn PPP\$ GDP	4.4	19 ○
2.3	Research and development (R&D)	37.1	31	6.1.2	PCT patents by origin/bn PPP\$ GDP	1.1	27
2.3.1	Researchers, FTE/mn pop.	4,932.3	16	6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP	2.1	17	6.1.4	Scientific and technical articles/bn PPP\$ GDP	59.7	3 ● ◆
2.3.3	Global corporate R&D investors, top 3, mn USD	52.0	26	6.1.5	Citable documents H-index	18.8	44
2.3.4	QS university ranking, top 3*	11.3	61 ◇	6.2	Knowledge impact	37.6	32
 Infrastructure		57.6	24	6.2.1	Labor productivity growth, %	1.4	53
3.1	Information and communication technologies (ICTs)	85.4	27	6.2.2	New businesses/th pop. 15-64	2.4	52
3.1.1	ICT access*	94.6	13 ●	6.2.3	Software spending, % GDP	0.1	89 ○ ◇
3.1.2	ICT use*	76.1	35	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	22.4	7 ● ◆
3.1.3	Government's online service*	85.3	24	6.2.5	High-tech manufacturing, %	41.4	26
3.1.4	E-participation*	85.7	29	6.3	Knowledge diffusion	38.2	33
3.2	General infrastructure	42.6	32	6.3.1	Intellectual property receipts, % total trade	0.2	44
3.2.1	Electricity output, GWh/mn pop.	8,047.6	18	6.3.2	Production and export complexity	80.0	9 ●
3.2.2	Logistics performance*	58.6	34	6.3.3	High-tech exports, % total trade	6.5	30
3.2.3	Gross capital formation, % GDP	22.5	75 ○	6.3.4	ICT services exports, % total trade	1.9	67
3.3	Ecological sustainability	44.9	23	 Creative outputs		23.3	56
3.3.1	GDP/unit of energy use	11.2	59	7.1	Intangible assets	20.2	80 ○ ◇
3.3.2	Environmental performance*	67.3	7 ●	7.1.1	Intangible asset intensity, top 15, %	-27.0	77 ○ ◇
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	6.1	17	7.1.2	Trademarks by origin/bn PPP\$ GDP	68.1	29 ○
 Market sophistication		32.1	68	7.1.3	Global brand value, top 5,000, % GDP	7.7	62 ◇
4.1	Credit	28.7	58	7.1.4	Industrial designs by origin/bn PPP\$ GDP	2.7	38
4.1.1	Finance for startups and scaleups*	42.5	33	7.2	Creative goods and services	27.5	38
4.1.2	Domestic credit to private sector, % GDP	43.4	78 ○ ◇	7.2.1	Cultural and creative services exports, % total trade	1.1	28
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.2	National feature films/mn pop. 15-69	8.1	10 ●
4.2	Investment	3.8	89 ○ ◇	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.2.1	Market capitalization, % GDP	14.6	66 ○ ◇	7.2.4	Printing and other media, % manufacturing	1.5	23
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	82 ○	7.2.5	Creative goods exports, % total trade	0.9	45
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	60	7.3	Online creativity	25.5	29
4.2.4	Venture capital received, value, % GDP	0.0	80 ○	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	21.1	28
4.3	Trade, diversification, and market scale	63.6	36	7.3.2	Country-code TLDs/th pop. 15-69	28.7	24
4.3.1	Applied tariff rate, weighted avg., %	1.5	20	7.3.3	GitHub commit pushes received/mn pop. 15-69	28.6	24
4.3.2	Domestic industry diversification	98.6	8 ●	7.3.4	Mobile app creation/bn PPP\$ GDP	23.6	11 ●
4.3.3	Domestic market scale, bn PPP\$	90.9	88 ○				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

South Africa








61

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
61	69	Upper middle	SSA	60.0	861.9	14,239

	Score/Value	Rank		Score/Value	Rank
 Institutions	51.9	81	 Business sophistication	27.6	63
1.1 Political environment	59.0	66	5.1 Knowledge workers	25.0	78
1.1.1 Political and operational stability*	61.8	87	5.1.1 Knowledge-intensive employment, %	21.4	72
1.1.2 Government effectiveness*	56.2	55	5.1.2 Firms offering formal training, %	7.9	96 ○ ◇
1.2 Regulatory environment	72.0	44	5.1.3 GERD performed by business, % GDP	⊙ 0.3	48
1.2.1 Regulatory quality*	50.0	63	5.1.4 GERD financed by business, %	⊙ 41.5	41
1.2.2 Rule of law*	43.1	68	5.1.5 Females employed w/advanced degrees, %	10.0	74
1.2.3 Cost of redundancy dismissal	9.3	24 ● ◆	5.2 Innovation linkages	26.1	51
1.3 Business environment	24.8	119 ○ ◇	5.2.1 University-industry R&D collaboration†	49.3	49
1.3.1 Policies for doing business†	32.6	111 ○	5.2.2 State of cluster development and depth†	45.6	76
1.3.2 Entrepreneurship policies and culture*	17.1	60 ○	5.2.3 GERD financed by abroad, % GDP	⊙ 0.1	40
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	35 ● ◆
			5.2.5 Patent families/bn PPP\$ GDP	0.2	42
 Human capital and research	26.9	81	5.3 Knowledge absorption	31.8	58
2.1 Education	50.0	68	5.3.1 Intellectual property payments, % total trade	1.6	19 ● ◆
2.1.1 Expenditure on education, % GDP	6.2	17 ● ◆	5.3.2 High-tech imports, % total trade	9.6	46
2.1.2 Government funding/pupil, secondary, % GDP/cap	24.0	26	5.3.3 ICT services imports, % total trade	1.2	77
2.1.3 School life expectancy, years	13.6	74	5.3.4 FDI net inflows, % GDP	1.2	94
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	⊙ 18.6	55
2.1.5 Pupil-teacher ratio, secondary	25.1	106 ○ ◇	 Knowledge and technology outputs	24.7	56
2.2 Tertiary education	17.6	96 ○ ◇	6.1 Knowledge creation	17.7	52
2.2.1 Tertiary enrolment, % gross	23.9	92 ○ ◇	6.1.1 Patents by origin/bn PPP\$ GDP	0.7	72
2.2.2 Graduates in science and engineering, %	⊙ 18.3	84 ○	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.3	44
2.2.3 Tertiary inbound mobility, %	3.5	65	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	13.2	50	6.1.4 Scientific and technical articles/bn PPP\$ GDP	20.6	45
2.3.1 Researchers, FTE/mn pop.	⊙ 484.3	70	6.1.5 Citable documents H-index	31.2	31 ● ◆
2.3.2 Gross expenditure on R&D, % GDP	⊙ 0.6	54	6.2 Knowledge impact	36.3	35
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2.1 Labor productivity growth, %	1.7	43
2.3.4 QS university ranking, top 3*	31.4	39	6.2.2 New businesses/th pop. 15-64	12.5	9 ● ◆
			6.2.3 Software spending, % GDP	0.3	27 ● ◆
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	4.4	62
			6.2.5 High-tech manufacturing, %	20.9	62
 Infrastructure	40.7	77	6.3 Knowledge diffusion	20.1	73
3.1 Information and communication technologies (ICTs)	72.5	67	6.3.1 Intellectual property receipts, % total trade	0.1	55
3.1.1 ICT access*	83.5	74	6.3.2 Production and export complexity	42.3	59
3.1.2 ICT use*	56.9	83	6.3.3 High-tech exports, % total trade	2.2	57
3.1.3 Government's online service*	74.7	55	6.3.4 ICT services exports, % total trade	0.6	97 ○
3.1.4 E-participation*	75.0	57	 Creative outputs	19.5	64
3.2 General infrastructure	31.4	59	7.1 Intangible assets	34.3	52
3.2.1 Electricity output, GWh/mn pop.	3,956.5	54	7.1.1 Intangible asset intensity, top 15, %	63.6	37
3.2.2 Logistics performance*	61.9	32 ● ◆	7.1.2 Trademarks by origin/bn PPP\$ GDP	27.9	79
3.2.3 Gross capital formation, % GDP	13.5	122 ○ ◇	7.1.3 Global brand value, top 5,000, % GDP	84.8	26 ● ◆
3.3 Ecological sustainability	18.3	104 ○ ◇	7.1.4 Industrial designs by origin/bn PPP\$ GDP	1.2	62
3.3.1 GDP/unit of energy use	5.1	120 ○ ◇	7.2 Creative goods and services	5.5	99 ○
3.3.2 Environmental performance*	37.2	84	7.2.1 Cultural and creative services exports, % total trade	0.2	75
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	1.3	65	7.2.2 National feature films/mn pop. 15-69	0.6	66 ○
			7.2.3 Entertainment and media market/th pop. 15-69	6.6	41
			7.2.4 Printing and other media, % manufacturing	n/a	n/a
			7.2.5 Creative goods exports, % total trade	0.8	51
 Market sophistication	40.4	39	7.3 Online creativity	4.1	65
4.1 Credit	31.4	48	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	2.9	65
4.1.1 Finance for startups and scaleups*	35.6	48	7.3.2 Country-code TLDs/th pop. 15-69	9.3	41
4.1.2 Domestic credit to private sector, % GDP	107.9	23 ● ◆	7.3.3 GitHub commit pushes received/mn pop. 15-69	2.8	74
4.1.3 Loans from microfinance institutions, % GDP	1.3	23	7.3.4 Mobile app creation/bn PPP\$ GDP	1.3	75
4.2 Investment	31.7	25 ● ◆			
4.2.1 Market capitalization, % GDP	266.5	1 ● ◆			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.1	36			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	40			
4.2.4 Venture capital received, value, % GDP	0.0	59			
4.3 Trade, diversification, and market scale	58.1	61			
4.3.1 Applied tariff rate, weighted avg., %	4.4	88			
4.3.2 Domestic industry diversification	83.6	64			
4.3.3 Domestic market scale, bn PPP\$	861.9	31 ●			







NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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	46.7	1,984.0	42,075

	Score/Value	Rank		Score/Value	Rank
 Institutions	66.8	38	 Business sophistication	41.4	32
1.1 Political environment	71.8	41	5.1 Knowledge workers	55.8	24
1.1.1 Political and operational stability*	74.5	42	5.1.1 Knowledge-intensive employment, %	35.5	43
1.1.2 Government effectiveness*	69.0	35	5.1.2 Firms offering formal training, %	55.2	14
1.2 Regulatory environment	74.1	39	5.1.3 GERD performed by business, % GDP	0.8	32
1.2.1 Regulatory quality*	64.1	41	5.1.4 GERD financed by business, %	49.1	33
1.2.2 Rule of law*	69.5	36	5.1.5 Females employed w/advanced degrees, %	24.6	21
1.2.3 Cost of redundancy dismissal	17.4	75 ○	5.2 Innovation linkages	29.6	40
1.3 Business environment	54.4	49	5.2.1 University-industry R&D collaboration†	43.6	66 ○
1.3.1 Policies for doing business†	48.3	69 ○	5.2.2 State of cluster development and depth†	59.0	30
1.3.2 Entrepreneurship policies and culture*	60.5	22	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	31
 Human capital and research	47.7	26	5.3 Knowledge absorption	38.9	39
2.1 Education	58.1	46	5.3.1 Intellectual property payments, % total trade	1.4	28
2.1.1 Expenditure on education, % GDP	4.2	71 ○	5.3.2 High-tech imports, % total trade	8.0	72 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap	18.7	60 ○	5.3.3 ICT services imports, % total trade	2.3	30
2.1.3 School life expectancy, years	17.9	13 ●	5.3.4 FDI net inflows, % GDP	2.8	50
2.1.4 PISA scales in reading, maths and science	482.3	29	5.3.5 Research talent, % in businesses	38.0	36
2.1.5 Pupil-teacher ratio, secondary	11.3	41			
2.2 Tertiary education	36.5	43	 Knowledge and technology outputs	38.1	27
2.2.1 Tertiary enrolment, % gross	92.9	9 ●	6.1 Knowledge creation	37.4	26
2.2.2 Graduates in science and engineering, %	20.8	61 ○	6.1.1 Patents by origin/bn PPP\$ GDP	1.8	40
2.2.3 Tertiary inbound mobility, %	3.7	60 ○	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.8	29
2.3 Research and development (R&D)	48.5	23	6.1.3 Utility models by origin/bn PPP\$ GDP	1.8	13 ◆
2.3.1 Researchers, FTE/mn pop.	3,109.2	31	6.1.4 Scientific and technical articles/bn PPP\$ GDP	38.8	24
2.3.2 Gross expenditure on R&D, % GDP	1.4	30	6.1.5 Citable documents H-index	61.7	12 ●
2.3.3 Global corporate R&D investors, top 3, mn USD	70.6	13 ●	6.2 Knowledge impact	39.8	25
2.3.4 QS university ranking, top 3*	44.3	26	6.2.1 Labor productivity growth, %	-0.9	104 ○ ◇
			6.2.2 New businesses/th pop. 15-64	2.5	50
			6.2.3 Software spending, % GDP	0.6	5 ◆
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	16.7	18
			6.2.5 High-tech manufacturing, %	38.0	30
 Infrastructure	59.8	16 ●	6.3 Knowledge diffusion	37.1	38
3.1 Information and communication technologies (ICTs)	86.2	23	6.3.1 Intellectual property receipts, % total trade	0.7	25
3.1.1 ICT access*	91.5	34	6.3.2 Production and export complexity	60.6	32
3.1.2 ICT use*	80.0	22	6.3.3 High-tech exports, % total trade	4.4	40
3.1.3 Government's online service*	88.8	17 ●	6.3.4 ICT services exports, % total trade	3.0	42
3.1.4 E-participation*	84.5	36			
3.2 General infrastructure	45.6	27	 Creative outputs	36.8	28
3.2.1 Electricity output, GWh/mn pop.	5,465.9	39	7.1 Intangible assets	50.6	22
3.2.2 Logistics performance*	82.8	17 ●	7.1.1 Intangible asset intensity, top 15, %	65.5	29
3.2.3 Gross capital formation, % GDP	21.1	85 ○	7.1.2 Trademarks by origin/bn PPP\$ GDP	52.3	44
3.3 Ecological sustainability	47.5	17 ●	7.1.3 Global brand value, top 5,000, % GDP	86.2	25
3.3.1 GDP/unit of energy use	14.7	26	7.1.4 Industrial designs by origin/bn PPP\$ GDP	8.6	12 ● ◆
3.3.2 Environmental performance*	56.6	27	7.2 Creative goods and services	26.1	43
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	7.2	14 ● ◆	7.2.1 Cultural and creative services exports, % total trade	1.2	24
			7.2.2 National feature films/mn pop. 15-69	7.7	12
			7.2.3 Entertainment and media market/th pop. 15-69	28.4	24
			7.2.4 Printing and other media, % manufacturing	1.2	36
			7.2.5 Creative goods exports, % total trade	0.9	44
 Market sophistication	43.4	30	7.3 Online creativity	19.9	31
4.1 Credit	41.1	26	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	28.8	22
4.1.1 Finance for startups and scaleups*	41.5	36	7.3.2 Country-code TLDs/th pop. 15-69	17.2	31
4.1.2 Domestic credit to private sector, % GDP	108.5	22	7.3.3 GitHub commit pushes received/mn pop. 15-69	21.5	31
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	12.1	33
4.2 Investment	12.8	47			
4.2.1 Market capitalization, % GDP	55.8	34			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.1	37			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	47			
4.2.4 Venture capital received, value, % GDP	0.0	38			
4.3 Trade, diversification, and market scale	76.2	14 ●			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	93.8	29			
4.3.3 Domestic market scale, bn PPP\$	1,984.0	16 ●			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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	102	Lower middle	CSA	21.5	311.2	14,123

	Score/Value	Rank		Score/Value	Rank
 Institutions	40.8	119 ○	 Business sophistication	25.8	71
1.1 Political environment	57.7	72 ◆	5.1 Knowledge workers	23.0	85
1.1.1 Political and operational stability*	67.3	71	5.1.1 Knowledge-intensive employment, %	⊙ 24.1	60 ◆
1.1.2 Government effectiveness*	48.2	74 ◆	5.1.2 Firms offering formal training, %	⊙ 18.4	84
1.2 Regulatory environment	21.3	132 ○ ◇	5.1.3 GERD performed by business, % GDP	⊙ 0.1	71
1.2.1 Regulatory quality*	40.5	86	5.1.4 GERD financed by business, %	⊙ 40.3	42 ◆◆
1.2.2 Rule of law*	44.9	62 ◆	5.1.5 Females employed w/advanced degrees, %	⊙ 3.5	98
1.2.3 Cost of redundancy dismissal	58.5	131 ○ ◇	5.2 Innovation linkages	23.4	64
1.3 Business environment	43.3	[79]	5.2.1 University-industry R&D collaboration†	49.0	51 ●
1.3.1 Policies for doing business†	43.3	85	5.2.2 State of cluster development and depth†	49.6	52 ●
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	⊙ 0.0	75
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	32 ●◆
			5.2.5 Patent families/bn PPP\$ GDP	0.0	89
 Human capital and research	13.4	120 ○	5.3 Knowledge absorption	31.1	60
2.1 Education	33.2	113	5.3.1 Intellectual property payments, % total trade	n/a	n/a
2.1.1 Expenditure on education, % GDP	⊙ 1.9	125 ○ ◇	5.3.2 High-tech imports, % total trade	7.4	82
2.1.2 Government funding/pupil, secondary, % GDP/cap	6.8	105 ○ ◇	5.3.3 ICT services imports, % total trade	1.8	43 ●◆
2.1.3 School life expectancy, years	⊙ 14.1	71 ◆	5.3.4 FDI net inflows, % GDP	1.1	99
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	⊙ 20.0	53
2.1.5 Pupil-teacher ratio, secondary	17.7	86			
2.2 Tertiary education	6.5	116 ○	 Knowledge and technology outputs	21.0	66
2.2.1 Tertiary enrolment, % gross	21.6	95	6.1 Knowledge creation	7.4	88
2.2.2 Graduates in science and engineering, %	n/a	n/a	6.1.1 Patents by origin/bn PPP\$ GDP	1.2	60
2.2.3 Tertiary inbound mobility, %	0.4	101 ○	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	59
2.3 Research and development (R&D)	0.5	104	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1 Researchers, FTE/mn pop.	⊙ 105.6	88	6.1.4 Scientific and technical articles/bn PPP\$ GDP	5.5	110
2.3.2 Gross expenditure on R&D, % GDP	⊙ 0.1	102 ○	6.1.5 Citable documents H-index	10.6	69
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2 Knowledge impact	22.6	79
2.3.4 QS university ranking, top 3*	0.0	72 ○ ◇	6.2.1 Labor productivity growth, %	1.4	52
			6.2.2 New businesses/th pop. 15-64	⊙ 0.7	88
			6.2.3 Software spending, % GDP	0.4	25 ●◆
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	4.3	63 ◆
			6.2.5 High-tech manufacturing, %	⊙ 7.5	92
			6.3 Knowledge diffusion	32.9	48 ●◆
			6.3.1 Intellectual property receipts, % total trade	n/a	n/a
			6.3.2 Production and export complexity	35.9	73
			6.3.3 High-tech exports, % total trade	1.0	72
			6.3.4 ICT services exports, % total trade	6.3	15 ●◆
			 Creative outputs	18.9	69
			7.1 Intangible assets	20.5	77
			7.1.1 Intangible asset intensity, top 15, %	35.0	65
			7.1.2 Trademarks by origin/bn PPP\$ GDP	⊙ 22.5	90
			7.1.3 Global brand value, top 5,000, % GDP	12.3	56
			7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.9	72
			7.2 Creative goods and services	31.2	[24]
			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 Printing and other media, % manufacturing	⊙ 2.2	11 ●◆
			7.2.5 Creative goods exports, % total trade	0.4	64
			7.3 Online creativity	3.2	69
			7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.8	99
			7.3.2 Country-code TLDs/th pop. 15-69	0.9	87
			7.3.3 GitHub commit pushes received/mn pop. 15-69	10.5	43 ●◆
			7.3.4 Mobile app creation/bn PPP\$ GDP	0.8	77
 Market sophistication	21.0	108			
4.1 Credit	13.1	105			
4.1.1 Finance for startups and scaleups*	n/a	n/a			
4.1.2 Domestic credit to private sector, % GDP	⊙ 49.8	71			
4.1.3 Loans from microfinance institutions, % GDP	⊙ 0.6	36			
4.2 Investment	2.2	103 ○			
4.2.1 Market capitalization, % GDP	18.7	62			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	92 ○ ◇			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	94 ○			
4.2.4 Venture capital received, value, % GDP	0.0	97 ○			
4.3 Trade, diversification, and market scale	47.6	86			
4.3.1 Applied tariff rate, weighted avg., %	6.3	100			
4.3.2 Domestic industry diversification	⊙ 76.7	72			
4.3.3 Domestic market scale, bn PPP\$	311.2	55			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Sweden

3

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
2	4	High	EUR	10.2	609.5	57,425







	Score/ Value	Rank		Score/ Value	Rank
 Institutions	76.6	19	 Business sophistication	69.8	1 ● ◆
1.1 Political environment	86.1	12	5.1 Knowledge workers	77.1	2 ● ◆
1.1.1 Political and operational stability*	85.5	10	5.1.1 Knowledge-intensive employment, %	56.7	3 ● ◆
1.1.2 Government effectiveness*	86.7	8	5.1.2 Firms offering formal training, %	61.9	8
1.2 Regulatory environment	88.6	13	5.1.3 GERD performed by business, % GDP	2.6	5
1.2.1 Regulatory quality*	86.9	10	5.1.4 GERD financed by business, %	62.4	12
1.2.2 Rule of law*	92.9	8	5.1.5 Females employed w/advanced degrees, %	27.7	9
1.2.3 Cost of redundancy dismissal	14.4	56 ○	5.2 Innovation linkages	68.3	2 ● ◆
1.3 Business environment	55.0	48 ◇	5.2.1 University-industry R&D collaboration†	67.4	10
1.3.1 Policies for doing business†	63.7	29	5.2.2 State of cluster development and depth†	64.9	15
1.3.2 Entrepreneurship policies and culture*	46.2	36 ○ ◇	5.2.3 GERD financed by abroad, % GDP	0.3	9
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.3	4 ● ◆
			5.2.5 Patent families/bn PPP\$ GDP	6.8	4 ● ◆
 Human capital and research	62.6	3 ●	5.3 Knowledge absorption	64.0	3 ● ◆
2.1 Education	72.1	4 ● ◆	5.3.1 Intellectual property payments, % total trade	2.9	7
2.1.1 Expenditure on education, % GDP	7.6	5 ◆	5.3.2 High-tech imports, % total trade	8.5	62 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap	24.4	24	5.3.3 ICT services imports, % total trade	4.7	5 ● ◆
2.1.3 School life expectancy, years	19.4	5 ◆	5.3.4 FDI net inflows, % GDP	2.8	52 ○
2.1.4 PISA scales in reading, maths and science	502.5	14	5.3.5 Research talent, % in businesses	71.8	5 ◆
2.1.5 Pupil-teacher ratio, secondary	12.3	53 ○			
2.2 Tertiary education	43.0	28	 Knowledge and technology outputs	62.9	2 ● ◆
2.2.1 Tertiary enrolment, % gross	77.3	25	6.1 Knowledge creation	81.6	2 ● ◆
2.2.2 Graduates in science and engineering, %	27.0	31	6.1.1 Patents by origin/bn PPP\$ GDP	10.9	8
2.2.3 Tertiary inbound mobility, %	7.2	35	6.1.2 PCT patents by origin/bn PPP\$ GDP	7.3	1 ● ◆
2.3 Research and development (R&D)	72.7	7	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1 Researchers, FTE/mn pop.	7,930.4	2 ● ◆	6.1.4 Scientific and technical articles/bn PPP\$ GDP	57.7	5 ● ◆
2.3.2 Gross expenditure on R&D, % GDP	3.5	3 ●	6.1.5 Citable documents H-index	59.5	13
2.3.3 Global corporate R&D investors, top 3, mn USD	79.3	10	6.2 Knowledge impact	43.7	14
2.3.4 QS university ranking, top 3*	61.0	14	6.2.1 Labor productivity growth, %	0.7	69 ○
			6.2.2 New businesses/th pop. 15-64	9.0	16
			6.2.3 Software spending, % GDP	0.5	13
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	5.8	48
			6.2.5 High-tech manufacturing, %	48.8	13
			6.3 Knowledge diffusion	63.4	6
			6.3.1 Intellectual property receipts, % total trade	3.4	7
			6.3.2 Production and export complexity	82.7	8
			6.3.3 High-tech exports, % total trade	7.8	24
			6.3.4 ICT services exports, % total trade	6.7	12
 Infrastructure	67.0	1 ● ◆	 Creative outputs	50.7	8
3.1 Information and communication technologies (ICTs)	88.1	19	7.1 Intangible assets	57.4	13
3.1.1 ICT access*	93.6	18	7.1.1 Intangible asset intensity, top 15, %	86.1	6
3.1.2 ICT use*	86.5	6	7.1.2 Trademarks by origin/bn PPP\$ GDP	47.2	50 ○
3.1.3 Government's online service*	90.0	15	7.1.3 Global brand value, top 5,000, % GDP	205.5	4 ● ◆
3.1.4 E-participation*	82.1	41	7.1.4 Industrial designs by origin/bn PPP\$ GDP	3.7	31
3.2 General infrastructure	68.3	3 ● ◆	7.2 Creative goods and services	42.2	6 ◆
3.2.1 Electricity output, GWh/mn pop.	15,707.2	7 ◆	7.2.1 Cultural and creative services exports, % total trade	3.5	4 ● ◆
3.2.2 Logistics performance*	93.0	2 ●	7.2.2 National feature films/mn pop. 15-69	7.5	14
3.2.3 Gross capital formation, % GDP	25.2	53 ○	7.2.3 Entertainment and media market/th pop. 15-69	57.5	8
3.3 Ecological sustainability	44.6	24	7.2.4 Printing and other media, % manufacturing	0.8	60 ○
3.3.1 GDP/unit of energy use	11.2	58 ○	7.2.5 Creative goods exports, % total trade	1.9	28
3.3.2 Environmental performance*	72.7	5 ◆	7.3 Online creativity	45.8	8
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	5.1	21	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	42.8	16
			7.3.2 Country-code TLDs/th pop. 15-69	63.0	11
			7.3.3 GitHub commit pushes received/mn pop. 15-69	51.2	8
			7.3.4 Mobile app creation/bn PPP\$ GDP	26.3	10
 Market sophistication	55.6	13			
4.1 Credit	50.1	18			
4.1.1 Finance for startups and scaleups*	50.3	12			
4.1.2 Domestic credit to private sector, % GDP	131.9	18			
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a			
4.2 Investment	49.3	11			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.3	14			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	12			
4.2.4 Venture capital received, value, % GDP	0.0	8			
4.3 Trade, diversification, and market scale	67.4	23			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	98.1	13			
4.3.3 Domestic market scale, bn PPP\$	609.5	38			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Switzerland

1

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
1	3	High	EUR	8.7	677.3	78,112








	Score/ Value	Rank		Score/ Value	Rank
 Institutions	89.2	2 ● ◆	 Business sophistication	60.7	7
1.1 Political environment	89.3	6	5.1 Knowledge workers	67.9	10
1.1.1 Political and operational stability*	85.5	10	5.1.1 Knowledge-intensive employment, %	50.9	7
1.1.2 Government effectiveness*	93.2	2 ● ◆	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	92.4	7	5.1.3 GERD performed by business, % GDP	⊙ 2.1	8
1.2.1 Regulatory quality*	84.6	12	5.1.4 GERD financed by business, %	64.7	7
1.2.2 Rule of law*	93.5	6	5.1.5 Females employed w/advanced degrees, %	20.9	29
1.2.3 Cost of redundancy dismissal	10.1	30	5.2 Innovation linkages	64.3	5 ◆
1.3 Business environment	85.8	4 ◆	5.2.1 University-industry R&D collaboration†	77.6	3 ● ◆
1.3.1 Policies for doing business†	91.5	1 ● ◆	5.2.2 State of cluster development and depth†	71.9	3 ● ◆
1.3.2 Entrepreneurship policies and culture*	80.0	7	5.2.3 GERD financed by abroad, % GDP	0.2	21
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.2	8
			5.2.5 Patent families/bn PPP\$ GDP	7.9	3 ● ◆
 Human capital and research	62.4	4	5.3 Knowledge absorption	49.7	16
2.1 Education	61.7	27	5.3.1 Intellectual property payments, % total trade	4.1	1 ● ◆
2.1.1 Expenditure on education, % GDP	⊙ 4.9	47 ○	5.3.2 High-tech imports, % total trade	5.9	109 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.6	35	5.3.3 ICT services imports, % total trade	3.5	12
2.1.3 School life expectancy, years	16.5	26	5.3.4 FDI net inflows, % GDP	-18.3	131 ○ ◇
2.1.4 PISA scales in reading, maths and science	498.2	21	5.3.5 Research talent, % in businesses	⊙ 48.3	28
2.1.5 Pupil-teacher ratio, secondary	9.7	27			
2.2 Tertiary education	47.2	19	 Knowledge and technology outputs	67.1	1 ● ◆
2.2.1 Tertiary enrolment, % gross	63.3	47 ○	6.1 Knowledge creation	86.7	1 ● ◆
2.2.2 Graduates in science and engineering, %	25.2	39	6.1.1 Patents by origin/bn PPP\$ GDP	15.1	1 ● ◆
2.2.3 Tertiary inbound mobility, %	17.8	9	6.1.2 PCT patents by origin/bn PPP\$ GDP	8.0	1 ● ◆
2.3 Research and development (R&D)	78.3	3 ●	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1 Researchers, FTE/mn pop.	⊙ 5,552.2	12	6.1.4 Scientific and technical articles/bn PPP\$ GDP	56.9	6 ◆
2.3.2 Gross expenditure on R&D, % GDP	⊙ 3.1	8	6.1.5 Citable documents H-index	65.9	10
2.3.3 Global corporate R&D investors, top 3, mn USD	89.9	6	6.2 Knowledge impact	51.3	5 ◆
2.3.4 QS university ranking, top 3*	84.3	4	6.2.1 Labor productivity growth, %	0.9	63 ○
			6.2.2 New businesses/th pop. 15-64	⊙ 4.6	31
			6.2.3 Software spending, % GDP	0.7	2 ● ◆
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	12.0	25
			6.2.5 High-tech manufacturing, %	⊙ 67.3	2 ● ◆
 Infrastructure	65.7	4 ◆	6.3 Knowledge diffusion	63.4	7
3.1 Information and communication technologies (ICTs)	88.7	17	6.3.1 Intellectual property receipts, % total trade	6.4	2 ● ◆
3.1.1 ICT access*	93.2	21	6.3.2 Production and export complexity	91.7	2 ● ◆
3.1.2 ICT use*	88.2	3 ● ◆	6.3.3 High-tech exports, % total trade	6.7	29
3.1.3 Government's online service*	82.9	36	6.3.4 ICT services exports, % total trade	2.4	55 ○
3.1.4 E-participation*	90.5	18			
3.2 General infrastructure	54.3	18	 Creative outputs	56.3	1 ● ◆
3.2.1 Electricity output, GWh/mn pop.	7,915.5	19	7.1 Intangible assets	63.6	8
3.2.2 Logistics performance*	86.0	13	7.1.1 Intangible asset intensity, top 15, %	81.6	8
3.2.3 Gross capital formation, % GDP	26.9	37	7.1.2 Trademarks by origin/bn PPP\$ GDP	71.4	25
3.3 Ecological sustainability	54.0	4 ◆	7.1.3 Global brand value, top 5,000, % GDP	216.2	3 ● ◆
3.3.1 GDP/unit of energy use	24.8	5 ◆	7.1.4 Industrial designs by origin/bn PPP\$ GDP	4.6	25
3.3.2 Environmental performance*	65.9	9	7.2 Creative goods and services	37.1	12
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	3.6	27	7.2.1 Cultural and creative services exports, % total trade	0.6	45 ○
			7.2.2 National feature films/mn pop. 15-69	3.3	36 ○
			7.2.3 Entertainment and media market/th pop. 15-69	99.5	2 ● ◆
			7.2.4 Printing and other media, % manufacturing	⊙ 1.1	39 ○
			7.2.5 Creative goods exports, % total trade	2.4	21
 Market sophistication	59.8	8	7.3 Online creativity	61.0	2 ● ◆
4.1 Credit	57.9	8	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	59.6	11
4.1.1 Finance for startups and scaleups*	51.3	10	7.3.2 Country-code TLDs/th pop. 15-69	100.0	1 ● ◆
4.1.2 Domestic credit to private sector, % GDP	⊙ 168.5	5	7.3.3 GitHub commit pushes received/mn pop. 15-69	69.5	3 ● ◆
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	14.8	25
4.2 Investment	59.0	10			
4.2.1 Market capitalization, % GDP	237.6	5 ◆			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.5	9			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.2	8			
4.2.4 Venture capital received, value, % GDP	0.0	27			
4.3 Trade, diversification, and market scale	62.4	42			
4.3.1 Applied tariff rate, weighted avg., %	1.4	18			
4.3.2 Domestic industry diversification	⊙ 80.9	69 ○			
4.3.3 Domestic market scale, bn PPP\$	677.3	34			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Tajikistan

104








Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
101	104	Lower middle	CSA	9.7	37.9	3,923

	Score/Value	Rank		Score/Value	Rank
 Institutions	48.6	91	 Business sophistication	15.6	128
1.1 Political environment	45.4	113	5.1 Knowledge workers	13.6	[113]
1.1.1 Political and operational stability*	56.4	108	5.1.1 Knowledge-intensive employment, %	n/a	n/a
1.1.2 Government effectiveness*	34.4	110	5.1.2 Firms offering formal training, %	24.3	66
1.2 Regulatory environment	45.0	117	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	19.5	126	5.1.4 GERD financed by business, %	1.6	91
1.2.2 Rule of law*	14.5	126	5.1.5 Females employed w/advanced degrees, %	n/a	n/a
1.2.3 Cost of redundancy dismissal	21.7	95	5.2 Innovation linkages	16.1	117
1.3 Business environment	55.6	[45]	5.2.1 University-industry R&D collaboration†	38.3	89
1.3.1 Policies for doing business†	55.6	48	5.2.2 State of cluster development and depth†	36.4	113
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.0	97
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	74
			5.2.5 Patent families/bn PPP\$ GDP	0.0	101
 Human capital and research	25.2	85	5.3 Knowledge absorption	17.0	128
2.1 Education	54.1	[59]	5.3.1 Intellectual property payments, % total trade	0.0	119
2.1.1 Expenditure on education, % GDP	5.7	24	5.3.2 High-tech imports, % total trade	5.8	111
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	0.3	126
2.1.3 School life expectancy, years	11.4	93	5.3.4 FDI net inflows, % GDP	2.2	68
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	15.4	76	 Knowledge and technology outputs	14.9	84
2.2 Tertiary education	21.1	88	6.1 Knowledge creation	17.2	53
2.2.1 Tertiary enrolment, % gross	31.3	84	6.1.1 Patents by origin/bn PPP\$ GDP	0.1	110
2.2.2 Graduates in science and engineering, %	22.0	56	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	101
2.2.3 Tertiary inbound mobility, %	0.8	91	6.1.3 Utility models by origin/bn PPP\$ GDP	3.6	5
2.3 Research and development (R&D)	0.3	111	6.1.4 Scientific and technical articles/bn PPP\$ GDP	4.0	116
2.3.1 Researchers, FTE/mn pop.	n/a	n/a	6.1.5 Citable documents H-index	0.5	129
2.3.2 Gross expenditure on R&D, % GDP	0.1	107	6.2 Knowledge impact	20.6	89
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2.1 Labor productivity growth, %	5.7	2
2.3.4 QS university ranking, top 3*	0.0	72	6.2.2 New businesses/th pop. 15-64	0.2	115
			6.2.3 Software spending, % GDP	0.1	94
 Infrastructure	24.8	121	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	0.1	132
3.1 Information and communication technologies (ICTs)	37.2	123	6.2.5 High-tech manufacturing, %	2.6	108
3.1.1 ICT access*	66.7	103	6.3 Knowledge diffusion	6.9	115
3.1.2 ICT use*	15.6	129	6.3.1 Intellectual property receipts, % total trade	0.0	107
3.1.3 Government's online service*	31.8	123	6.3.2 Production and export complexity	24.3	93
3.1.4 E-participation*	34.5	117	6.3.3 High-tech exports, % total trade	0.1	122
3.2 General infrastructure	17.5	114	6.3.4 ICT services exports, % total trade	0.3	121
3.2.1 Electricity output, GWh/mn pop.	2,218.9	77	 Creative outputs	4.5	116
3.2.2 Logistics performance*	13.5	115	7.1 Intangible assets	2.8	120
3.2.3 Gross capital formation, % GDP	21.6	82	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3 Ecological sustainability	19.7	96	7.1.2 Trademarks by origin/bn PPP\$ GDP	14.0	101
3.3.1 GDP/unit of energy use	8.7	85	7.1.3 Global brand value, top 5,000, % GDP	0.0	77
3.3.2 Environmental performance*	37.1	85	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.0	121
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.1	126	7.2 Creative goods and services	12.0	[77]
 Market sophistication	25.1	94	7.2.1 Cultural and creative services exports, % total trade	0.0	105
4.1 Credit	19.2	86	7.2.2 National feature films/mn pop. 15-69	n/a	n/a
4.1.1 Finance for startups and scaleups*	n/a	n/a	7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.2 Domestic credit to private sector, % GDP	12.9	121	7.2.4 Printing and other media, % manufacturing	1.4	24
4.1.3 Loans from microfinance institutions, % GDP	2.4	14	7.2.5 Creative goods exports, % total trade	0.0	119
4.2 Investment	5.4	[71]	7.3 Online creativity	0.2	121
4.2.1 Market capitalization, % GDP	n/a	n/a	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.0	128
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15-69	0.3	103
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	53	7.3.3 GitHub commit pushes received/mn pop. 15-69	0.2	118
4.2.4 Venture capital received, value, % GDP	0.0	66	7.3.4 Mobile app creation/bn PPP\$ GDP	0.2	90
4.3 Trade, diversification, and market scale	50.6	81			
4.3.1 Applied tariff rate, weighted avg., %	3.9	82			
4.3.2 Domestic industry diversification	76.6	73			
4.3.3 Domestic market scale, bn PPP\$	37.9	115			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.








Thailand

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
44	48	Upper middle	SEAO	70.0	1,331.0	19,028

		Score/ Value	Rank			Score/ Value	Rank
	Institutions	52.5	78		Business sophistication	35.5	43
1.1	Political environment	62.6	56	5.1	Knowledge workers	37.6	53
1.1.1	Political and operational stability*	69.1	63	5.1.1	Knowledge-intensive employment, %	15.1	90 ◊
1.1.2	Government effectiveness*	56.2	54	5.1.2	Firms offering formal training, %	18.0	85 ◊
1.2	Regulatory environment	47.0	113 ◊	5.1.3	GERD performed by business, % GDP	0.8	30 ◆
1.2.1	Regulatory quality*	49.5	64	5.1.4	GERD financed by business, %	80.8	1 ◆
1.2.2	Rule of law*	49.2	57	5.1.5	Females employed w/advanced degrees, %	10.5	71
1.2.3	Cost of redundancy dismissal	36.0	125 ◊	5.2	Innovation linkages	23.3	65
1.3	Business environment	48.0	65	5.2.1	University-industry R&D collaboration†	52.7	38 ◆
1.3.1	Policies for doing business†	44.0	82	5.2.2	State of cluster development and depth†	50.5	47
1.3.2	Entrepreneurship policies and culture*	52.0	31	5.2.3	GERD financed by abroad, % GDP	0.0	80
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	55
				5.2.5	Patent families/bn PPP\$ GDP	0.1	59
	Human capital and research	29.8	71	5.3	Knowledge absorption	45.5	24 ◆
2.1	Education	39.2	98	5.3.1	Intellectual property payments, % total trade	1.8	16 ◆
2.1.1	Expenditure on education, % GDP	3.0	110 ◊	5.3.2	High-tech imports, % total trade	18.4	13 ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	18.0	65	5.3.3	ICT services imports, % total trade	0.4	119 ◊
2.1.3	School life expectancy, years	15.4	46	5.3.4	FDI net inflows, % GDP	0.8	105 ◊
2.1.4	PISA scales in reading, maths and science	412.4	61	5.3.5	Research talent, % in businesses	60.8	10 ◆
2.1.5	Pupil-teacher ratio, secondary	23.6	103 ◊		Knowledge and technology outputs	30.0	43
2.2	Tertiary education	32.3	62	6.1	Knowledge creation	20.4	45
2.2.1	Tertiary enrolment, % gross	49.3	65	6.1.1	Patents by origin/bn PPP\$ GDP	0.7	73
2.2.2	Graduates in science and engineering, %	27.9	27	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	62
2.2.3	Tertiary inbound mobility, %	1.3	85	6.1.3	Utility models by origin/bn PPP\$ GDP	2.6	8 ◆
2.3	Research and development (R&D)	17.9	44	6.1.4	Scientific and technical articles/bn PPP\$ GDP	11.1	79
2.3.1	Researchers, FTE/mn pop.	1,790.1	41 ◆	6.1.5	Citable documents H-index	20.9	41
2.3.2	Gross expenditure on R&D, % GDP	1.1	36 ◆	6.2	Knowledge impact	32.1	52
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ◊	6.2.1	Labor productivity growth, %	1.2	58
2.3.4	QS university ranking, top 3*	33.2	37	6.2.2	New businesses/th pop. 15-64	1.3	76
	Infrastructure	47.7	54	6.2.3	Software spending, % GDP	0.2	54
3.1	Information and communication technologies (ICTs)	80.4	46	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	7.3	37
3.1.1	ICT access*	91.8	30 ◆	6.2.5	High-tech manufacturing, %	44.0	22 ◆
3.1.2	ICT use*	72.9	49 ◆	6.3	Knowledge diffusion	37.4	36 ◆
3.1.3	Government's online service*	79.4	42	6.3.1	Intellectual property receipts, % total trade	0.1	64
3.1.4	E-participation*	77.4	51	6.3.2	Production and export complexity	68.5	23 ◆
3.2	General infrastructure	36.9	44 ◆	6.3.3	High-tech exports, % total trade	18.6	8 ◆
3.2.1	Electricity output, GWh/mn pop.	2,667.3	68	6.3.4	ICT services exports, % total trade	0.2	126 ◊
3.2.2	Logistics performance*	63.3	31 ◆		Creative outputs	25.2	49
3.2.3	Gross capital formation, % GDP	24.9	54	7.1	Intangible assets	35.6	47
3.3	Ecological sustainability	25.9	64	7.1.1	Intangible asset intensity, top 15, %	62.0	38
3.3.1	GDP/unit of energy use	9.0	80	7.1.2	Trademarks by origin/bn PPP\$ GDP	26.1	83
3.3.2	Environmental performance*	38.1	78	7.1.3	Global brand value, top 5,000, % GDP	71.9	30 ◆
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	2.8	30	7.1.4	Industrial designs by origin/bn PPP\$ GDP	3.3	34
	Market sophistication	45.3	27 ◆	7.2	Creative goods and services	26.3	42 ◆
4.1	Credit	55.3	11 ◆	7.2.1	Cultural and creative services exports, % total trade	0.0	103 ◊
4.1.1	Finance for startups and scaleups*	49.7	14 ◆	7.2.2	National feature films/mn pop. 15-69	1.0	59
4.1.2	Domestic credit to private sector, % GDP	159.8	10 ◆	7.2.3	Entertainment and media market/th pop. 15-69	9.7	35 ◆
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.4	Printing and other media, % manufacturing	0.8	65
4.2	Investment	12.5	49	7.2.5	Creative goods exports, % total trade	8.4	1 ◆
4.2.1	Market capitalization, % GDP	103.9	14 ◆	7.3	Online creativity	3.1	70
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	71	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	5.5	51
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	87 ◊	7.3.2	Country-code TLDs/th pop. 15-69	0.4	100
4.2.4	Venture capital received, value, % GDP	0.0	57	7.3.3	GitHub commit pushes received/mn pop. 15-69	2.3	80
4.3	Trade, diversification, and market scale	67.9	21 ◆	7.3.4	Mobile app creation/bn PPP\$ GDP	4.2	59
4.3.1	Applied tariff rate, weighted avg., %	3.5	77				
4.3.2	Domestic industry diversification	96.8	21				
4.3.3	Domestic market scale, bn PPP\$	1,331.1	21 ◆				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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\$
125	115	Low	SSA	8.5	20.0	2,353







		Score/ Value	Rank			Score/ Value	Rank
	Institutions	45.0	108		Business sophistication	14.4	[129]
1.1	Political environment	49.2	97	5.1	Knowledge workers	19.9	[95]
1.1.1	Political and operational stability*	63.6	81	5.1.1	Knowledge-intensive employment, %	14.1	92
1.1.2	Government effectiveness*	34.8	109	5.1.2	Firms offering formal training, %	33.7	48
1.2	Regulatory environment	59.0	82	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	30.2	102	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	28.9	102	5.1.5	Females employed w/advanced degrees, %	0.9	117
1.2.3	Cost of redundancy dismissal	13.9	52	5.2	Innovation linkages	2.8	[130]
1.3	Business environment	26.7	[117]	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 and depth†	n/a	n/a
1.3.2	Entrepreneurship policies and culture*	26.7	54	5.2.3	GERD financed by abroad, % GDP	0.0	69
				5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	75
				5.2.5	Patent families/bn PPP\$ GDP	0.0	101
	Human capital and research	14.9	117	5.3	Knowledge absorption	20.6	107
2.1	Education	36.1	107	5.3.1	Intellectual property payments, % total trade	0.0	109
2.1.1	Expenditure on education, % GDP	4.0	76	5.3.2	High-tech imports, % total trade	6.9	96
2.1.2	Government funding/pupil, secondary, % GDP/cap	15.3	81	5.3.3	ICT services imports, % total trade	0.7	103
2.1.3	School life expectancy, years	12.7	85	5.3.4	FDI net inflows, % GDP	3.6	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	26.2	109				
2.2	Tertiary education	7.8	[112]		Knowledge and technology outputs	5.4	126
2.2.1	Tertiary enrolment, % gross	15.4	102	6.1	Knowledge creation	3.1	117
2.2.2	Graduates in science and engineering, %	n/a	n/a	6.1.1	Patents by origin/bn PPP\$ GDP	0.3	90
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)	0.8	99	6.1.3	Utility models by origin/bn PPP\$ GDP	0.0	78
2.3.1	Researchers, FTE/mn pop.	45.6	96	6.1.4	Scientific and technical articles/bn PPP\$ GDP	9.3	93
2.3.2	Gross expenditure on R&D, % GDP	0.3	83	6.1.5	Citable documents H-index	0.8	128
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	6.2	Knowledge impact	4.8	[122]
2.3.4	QS university ranking, top 3*	0.0	72	6.2.1	Labor productivity growth, %	n/a	n/a
				6.2.2	New businesses/th pop. 15-64	0.9	82
	Infrastructure	26.5	117	6.2.3	Software spending, % GDP	0.1	91
3.1	Information and communication technologies (ICTs)	46.5	114	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	1.4	97
3.1.1	ICT access*	60.1	115	6.2.5	High-tech manufacturing, %	n/a	n/a
3.1.2	ICT use*	24.7	120	6.3	Knowledge diffusion	8.2	109
3.1.3	Government's online service*	50.0	106	6.3.1	Intellectual property receipts, % total trade	0.0	113
3.1.4	E-participation*	51.2	99	6.3.2	Production and export complexity	19.2	106
3.2	General infrastructure	18.7	113	6.3.3	High-tech exports, % total trade	0.1	119
3.2.1	Electricity output, GWh/mn pop.	89.1	126	6.3.4	ICT services exports, % total trade	1.6	76
3.2.2	Logistics performance*	18.6	107				
3.2.3	Gross capital formation, % GDP	26.3	44		Creative outputs	5.4	111
3.3	Ecological sustainability	14.3	129	7.1	Intangible assets	2.8	121
3.3.1	GDP/unit of energy use	3.8	126	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.3.2	Environmental performance*	34.0	95	7.1.2	Trademarks by origin/bn PPP\$ GDP	11.3	107
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.5	81	7.1.3	Global brand value, top 5,000, % GDP	0.0	77
				7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.3	94
	Market sophistication	22.9	105	7.2	Creative goods and services	15.7	[65]
4.1	Credit	31.2	52	7.2.1	Cultural and creative services exports, % total trade	1.4	19
4.1.1	Finance for startups and scaleups*	25.3	68	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
4.1.2	Domestic credit to private sector, % GDP	26.6	103	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
4.1.3	Loans from microfinance institutions, % GDP	4.1	7	7.2.4	Printing and other media, % manufacturing	n/a	n/a
4.2	Investment	n/a	[n/a]	7.2.5	Creative goods exports, % total trade	0.0	117
4.2.1	Market capitalization, % GDP	n/a	n/a	7.3	Online creativity	0.2	120
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.6	104
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.2	Country-code TLDs/th pop. 15-69	0.1	118
4.2.4	Venture capital received, value, % GDP	n/a	n/a	7.3.3	GitHub commit pushes received/mn pop. 15-69	0.2	123
4.3	Trade, diversification, and market scale	14.6	128	7.3.4	Mobile app creation/bn PPP\$ GDP	0.0	116
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\$	20.0	130				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Trinidad and Tobago

101

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
103	95	High	LCN	1.4	35.9	25,526

	Score/Value	Rank		Score/Value	Rank
 Institutions	56.2	66	 Business sophistication	20.5	102
1.1 Political environment	62.2	57	5.1 Knowledge workers	26.0	75
1.1.1 Political and operational stability*	70.9	53	5.1.1 Knowledge-intensive employment, %	29.8	50
1.1.2 Government effectiveness*	53.6	58	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	58.7	85	5.1.3 GERD performed by business, % GDP	0.0	84
1.2.1 Regulatory quality*	41.5	82	5.1.4 GERD financed by business, %	13.6	72
1.2.2 Rule of law*	42.8	69	5.1.5 Females employed w/advanced degrees, %	12.8	60
1.2.3 Cost of redundancy dismissal	20.5	88	5.2 Innovation linkages	18.6	104
1.3 Business environment	47.7	[66]	5.2.1 University-industry R&D collaboration†	33.6	107
1.3.1 Policies for doing business†	47.7	70	5.2.2 State of cluster development and depth†	42.3	95
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.3 GERD financed by abroad, % GDP	0.0	62
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	39
			5.2.5 Patent families/bn PPP\$ GDP	0.0	75
 Human capital and research	23.1	88	5.3 Knowledge absorption	16.9	129
2.1 Education	45.2	81	5.3.1 Intellectual property payments, % total trade	0.5	67
2.1.1 Expenditure on education, % GDP	4.1	73	5.3.2 High-tech imports, % total trade	6.4	100
2.1.2 Government funding/pupil, secondary, % GDP/cap	18.5	61	5.3.3 ICT services imports, % total trade	0.6	106
2.1.3 School life expectancy, years	n/a	n/a	5.3.4 FDI net inflows, % GDP	-0.9	123
2.1.4 PISA scales in reading, maths and science	423.0	54	5.3.5 Research talent, % in businesses	1.4	77
2.1.5 Pupil-teacher ratio, secondary	13.3	57			
2.2 Tertiary education	n/a	[n/a]	 Knowledge and technology outputs	14.5	87
2.2.1 Tertiary enrolment, % gross	n/a	n/a	6.1 Knowledge creation	3.4	115
2.2.2 Graduates in science and engineering, %	n/a	n/a	6.1.1 Patents by origin/bn PPP\$ GDP	0.0	125
2.2.3 Tertiary inbound mobility, %	n/a	n/a	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	74
2.3 Research and development (R&D)	1.1	94	6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	71
2.3.1 Researchers, FTE/mn pop.	491.8	69	6.1.4 Scientific and technical articles/bn PPP\$ GDP	8.2	99
2.3.2 Gross expenditure on R&D, % GDP	0.1	109	6.1.5 Citable documents H-index	4.0	105
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38	6.2 Knowledge impact	20.4	[91]
2.3.4 QS university ranking, top 3*	0.0	72	6.2.1 Labor productivity growth, %	-1.1	105
			6.2.2 New businesses/th pop. 15-64	4.5	32
			6.2.3 Software spending, % GDP	n/a	n/a
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	2.4	80
			6.2.5 High-tech manufacturing, %	n/a	n/a
			6.3 Knowledge diffusion	19.6	75
			6.3.1 Intellectual property receipts, % total trade	0.1	51
			6.3.2 Production and export complexity	44.7	51
			6.3.3 High-tech exports, % total trade	1.9	62
			6.3.4 ICT services exports, % total trade	0.2	125
			 Creative outputs	4.5	117
			7.1 Intangible assets	6.7	112
			7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
			7.1.2 Trademarks by origin/bn PPP\$ GDP	25.6	85
			7.1.3 Global brand value, top 5,000, % GDP	0.0	77
			7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.4	88
			7.2 Creative goods and services	1.7	[117]
			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 Printing and other media, % manufacturing	n/a	n/a
			7.2.5 Creative goods exports, % total trade	0.1	84
			7.3 Online creativity	2.8	76
			7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	4.3	56
			7.3.2 Country-code TLDs/th pop. 15-69	1.1	84
			7.3.3 GitHub commit pushes received/mn pop. 15-69	2.9	73
			7.3.4 Mobile app creation/bn PPP\$ GDP	n/a	n/a
 Market sophistication	14.2	[123]			
4.1 Credit	15.6	[98]			
4.1.1 Finance for startups and scaleups*	n/a	n/a			
4.1.2 Domestic credit to private sector, % GDP	45.0	77			
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a			
4.2 Investment	4.8	[81]			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	50			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a			
4.2.4 Venture capital received, value, % GDP	n/a	n/a			
4.3 Trade, diversification, and market scale	22.4	124			
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\$	35.9	119			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Tunisia








73

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
59	89	Lower middle	NAWA	11.9	128.8	10,720

		Score/Value	Rank			Score/Value	Rank
Institutions		48.4	92	Business sophistication		17.9	116
1.1	Political environment	52.7	93	5.1	Knowledge workers	19.0	99
1.1.1	Political and operational stability*	60.0	97	5.1.1	Knowledge-intensive employment, %	15.9	87
1.1.2	Government effectiveness*	45.3	82	5.1.2	Firms offering formal training, %	19.1	81
1.2	Regulatory environment	57.9	87	5.1.3	GERD performed by business, % GDP	0.1	59
1.2.1	Regulatory quality*	35.8	93	5.1.4	GERD financed by business, %	18.9	67
1.2.2	Rule of law*	49.6	56	5.1.5	Females employed w/advanced degrees, %	8.8	78
1.2.3	Cost of redundancy dismissal	21.6	93	5.2	Innovation linkages	16.5	115
1.3	Business environment	34.6	[96]	5.2.1	University-industry R&D collaboration†	33.8	105
1.3.1	Policies for doing business†	34.6	106	5.2.2	State of cluster development and depth†	39.5	107
1.3.2	Entrepreneurship policies and culture*	n/a	n/a	5.2.3	GERD financed by abroad, % GDP	0.0	58
Human capital and research		37.4	45	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	88
2.1	Education	65.0	14	5.2.5	Patent families/bn PPP\$ GDP	0.0	85
2.1.1	Expenditure on education, % GDP	7.3	7	5.3	Knowledge absorption	18.1	122
2.1.2	Government funding/pupil, secondary, % GDP/cap	49.4	1	5.3.1	Intellectual property payments, % total trade	0.1	103
2.1.3	School life expectancy, years	15.1	49	5.3.2	High-tech imports, % total trade	9.3	49
2.1.4	PISA scales in reading, maths and science	371.4	73	5.3.3	ICT services imports, % total trade	0.4	115
2.1.5	Pupil-teacher ratio, secondary	14.4	66	5.3.4	FDI net inflows, % GDP	1.9	78
2.2	Tertiary education	41.8	32	5.3.5	Research talent, % in businesses	5.2	69
2.2.1	Tertiary enrolment, % gross	32.8	82	Knowledge and technology outputs		25.3	53
2.2.2	Graduates in science and engineering, %	38.3	5	6.1	Knowledge creation	23.2	39
2.2.3	Tertiary inbound mobility, %	3.1	67	6.1.1	Patents by origin/bn PPP\$ GDP	1.4	53
2.3	Research and development (R&D)	5.4	70	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	61
2.3.1	Researchers, FTE/mn pop.	1,659.9	46	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	48.2	12
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	6.1.5	Citable documents H-index	11.2	67
2.3.4	QS university ranking, top 3*	0.0	72	6.2	Knowledge impact	26.6	68
Infrastructure		37.2	85	6.2.1	Labor productivity growth, %	-0.2	94
3.1	Information and communication technologies (ICTs)	68.4	80	6.2.2	New businesses/th pop. 15-64	2.0	59
3.1.1	ICT access*	83.5	73	6.2.3	Software spending, % GDP	0.3	42
3.1.2	ICT use*	58.6	76	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	9.0	32
3.1.3	Government's online service*	62.4	83	6.2.5	High-tech manufacturing, %	24.3	52
3.1.4	E-participation*	69.0	73	6.3	Knowledge diffusion	26.1	55
3.2	General infrastructure	15.2	121	6.3.1	Intellectual property receipts, % total trade	0.1	56
3.2.1	Electricity output, GWh/mn pop.	1,887.2	85	6.3.2	Production and export complexity	50.0	45
3.2.2	Logistics performance*	24.2	97	6.3.3	High-tech exports, % total trade	4.0	43
3.2.3	Gross capital formation, % GDP	13.1	123	6.3.4	ICT services exports, % total trade	1.3	79
3.3	Ecological sustainability	28.1	56	Creative outputs		20.3	61
3.3.1	GDP/unit of energy use	10.8	62	7.1	Intangible assets	37.5	[43]
3.3.2	Environmental performance*	40.7	71	7.1.1	Intangible asset intensity, top 15, %	44.9	57
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	2.5	36	7.1.2	Trademarks by origin/bn PPP\$ GDP	n/a	n/a
Market sophistication		23.9	98	7.1.3	Global brand value, top 5,000, % GDP	n/a	n/a
4.1	Credit	23.7	75	7.1.4	Industrial designs by origin/bn PPP\$ GDP	1.7	51
4.1.1	Finance for startups and scaleups*	n/a	n/a	7.2	Creative goods and services	4.0	103
4.1.2	Domestic credit to private sector, % GDP	81.7	41	7.2.1	Cultural and creative services exports, % total trade	0.0	104
4.1.3	Loans from microfinance institutions, % GDP	1.2	24	7.2.2	National feature films/mn pop. 15-69	0.2	75
4.2	Investment	5.2	74	7.2.3	Entertainment and media market/th pop. 15-69	0.7	59
4.2.1	Market capitalization, % GDP	20.2	60	7.2.4	Printing and other media, % manufacturing	n/a	n/a
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	52	7.2.5	Creative goods exports, % total trade	1.2	39
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	54	7.3	Online creativity	2.4	80
4.2.4	Venture capital received, value, % GDP	0.0	87	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	2.7	67
4.3	Trade, diversification, and market scale	42.7	95	7.3.2	Country-code TLDs/th pop. 15-69	1.7	72
4.3.1	Applied tariff rate, weighted avg., %	9.3	116	7.3.3	GitHub commit pushes received/mn pop. 15-69	4.6	61
4.3.2	Domestic industry diversification	86.0	56	7.3.4	Mobile app creation/bn PPP\$ GDP	0.4	86
4.3.3	Domestic market scale, bn PPP\$	128.8	79				

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
33	49	Upper middle	NAWA	85.0	2,873.8	33,963

	Score/Value	Rank		Score/Value	Rank
 Institutions	46.8	101 ○	 Business sophistication	32.5	47
1.1 Political environment	55.3	81	5.1 Knowledge workers	38.1	52
1.1.1 Political and operational stability*	61.8	87 ○	5.1.1 Knowledge-intensive employment, %	24.0	63
1.1.2 Government effectiveness*	48.8	73	5.1.2 Firms offering formal training, %	30.7	54
1.2 Regulatory environment	48.8	109 ○ ◇	5.1.3 GERD performed by business, % GDP	0.7	33 ◆
1.2.1 Regulatory quality*	44.7	74	5.1.4 GERD financed by business, %	57.2	17 ◆
1.2.2 Rule of law*	36.8	83	5.1.5 Females employed w/advanced degrees, %	11.0	68
1.2.3 Cost of redundancy dismissal	29.8	119 ○ ◇	5.2 Innovation linkages	21.5	75
1.3 Business environment	36.4	92	5.2.1 University-industry R&D collaboration†	43.1	68
1.3.1 Policies for doing business†	38.4	99 ○	5.2.2 State of cluster development and depth†	48.9	58
1.3.2 Entrepreneurship policies and culture*	34.3	47	5.2.3 GERD financed by abroad, % GDP	0.0	60
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	116 ○
			5.2.5 Patent families/bn PPP\$ GDP	0.3	38 ◆
 Human capital and research	38.9	41 ◆	5.3 Knowledge absorption	37.9	44
2.1 Education	52.5	66	5.3.1 Intellectual property payments, % total trade	0.9	44
2.1.1 Expenditure on education, % GDP	4.3	65	5.3.2 High-tech imports, % total trade	9.2	51
2.1.2 Government funding/pupil, secondary, % GDP/cap	13.2	87 ○	5.3.3 ICT services imports, % total trade	0.8	92
2.1.3 School life expectancy, years	18.3	11 ◆ ◆	5.3.4 FDI net inflows, % GDP	1.3	91
2.1.4 PISA scales in reading, maths and science	462.5	41	5.3.5 Research talent, % in businesses	64.9	7 ◆ ◆
2.1.5 Pupil-teacher ratio, secondary	15.5	77			
2.2 Tertiary education	33.8	56	 Knowledge and technology outputs	27.4	47
2.2.1 Tertiary enrolment, % gross	115.0	2 ◆ ◆	6.1 Knowledge creation	24.6	37
2.2.2 Graduates in science and engineering, %	15.2	97 ○	6.1.1 Patents by origin/bn PPP\$ GDP	3.3	24
2.2.3 Tertiary inbound mobility, %	2.0	78	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.6	31
2.3 Research and development (R&D)	30.3	36 ◆	6.1.3 Utility models by origin/bn PPP\$ GDP	1.4	17
2.3.1 Researchers, FTE/mn pop.	1,775.3	42 ◆	6.1.4 Scientific and technical articles/bn PPP\$ GDP	16.8	60
2.3.2 Gross expenditure on R&D, % GDP	1.1	39 ◆	6.1.5 Citable documents H-index	29.3	35 ◆
2.3.3 Global corporate R&D investors, top 3, mn USD	48.5	29 ◆	6.2 Knowledge impact	34.9	39
2.3.4 QS university ranking, top 3*	22.4	46	6.2.1 Labor productivity growth, %	3.5	10 ◆ ◆
			6.2.2 New businesses/th pop. 15-64	1.8	63
			6.2.3 Software spending, % GDP	0.5	20 ◆
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	3.4	70
			6.2.5 High-tech manufacturing, %	31.5	40
 Infrastructure	49.2	48	6.3 Knowledge diffusion	22.8	67
3.1 Information and communication technologies (ICTs)	82.2	38	6.3.1 Intellectual property receipts, % total trade	0.1	66
3.1.1 ICT access*	87.5	64	6.3.2 Production and export complexity	56.0	40
3.1.2 ICT use*	66.3	60	6.3.3 High-tech exports, % total trade	1.9	63
3.1.3 Government's online service*	85.9	22 ◆	6.3.4 ICT services exports, % total trade	0.7	93
3.1.4 E-participation*	89.3	23 ◆			
3.2 General infrastructure	39.0	41 ◆	 Creative outputs	41.5	15 ◆ ◆
3.2.1 Electricity output, GWh/mn pop.	3,662.7	57	7.1 Intangible assets	72.2	4 ◆ ◆
3.2.2 Logistics performance*	51.2	44	7.1.1 Intangible asset intensity, top 15, %	72.8	15
3.2.3 Gross capital formation, % GDP	32.1	16 ◆ ◆	7.1.2 Trademarks by origin/bn PPP\$ GDP	130.2	6 ◆ ◆
3.3 Ecological sustainability	26.5	61	7.1.3 Global brand value, top 5,000, % GDP	14.8	51
3.3.1 GDP/unit of energy use	16.1	17 ◆ ◆	7.1.4 Industrial designs by origin/bn PPP\$ GDP	16.5	1 ◆ ◆
3.3.2 Environmental performance*	26.3	125 ○ ◇	7.2 Creative goods and services	13.2	72
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	1.2	66	7.2.1 Cultural and creative services exports, % total trade	0.2	77
			7.2.2 National feature films/mn pop. 15-69	2.4	44
			7.2.3 Entertainment and media market/th pop. 15-69	4.3	48 ○
			7.2.4 Printing and other media, % manufacturing	0.7	70
			7.2.5 Creative goods exports, % total trade	2.6	19
 Market sophistication	41.6	37	7.3 Online creativity	8.6	48
4.1 Credit	34.9	39	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	11.3	37
4.1.1 Finance for startups and scaleups*	42.4	35	7.3.2 Country-code TLDs/th pop. 15-69	2.2	67
4.1.2 Domestic credit to private sector, % GDP	75.1	44	7.3.3 GitHub commit pushes received/mn pop. 15-69	3.6	68
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	17.2	17 ◆
4.2 Investment	7.9	61			
4.2.1 Market capitalization, % GDP	25.5	53			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	76 ○			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	76 ○			
4.2.4 Venture capital received, value, % GDP	0.0	33			
4.3 Trade, diversification, and market scale	81.9	11 ◆ ◆			
4.3.1 Applied tariff rate, weighted avg., %	2.8	71			
4.3.2 Domestic industry diversification	99.7	3 ◆			
4.3.3 Domestic market scale, bn PPP\$	2,873.8	11 ◆ ◆			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Uganda

119

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
120	116	Low	SSA	47.1	115.9	2,729

Institutions		Score/Value	Rank
1.1 Political environment		48.6	100
1.1.1	Political and operational stability*	60.0	97
1.1.2	Government effectiveness*	37.3	104
1.2 Regulatory environment		67.3	60 ●◆
1.2.1	Regulatory quality*	34.2	97
1.2.2	Rule of law*	37.5	79
1.2.3	Cost of redundancy dismissal	8.7	20 ●◆
1.3 Business environment		56.6	[38]
1.3.1	Policies for doing business†	⊙ 56.6	47 ●
1.3.2	Entrepreneurship policies and culture*	n/a	n/a

Human capital and research		Score/Value	Rank
2.1 Education		16.1	[131]
2.1.1	Expenditure on education, % GDP	2.7	115 ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a
2.1.3	School life expectancy, years	n/a	n/a
2.1.4	PISA scales in reading, maths and science	n/a	n/a
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a
2.2 Tertiary education		14.6	103
2.2.1	Tertiary enrolment, % gross	⊙ 5.1	125 ○
2.2.2	Graduates in science and engineering, %	n/a	n/a
2.2.3	Tertiary inbound mobility, %	⊙ 10.7	21 ●◆
2.3 Research and development (R&D)		0.4	107
2.3.1	Researchers, FTE/mn pop.	⊙ 27.8	103 ○
2.3.2	Gross expenditure on R&D, % GDP	⊙ 0.1	97
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇
2.3.4	QS university ranking, top 3*	0.0	72 ○ ◇

Infrastructure		Score/Value	Rank
3.1 Information and communication technologies (ICTs)		48.4	106 ●◆
3.1.1	ICT access*	51.9	120
3.1.2	ICT use*	26.4	118
3.1.3	Government's online service*	58.2	90 ●◆
3.1.4	E-participation*	57.1	90 ●◆
3.2 General infrastructure		21.4	101
3.2.1	Electricity output, GWh/mn pop.	⊙ 98.7	124 ○
3.2.2	Logistics performance*	24.7	92
3.2.3	Gross capital formation, % GDP	27.4	33 ●
3.3 Ecological sustainability		16.3	118
3.3.1	GDP/unit of energy use	5.4	117
3.3.2	Environmental performance*	35.8	87 ●◆
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.4	93

Market sophistication		Score/Value	Rank
4.1 Credit		3.8	126 ○
4.1.1	Finance for startups and scaleups*	n/a	n/a
4.1.2	Domestic credit to private sector, % GDP	14.2	119
4.1.3	Loans from microfinance institutions, % GDP	0.3	48
4.2 Investment		4.0	86
4.2.1	Market capitalization, % GDP	n/a	n/a
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	87 ●◆
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	51
4.2.4	Venture capital received, value, % GDP	0.0	73
4.3 Trade, diversification, and market scale		25.0	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\$	115.9	83

Business sophistication		Score/Value	Rank
5.1 Knowledge workers		10.1	119
5.1.1	Knowledge-intensive employment, %	⊙ 6.7	117 ○
5.1.2	Firms offering formal training, %	⊙ 34.7	46 ●◆
5.1.3	GERD performed by business, % GDP	⊙ 0.0	87 ○
5.1.4	GERD financed by business, %	⊙ 3.4	85
5.1.5	Females employed w/advanced degrees, %	⊙ 0.1	126 ○ ◇
5.2 Innovation linkages		20.7	86
5.2.1	University-industry R&D collaboration†	⊙ 43.1	67 ●◆
5.2.2	State of cluster development and depth†	⊙ 43.3	86
5.2.3	GERD financed by abroad, % GDP	⊙ 0.1	42 ●
5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	99
5.2.5	Patent families/bn PPP\$ GDP	0.0	79 ●◆
5.3 Knowledge absorption		17.2	127 ○ ◇
5.3.1	Intellectual property payments, % total trade	0.2	91
5.3.2	High-tech imports, % total trade	7.3	86
5.3.3	ICT services imports, % total trade	0.4	117 ◇
5.3.4	FDI net inflows, % GDP	3.0	43 ●
5.3.5	Research talent, % in businesses	⊙ 4.0	72

Knowledge and technology outputs		Score/Value	Rank
6.1 Knowledge creation		8.0	85
6.1.1	Patents by origin/bn PPP\$ GDP	0.1	106
6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	82 ●◆
6.1.3	Utility models by origin/bn PPP\$ GDP	0.2	53
6.1.4	Scientific and technical articles/bn PPP\$ GDP	17.6	55 ●◆
6.1.5	Citable documents H-index	9.6	77 ●◆
6.2 Knowledge impact		16.5	103
6.2.1	Labor productivity growth, %	1.5	47 ●
6.2.2	New businesses/th pop. 15-64	⊙ 0.9	85
6.2.3	Software spending, % GDP	0.0	120 ○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	1.3	101
6.2.5	High-tech manufacturing, %	n/a	n/a
6.3 Knowledge diffusion		8.5	108
6.3.1	Intellectual property receipts, % total trade	0.2	47 ●◆
6.3.2	Production and export complexity	20.8	101
6.3.3	High-tech exports, % total trade	0.2	112
6.3.4	ICT services exports, % total trade	0.4	103 ◇

Creative outputs		Score/Value	Rank
7.1 Intangible assets		3.9	118
7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
7.1.2	Trademarks by origin/bn PPP\$ GDP	14.7	98
7.1.3	Global brand value, top 5,000, % GDP	0.0	77 ○ ◇
7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.4	86
7.2 Creative goods and services		0.9	[124]
7.2.1	Cultural and creative services exports, % total trade	0.0	93
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	Printing and other media, % manufacturing	n/a	n/a
7.2.5	Creative goods exports, % total trade	0.1	103
7.3 Online creativity		0.3	116
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.2	114
7.3.2	Country-code TLDs/th pop. 15-69	0.1	120
7.3.3	GitHub commit pushes received/mn pop. 15-69	0.7	109 ●◆
7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	n/a

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Ukraine

57

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
48	75	Lower middle	EUR	43.5	584.1	14,146

Institutions		Score/Value	Rank
47.4			97
1.1 Political environment		46.5	107
1.1.1 Political and operational stability*		50.9	121 ○ ◇
1.1.2 Government effectiveness*		42.0	90
1.2 Regulatory environment		61.6	75
1.2.1 Regulatory quality*		37.5	91
1.2.2 Rule of law*		28.7	103
1.2.3 Cost of redundancy dismissal		13.0	41
1.3 Business environment		34.1	[99]
1.3.1 Policies for doing business [†]		34.1	108
1.3.2 Entrepreneurship policies and culture*		n/a	n/a

Human capital and research		Score/Value	Rank
36.6			49 ◆
2.1 Education		61.9	26 ● ◆
2.1.1 Expenditure on education, % GDP	○	5.4	27 ◆
2.1.2 Government funding/pupil, secondary, % GDP/cap		29.4	12 ● ◆
2.1.3 School life expectancy, years	○	14.9	56 ◆
2.1.4 PISA scales in reading, maths and science		462.7	40 ◆
2.1.5 Pupil-teacher ratio, secondary		8.1	11 ● ◆
2.2 Tertiary education		38.3	40 ◆
2.2.1 Tertiary enrolment, % gross	○	82.7	19 ● ◆
2.2.2 Graduates in science and engineering, %		24.3	41
2.2.3 Tertiary inbound mobility, %		4.0	57
2.3 Research and development (R&D)		9.6	59
2.3.1 Researchers, FTE/mn pop.		846.2	54
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	38 ○ ◇
2.3.4 QS university ranking, top 3*		20.3	48 ◆

Infrastructure		Score/Value	Rank
38.7			82 ◆
3.1 Information and communication technologies (ICTs)		74.9	63 ◆
3.1.1 ICT access*		86.6	66 ◆
3.1.2 ICT use*		63.8	62 ◆
3.1.3 Government's online service*		68.2	72
3.1.4 E-participation*		81.0	46 ◆
3.2 General infrastructure		19.6	111
3.2.1 Electricity output, GWh/mn pop.		3,193.1	60 ◆
3.2.2 Logistics performance*		36.3	65
3.2.3 Gross capital formation, % GDP		10.3	125 ○ ◇
3.3 Ecological sustainability		21.5	86
3.3.1 GDP/unit of energy use		5.4	116 ○ ◇
3.3.2 Environmental performance*		49.6	43 ◆
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP		0.6	78

Market sophistication		Score/Value	Rank
23.4			102
4.1 Credit		5.3	124 ○
4.1.1 Finance for startups and scaleups*		n/a	n/a
4.1.2 Domestic credit to private sector, % GDP		28.4	97
4.1.3 Loans from microfinance institutions, % GDP		0.1	53 ○
4.2 Investment		1.4	107 ○
4.2.1 Market capitalization, % GDP	○	4.3	78 ○
4.2.2 Venture capital investors, deals/bn PPP\$ GDP		0.0	62
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP		0.0	99 ○ ◇
4.2.4 Venture capital received, value, % GDP		0.0	88 ○
4.3 Trade, diversification, and market scale		63.6	37 ◆
4.3.1 Applied tariff rate, weighted avg., %		1.7	52 ◆
4.3.2 Domestic industry diversification		88.7	47
4.3.3 Domestic market scale, bn PPP\$		584.1	39

Business sophistication		Score/Value	Rank
32.3			48 ◆
5.1 Knowledge workers		45.2	42 ◆
5.1.1 Knowledge-intensive employment, %	○	37.6	38 ◆
5.1.2 Firms offering formal training, %		24.3	66
5.1.3 GERD performed by business, % GDP	○	0.3	50 ◆
5.1.4 GERD financed by business, %	○	30.5	60
5.1.5 Females employed w/advanced degrees, %	○	30.2	2 ● ◆
5.2 Innovation linkages		21.3	78
5.2.1 University-industry R&D collaboration [†]		41.5	73
5.2.2 State of cluster development and depth [†]		39.9	104
5.2.3 GERD financed by abroad, % GDP	○	0.1	36 ◆
5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	122 ○
5.2.5 Patent families/bn PPP\$ GDP		0.2	46 ◆
5.3 Knowledge absorption		30.6	63
5.3.1 Intellectual property payments, % total trade		0.9	47 ◆
5.3.2 High-tech imports, % total trade		9.4	47
5.3.3 ICT services imports, % total trade		1.2	79
5.3.4 FDI net inflows, % GDP		2.6	56
5.3.5 Research talent, % in businesses	○	27.3	46

Knowledge and technology outputs		Score/Value	Rank
32.9			36 ◆
6.1 Knowledge creation		30.4	29 ◆
6.1.1 Patents by origin/bn PPP\$ GDP		2.5	29
6.1.2 PCT patents by origin/bn PPP\$ GDP		0.2	49 ◆
6.1.3 Utility models by origin/bn PPP\$ GDP		9.3	1 ● ◆
6.1.4 Scientific and technical articles/bn PPP\$ GDP		8.7	97
6.1.5 Citable documents H-index		16.5	51
6.2 Knowledge impact		32.8	48 ◆
6.2.1 Labor productivity growth, %		2.7	25
6.2.2 New businesses/th pop. 15-64	○	1.7	65
6.2.3 Software spending, % GDP		0.6	9 ● ◆
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP		3.0	76
6.2.5 High-tech manufacturing, %		21.0	61
6.3 Knowledge diffusion		35.4	42 ◆
6.3.1 Intellectual property receipts, % total trade		0.1	50
6.3.2 Production and export complexity		48.6	47 ◆
6.3.3 High-tech exports, % total trade		1.9	64
6.3.4 ICT services exports, % total trade		8.5	7 ● ◆






Creative outputs		Score/Value	Rank
19.8			63
7.1 Intangible assets		29.7	62
7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
7.1.2 Trademarks by origin/bn PPP\$ GDP		70.6	26 ● ◆
7.1.3 Global brand value, top 5,000, % GDP		3.1	71
7.1.4 Industrial designs by origin/bn PPP\$ GDP		5.9	19 ●
7.2 Creative goods and services		8.9	87
7.2.1 Cultural and creative services exports, % total trade		0.7	43
7.2.2 National feature films/mn pop. 15-69		0.5	69 ○
7.2.3 Entertainment and media market/th pop. 15-69		n/a	n/a
7.2.4 Printing and other media, % manufacturing		0.8	64
7.2.5 Creative goods exports, % total trade		0.2	82
7.3 Online creativity		11.0	42 ◆
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		4.5	55 ◆
7.3.2 Country-code TLDs/th pop. 15-69		5.1	55 ◆
7.3.3 GitHub commit pushes received/mn pop. 15-69		14.3	37 ◆
7.3.4 Mobile app creation/bn PPP\$ GDP		20.1	13 ● ◆

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ○ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

United Arab Emirates

31

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
52	18	High	NAWA	10.0	699.4	74,245

		Score/ Value	Rank			Score/ Value	Rank
	Institutions	83.5	6 ●◆		Business sophistication	48.2	26
1.1	Political environment	75.5	33	5.1	Knowledge workers	50.2	29
1.1.1	Political and operational stability*	72.7	46	5.1.1	Knowledge-intensive employment, %	⊙ 41.7	27
1.1.2	Government effectiveness*	78.3	22	5.1.2	Firms offering formal training, %	n/a	n/a
1.2	Regulatory environment	85.5	18	5.1.3	GERD performed by business, % GDP	⊙ 0.8	31
1.2.1	Regulatory quality*	72.0	30	5.1.4	GERD financed by business, %	⊙ 74.3	5 ●◆
1.2.2	Rule of law*	69.9	34	5.1.5	Females employed w/advanced degrees, %	⊙ 8.6	80 ○◇
1.2.3	Cost of redundancy dismissal	8.0	1 ●◆	5.2	Innovation linkages	47.8	19
1.3	Business environment	89.4	1 ●◆	5.2.1	University-industry R&D collaboration†	63.1	17
1.3.1	Policies for doing business†	78.8	6 ●◆	5.2.2	State of cluster development and depth†	69.9	5 ●◆
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	14
				5.2.5	Patent families/bn PPP\$ GDP	0.1	57 ○◇
	Human capital and research	55.8	17	5.3	Knowledge absorption	46.6	22
2.1	Education	54.8	57	5.3.1	Intellectual property payments, % total trade	0.7	56
2.1.1	Expenditure on education, % GDP	3.9	84 ○	5.3.2	High-tech imports, % total trade	13.9	17
2.1.2	Government funding/pupil, secondary, % GDP/cap	26.6	17	5.3.3	ICT services imports, % total trade	1.4	66
2.1.3	School life expectancy, years	15.7	42	5.3.4	FDI net inflows, % GDP	4.1	24
2.1.4	PISA scales in reading, maths and science	433.5	47 ○◇	5.3.5	Research talent, % in businesses	⊙ 77.9	2 ●◆
2.1.5	Pupil-teacher ratio, secondary	9.6	25				
2.2	Tertiary education	71.5	1 ●◆		Knowledge and technology outputs	23.3	59 ○◇
2.2.1	Tertiary enrolment, % gross	53.7	60	6.1	Knowledge creation	6.2	97 ○◇
2.2.2	Graduates in science and engineering, %	33.1	13 ●◆	6.1.1	Patents by origin/bn PPP\$ GDP	0.1	113 ○
2.2.3	Tertiary inbound mobility, %	73.0	1 ●◆	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.2	55
2.3	Research and development (R&D)	41.2	25	6.1.3	Utility models by origin/bn PPP\$ GDP	0.0	76 ○◇
2.3.1	Researchers, FTE/mn pop.	2,442.5	34	6.1.4	Scientific and technical articles/bn PPP\$ GDP	10.0	88 ○◇
2.3.2	Gross expenditure on R&D, % GDP	1.4	28	6.1.5	Citable documents H-index	13.2	59
2.3.3	Global corporate R&D investors, top 3, mn USD	59.6	23	6.2	Knowledge impact	27.1	67
2.3.4	QS university ranking, top 3*	36.8	33	6.2.1	Labor productivity growth, %	0.7	71 ○
				6.2.2	New businesses/th pop. 15-64	2.3	53
	Infrastructure	63.2	7 ●◆	6.2.3	Software spending, % GDP	0.3	44
3.1	Information and communication technologies (ICTs)	90.2	13	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	5.8	49
3.1.1	ICT access*	98.2	3 ●◆	6.2.5	High-tech manufacturing, %	26.4	47
3.1.2	ICT use*	78.7	25	6.3	Knowledge diffusion	36.4	40
3.1.3	Government's online service*	90.0	15	6.3.1	Intellectual property receipts, % total trade	1.0	21
3.1.4	E-participation*	94.0	16	6.3.2	Production and export complexity	31.4	80 ○◇
3.2	General infrastructure	64.6	4 ●◆	6.3.3	High-tech exports, % total trade	10.9	16
3.2.1	Electricity output, GWh/mn pop.	⊙ 14,170.9	8 ●◆	6.3.4	ICT services exports, % total trade	2.6	51
3.2.2	Logistics performance*	88.8	11 ●◆				
3.2.3	Gross capital formation, % GDP	25.4	52		Creative outputs	26.4	45
3.3	Ecological sustainability	34.8	42	7.1	Intangible assets	33.5	54
3.3.1	GDP/unit of energy use	12.4	43	7.1.1	Intangible asset intensity, top 15, %	63.9	34
3.3.2	Environmental performance*	52.4	34	7.1.2	Trademarks by origin/bn PPP\$ GDP	9.7	110 ○◇
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	3.0	29	7.1.3	Global brand value, top 5,000, % GDP	131.5	12
				7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.1	115 ○◇
	Market sophistication	46.4	23	7.2	Creative goods and services	30.3	30
4.1	Credit	40.8	27	7.2.1	Cultural and creative services exports, % total trade	n/a	n/a
4.1.1	Finance for startups and scaleups*	48.9	16	7.2.2	National feature films/mn pop. 15-69	0.8	63 ○◇
4.1.2	Domestic credit to private sector, % GDP	88.4	34	7.2.3	Entertainment and media market/th pop. 15-69	23.3	26
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.4	Printing and other media, % manufacturing	1.3	31
4.2	Investment	35.8	20	7.2.5	Creative goods exports, % total trade	5.2	11 ●◆
4.2.1	Market capitalization, % GDP	65.4	28	7.3	Online creativity	8.4	50 ○◇
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.2	19	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	11.2	38
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.1	18	7.3.2	Country-code TLDs/th pop. 15-69	7.5	44
4.2.4	Venture capital received, value, % GDP	0.0	11	7.3.3	GitHub commit pushes received/mn pop. 15-69	5.1	57 ○◇
4.3	Trade, diversification, and market scale	62.5	41	7.3.4	Mobile app creation/bn PPP\$ GDP	9.8	41
4.3.1	Applied tariff rate, weighted avg., %	3.3	75				
4.3.2	Domestic industry diversification	93.2	32				
4.3.3	Domestic market scale, bn PPP\$	699.4	33				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

United Kingdom

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
3	7	High	EUR	68.2	3,276.1	48,693

Institutions		Score/Value	Rank
74.5			24
1.1 Political environment		76.9	28 ◊
1.1.1 Political and operational stability*		74.5	42 ◊
1.1.2 Government effectiveness*		79.4	19
1.2 Regulatory environment		90.4	11
1.2.1 Regulatory quality*		81.9	15
1.2.2 Rule of law*		84.9	18
1.2.3 Cost of redundancy dismissal		9.3	24
1.3 Business environment		56.0	43 ◊
1.3.1 Policies for doing business [†]		59.3	41 ◊
1.3.2 Entrepreneurship policies and culture*		52.7	30 ◊

Human capital and research		Score/Value	Rank
61.5			6 ●
2.1 Education		59.7	40
2.1.1 Expenditure on education, % GDP	⊙	5.2	36
2.1.2 Government funding/pupil, secondary, % GDP/cap		21.7	40 ◊
2.1.3 School life expectancy, years		17.3	16
2.1.4 PISA scales in reading, maths and science		503.5	12
2.1.5 Pupil-teacher ratio, secondary		16.9	82 ◊
2.2 Tertiary education		49.7	11
2.2.1 Tertiary enrolment, % gross		65.8	43
2.2.2 Graduates in science and engineering, %	⊙	26.2	33
2.2.3 Tertiary inbound mobility, %		18.7	8
2.3 Research and development (R&D)		75.1	6 ●
2.3.1 Researchers, FTE/mn pop.	⊙	4,683.8	21
2.3.2 Gross expenditure on R&D, % GDP	⊙	1.7	22
2.3.3 Global corporate R&D investors, top 3, mn USD		84.3	8
2.3.4 QS university ranking, top 3*		98.5	2 ●◆

Infrastructure		Score/Value	Rank
62.9			8
3.1 Information and communication technologies (ICTs)		94.2	2 ●◆
3.1.1 ICT access*		95.9	9
3.1.2 ICT use*		87.3	5 ●◆
3.1.3 Government's online service*		95.9	6 ●
3.1.4 E-participation*		97.6	6
3.2 General infrastructure		44.2	29
3.2.1 Electricity output, GWh/mn pop.		4,633.0	47 ◊
3.2.2 Logistics performance*		90.2	8
3.2.3 Gross capital formation, % GDP		17.1	109 ◊
3.3 Ecological sustainability		50.3	12
3.3.1 GDP/unit of energy use		17.0	14
3.3.2 Environmental performance*		77.7	2 ●◆
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP		4.0	24

Market sophistication		Score/Value	Rank
67.6			5 ●◆
4.1 Credit		51.4	16
4.1.1 Finance for startups and scaleups*		48.3	19
4.1.2 Domestic credit to private sector, % GDP		143.7	12
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a
4.2 Investment		63.2	9
4.2.1 Market capitalization, % GDP	⊙	125.8	9
4.2.2 Venture capital investors, deals/bn PPP\$ GDP		0.5	10
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP		0.2	6 ●◆
4.2.4 Venture capital received, value, % GDP		0.0	9
4.3 Trade, diversification, and market scale		88.1	6 ●◆
4.3.1 Applied tariff rate, weighted avg., %		1.3	16
4.3.2 Domestic industry diversification	⊙	98.9	7
4.3.3 Domestic market scale, bn PPP\$		3,276.1	10 ◆

Business sophistication		Score/Value	Rank
51.7			22
5.1 Knowledge workers		62.6	18
5.1.1 Knowledge-intensive employment, %	⊙	50.6	8
5.1.2 Firms offering formal training, %		n/a	n/a
5.1.3 GERD performed by business, % GDP		1.3	17
5.1.4 GERD financed by business, %		53.6	23
5.1.5 Females employed w/advanced degrees, %	⊙	24.1	22
5.2 Innovation linkages		52.0	14
5.2.1 University-industry R&D collaboration [†]		61.4	22
5.2.2 State of cluster development and depth [†]		59.4	28
5.2.3 GERD financed by abroad, % GDP		0.2	13
5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.2	13
5.2.5 Patent families/bn PPP\$ GDP		2.0	18
5.3 Knowledge absorption		40.6	34 ◊
5.3.1 Intellectual property payments, % total trade		1.9	15
5.3.2 High-tech imports, % total trade		10.9	28
5.3.3 ICT services imports, % total trade		1.7	54 ◊
5.3.4 FDI net inflows, % GDP		0.1	119 ◊
5.3.5 Research talent, % in businesses	⊙	41.8	32 ◊

Knowledge and technology outputs		Score/Value	Rank
55.7			8
6.1 Knowledge creation		61.9	11
6.1.1 Patents by origin/bn PPP\$ GDP		6.0	15
6.1.2 PCT patents by origin/bn PPP\$ GDP		1.8	19
6.1.3 Utility models by origin/bn PPP\$ GDP		n/a	n/a
6.1.4 Scientific and technical articles/bn PPP\$ GDP		46.4	14
6.1.5 Citable documents H-index		100.0	1 ●◆
6.2 Knowledge impact		50.8	6 ●◆
6.2.1 Labor productivity growth, %		0.3	83 ◊
6.2.2 New businesses/th pop. 15-64		18.1	3 ●◆
6.2.3 Software spending, % GDP		0.6	11
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP		8.9	33
6.2.5 High-tech manufacturing, %	⊙	42.6	25
6.3 Knowledge diffusion		54.5	12
6.3.1 Intellectual property receipts, % total trade		2.6	10
6.3.2 Production and export complexity		78.0	12
6.3.3 High-tech exports, % total trade		8.0	23
6.3.4 ICT services exports, % total trade		3.5	32

Creative outputs		Score/Value	Rank
55.9			3 ●◆
7.1 Intangible assets		68.3	6 ●◆
7.1.1 Intangible asset intensity, top 15, %		90.9	4 ●◆
7.1.2 Trademarks by origin/bn PPP\$ GDP		73.9	23
7.1.3 Global brand value, top 5,000, % GDP		169.1	7 ●
7.1.4 Industrial designs by origin/bn PPP\$ GDP		9.2	11
7.2 Creative goods and services		42.3	5 ●◆
7.2.1 Cultural and creative services exports, % total trade		2.6	6 ●
7.2.2 National feature films/mn pop. 15-69		4.0	31 ◊
7.2.3 Entertainment and media market/th pop. 15-69		62.2	6
7.2.4 Printing and other media, % manufacturing	⊙	1.9	15
7.2.5 Creative goods exports, % total trade		2.2	26
7.3 Online creativity		44.8	11
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		61.6	9
7.3.2 Country-code TLDs/th pop. 15-69		68.3	8
7.3.3 GitHub commit pushes received/mn pop. 15-69		34.4	20
7.3.4 Mobile app creation/bn PPP\$ GDP		15.1	24

NOTES: ● indicates a strength; ◊ a weakness; ◆ an income group strength; ◊ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

United Republic of Tanzania

103

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
99	100	Lower middle	SSA	61.5	182.9	3,062

	Score/Value	Rank		Score/Value	Rank
Institutions	54.2	74	Business sophistication	19.0	112
1.1 Political environment	44.7	115	5.1 Knowledge workers	12.2	[116]
1.1.1 Political and operational stability*	56.4	108	5.1.1 Knowledge-intensive employment, %	3.4	125 ○ ◇
1.1.2 Government effectiveness*	33.1	117	5.1.2 Firms offering formal training, %	30.7	54
1.2 Regulatory environment	63.4	68 ● ◆	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	28.5	108	5.1.4 GERD financed by business, %	n/a	n/a
1.2.2 Rule of law*	30.4	100	5.1.5 Females employed w/advanced degrees, %	0.4	123 ○
1.2.3 Cost of redundancy dismissal	9.3	24 ● ◆	5.2 Innovation linkages	26.5	49 ● ◆
1.3 Business environment	54.4	[50]	5.2.1 University-industry R&D collaboration†	50.6	43 ● ◆
1.3.1 Policies for doing business†	54.4	51 ●	5.2.2 State of cluster development and depth†	52.0	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	100
			5.2.5 Patent families/bn PPP\$ GDP	0.0	101 ○ ◇
Human capital and research	10.9	126 ◇	5.3 Knowledge absorption	18.5	121
2.1 Education	29.8	123	5.3.1 Intellectual property payments, % total trade	0	108
2.1.1 Expenditure on education, % GDP	3.3	102	5.3.2 High-tech imports, % total trade	7.4	84
2.1.2 Government funding/pupil, secondary, % GDP/cap	14.9	83	5.3.3 ICT services imports, % total trade	0.3	124
2.1.3 School life expectancy, years	9.2	108 ◇	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	23.3	101			
2.2 Tertiary education	1.3	127 ○ ◇	Knowledge and technology outputs	9.4	114
2.2.1 Tertiary enrolment, % gross	7.8	118	6.1 Knowledge creation	4.6	109
2.2.2 Graduates in science and engineering, %	9.5	109 ○ ◇	6.1.1 Patents by origin/bn PPP\$ GDP	0.0	130 ○
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)	1.6	90	6.1.3 Utility models by origin/bn PPP\$ GDP	0.0	77
2.3.1 Researchers, FTE/mn pop.	19.2	106 ○	6.1.4 Scientific and technical articles/bn PPP\$ GDP	9.8	89
2.3.2 Gross expenditure on R&D, % GDP	0.5	63 ●	6.1.5 Citable documents H-index	9.4	78
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.2 Knowledge impact	17.1	99
2.3.4 QS university ranking, top 3*	0.0	72 ○ ◇	6.2.1 Labor productivity growth, %	3.5	9 ●
			6.2.2 New businesses/th pop. 15-64	0.2	113
			6.2.3 Software spending, % GDP	0.0	123 ○ ◇
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	0.5	118
			6.2.5 High-tech manufacturing, %	6.9	95
			6.3 Knowledge diffusion	6.4	116
			6.3.1 Intellectual property receipts, % total trade	0.0	110
			6.3.2 Production and export complexity	18.1	109
			6.3.3 High-tech exports, % total trade	0.2	102
			6.3.4 ICT services exports, % total trade	0.3	117
			Creative outputs	10.9	[94]
			7.1 Intangible assets	6.5	[113]
			7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
			7.1.2 Trademarks by origin/bn PPP\$ GDP	11.5	106
			7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a
			7.1.4 Industrial designs by origin/bn PPP\$ GDP	n/a	n/a
			7.2 Creative goods and services	30.4	[27]
			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 Printing and other media, % manufacturing	2.3	9 ● ◆
			7.2.5 Creative goods exports, % total trade	0.1	107
			7.3 Online creativity	0.1	124
			7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.1	120
			7.3.2 Country-code TLDs/th pop. 15-69	0.2	113
			7.3.3 GitHub commit pushes received/mn pop. 15-69	0.2	121
			7.3.4 Mobile app creation/bn PPP\$ GDP	0.0	108
Infrastructure	30.7	104			
3.1 Information and communication technologies (ICTs)	46.8	113			
3.1.1 ICT access*	49.2	123 ◇			
3.1.2 ICT use*	26.9	117 ◇			
3.1.3 Government's online service*	55.3	94			
3.1.4 E-participation*	56.0	92			
3.2 General infrastructure	28.4	69 ●			
3.2.1 Electricity output, GWh/mn pop.	135.7	121			
3.2.2 Logistics performance*	n/a	n/a			
3.2.3 Gross capital formation, % GDP	36.5	8 ● ◆			
3.3 Ecological sustainability	16.9	114			
3.3.1 GDP/unit of energy use	6.7	105			
3.3.2 Environmental performance*	34.2	94			
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.2	110			
Market sophistication	28.9	79			
4.1 Credit	51.5	15 ● ◆			
4.1.1 Finance for startups and scaleups*	n/a	n/a			
4.1.2 Domestic credit to private sector, % GDP	13.2	120			
4.1.3 Loans from microfinance institutions, % GDP	14.5	1 ● ◆			
4.2 Investment	2.5	100			
4.2.1 Market capitalization, % GDP	10.4	73			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	91 ◇			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	70			
4.2.4 Venture capital received, value, % GDP	0.0	91			
4.3 Trade, diversification, and market scale	32.7	112			
4.3.1 Applied tariff rate, weighted avg., %	8.9	111			
4.3.2 Domestic industry diversification	52.1	100			
4.3.3 Domestic market scale, bn PPP\$	182.9	71 ●			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

United States of America

2

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
5	2	High	NAC	332.9	22,939.6	69,375

Institutions		Score/Value	Rank
Institutions		80.9	13
1.1 Political environment		78.1	23
1.1.1 Political and operational stability*		78.2	35
1.1.2 Government effectiveness*		78.1	23
1.2 Regulatory environment		89.4	12
1.2.1 Regulatory quality*		76.0	21
1.2.2 Rule of law*		81.6	21
1.2.3 Cost of redundancy dismissal		8.0	1 ●
1.3 Business environment		75.3	11
1.3.1 Policies for doing business†		78.6	7
1.3.2 Entrepreneurship policies and culture*		72.0	13

Human capital and research		Score/Value	Rank
Human capital and research		59.9	9
2.1 Education		58.6	44
2.1.1 Expenditure on education, % GDP	⊙	4.9	46
2.1.2 Government funding/pupil, secondary, % GDP/cap		22.6	36
2.1.3 School life expectancy, years		16.3	30
2.1.4 PISA scales in reading, maths and science		495.3	24
2.1.5 Pupil-teacher ratio, secondary		14.7	72 ○ ◇
2.2 Tertiary education		34.9	48
2.2.1 Tertiary enrolment, % gross		87.9	12
2.2.2 Graduates in science and engineering, %	⊙	19.2	76 ○
2.2.3 Tertiary inbound mobility, %		5.2	48
2.3 Research and development (R&D)		86.1	2 ● ◆
2.3.1 Researchers, FTE/mn pop.	⊙	4,829.1	19
2.3.2 Gross expenditure on R&D, % GDP		3.5	5
2.3.3 Global corporate R&D investors, top 3, mn USD		100.0	1 ● ◆
2.3.4 QS university ranking, top 3*		98.9	1 ● ◆

Infrastructure		Score/Value	Rank
Infrastructure		58.7	19
3.1 Information and communication technologies (ICTs)		92.1	7
3.1.1 ICT access*		89.5	50
3.1.2 ICT use*		84.0	11
3.1.3 Government's online service*		94.7	7
3.1.4 E-participation*		100.0	1 ●
3.2 General infrastructure		58.6	10
3.2.1 Electricity output, GWh/mn pop.		12,816.4	9
3.2.2 Logistics performance*		85.6	14
3.2.3 Gross capital formation, % GDP		21.1	84 ○
3.3 Ecological sustainability		25.4	67 ◇
3.3.1 GDP/unit of energy use		9.5	75 ○
3.3.2 Environmental performance*		51.1	36
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP		0.2	113 ○ ◇

Market sophistication		Score/Value	Rank
Market sophistication		80.8	1 ● ◆
4.1 Credit		69.8	3 ● ◆
4.1.1 Finance for startups and scaleups*		56.3	5 ◆
4.1.2 Domestic credit to private sector, % GDP		215.9	2 ● ◆
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a
4.2 Investment		76.3	5 ◆
4.2.1 Market capitalization, % GDP		166.7	7
4.2.2 Venture capital investors, deals/bn PPP\$ GDP		0.4	12
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP		0.3	1 ● ◆
4.2.4 Venture capital received, value, % GDP		0.0	1 ● ◆
4.3 Trade, diversification, and market scale		96.2	1 ● ◆
4.3.1 Applied tariff rate, weighted avg., %		1.5	49
4.3.2 Domestic industry diversification		98.5	11
4.3.3 Domestic market scale, bn PPP\$		22,939.6	1 ● ◆

Business sophistication		Score/Value	Rank
Business sophistication		64.5	3 ● ◆
5.1 Knowledge workers		75.0	4 ● ◆
5.1.1 Knowledge-intensive employment, %		46.8	18
5.1.2 Firms offering formal training, %		n/a	n/a
5.1.3 GERD performed by business, % GDP		2.6	3 ●
5.1.4 GERD financed by business, %		66.3	6
5.1.5 Females employed w/advanced degrees, %		28.0	8
5.2 Innovation linkages		66.1	4 ● ◆
5.2.1 University-industry R&D collaboration†		79.6	1 ● ◆
5.2.2 State of cluster development and depth†		78.5	1 ● ◆
5.2.3 GERD financed by abroad, % GDP		0.2	12
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
5.3 Knowledge absorption		52.5	10
5.3.1 Intellectual property payments, % total trade		1.6	21
5.3.2 High-tech imports, % total trade		19.2	11 ◆
5.3.3 ICT services imports, % total trade		1.6	57
5.3.4 FDI net inflows, % GDP		1.2	96 ○
5.3.5 Research talent, % in businesses	⊙	72.3	4 ● ◆

Knowledge and technology outputs		Score/Value	Rank
Knowledge and technology outputs		60.8	3 ● ◆
6.1 Knowledge creation		69.6	3 ●
6.1.1 Patents by origin/bn PPP\$ GDP		12.9	1 ● ◆
6.1.2 PCT patents by origin/bn PPP\$ GDP		2.6	13
6.1.3 Utility models by origin/bn PPP\$ GDP		n/a	n/a
6.1.4 Scientific and technical articles/bn PPP\$ GDP		19.3	50 ◇
6.1.5 Citable documents H-index		100.0	1 ● ◆
6.2 Knowledge impact		55.0	2 ● ◆
6.2.1 Labor productivity growth, %		1.5	46
6.2.2 New businesses/th pop. 15-64		n/a	n/a
6.2.3 Software spending, % GDP		1.1	1 ● ◆
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP		1.0	106 ○ ◇
6.2.5 High-tech manufacturing, %		44.3	20
6.3 Knowledge diffusion		57.9	9
6.3.1 Intellectual property receipts, % total trade		4.3	4 ● ◆
6.3.2 Production and export complexity		78.4	11
6.3.3 High-tech exports, % total trade		9.4	18
6.3.4 ICT services exports, % total trade		2.3	56

Creative outputs		Score/Value	Rank
Creative outputs		48.4	12
7.1 Intangible assets		52.8	16
7.1.1 Intangible asset intensity, top 15, %		92.7	1 ● ◆
7.1.2 Trademarks by origin/bn PPP\$ GDP		26.3	81 ○ ◇
7.1.3 Global brand value, top 5,000, % GDP		229.9	2 ● ◆
7.1.4 Industrial designs by origin/bn PPP\$ GDP		1.0	65 ○
7.2 Creative goods and services		44.8	4 ● ◆
7.2.1 Cultural and creative services exports, % total trade		1.8	14
7.2.2 National feature films/mn pop. 15-69		3.5	34
7.2.3 Entertainment and media market/th pop. 15-69		100.0	1 ● ◆
7.2.4 Printing and other media, % manufacturing		1.4	26
7.2.5 Creative goods exports, % total trade		2.8	18
7.3 Online creativity		43.0	14
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		2.1	68 ○ ◇
7.3.3 GitHub commit pushes received/mn pop. 15-69		53.8	7
7.3.4 Mobile app creation/bn PPP\$ GDP		16.2	20

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Uruguay

64

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
76	57	High	LCN	3.5	84.6	23,869

Institutions		Score/Value	Rank
69.4			32
1.1 Political environment		76.0	32
1.1.1 Political and operational stability*		85.5	10 ●
1.1.2 Government effectiveness*		66.5	40
1.2 Regulatory environment		68.1	56 ◇
1.2.1 Regulatory quality*		59.5	43 ◇
1.2.2 Rule of law*		63.7	37
1.2.3 Cost of redundancy dismissal		20.8	90
1.3 Business environment		64.2	26 ●
1.3.1 Policies for doing business†		81.9	5 ●◆
1.3.2 Entrepreneurship policies and culture*		46.5	35

Human capital and research		Score/Value	Rank
29.1			73 ◇
2.1 Education		42.9	88 ◇
2.1.1 Expenditure on education, % GDP	⊙	4.7	51
2.1.2 Government funding/pupil, secondary, % GDP/cap		15.5	80 ◇
2.1.3 School life expectancy, years		16.8	21 ●
2.1.4 PISA scales in reading, maths and science		423.5	52 ◇
2.1.5 Pupil-teacher ratio, secondary		n/a	n/a
2.2 Tertiary education		34.2	53
2.2.1 Tertiary enrolment, % gross		65.2	45
2.2.2 Graduates in science and engineering, %	⊙	17.2	88 ○ ◇
2.2.3 Tertiary inbound mobility, %		n/a	n/a
2.3 Research and development (R&D)		10.3	56 ◇
2.3.1 Researchers, FTE/mn pop.		767.2	59 ◇
2.3.2 Gross expenditure on R&D, % GDP	⊙	0.5	61 ◇
2.3.3 Global corporate R&D investors, top 3, mn USD		0.0	38 ○ ◇
2.3.4 QS university ranking, top 3*		21.8	47

Infrastructure		Score/Value	Rank
46.0			60 ◇
3.1 Information and communication technologies (ICTs)		83.3	32
3.1.1 ICT access*		86.0	68 ◇
3.1.2 ICT use*		77.2	29 ●
3.1.3 Government's online service*		84.1	31
3.1.4 E-participation*		85.7	29
3.2 General infrastructure		22.0	96 ◇
3.2.1 Electricity output, GWh/mn pop.		3,775.2	56
3.2.2 Logistics performance*		29.8	81 ◇
3.2.3 Gross capital formation, % GDP		16.0	115 ○ ◇
3.3 Ecological sustainability		32.8	46
3.3.1 GDP/unit of energy use		13.8	33
3.3.2 Environmental performance*		37.4	83 ◇
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP		3.7	26 ●

Market sophistication		Score/Value	Rank
29.2			77 ◇
4.1 Credit		19.7	85 ◇
4.1.1 Finance for startups and scaleups*		30.6	55 ◇
4.1.2 Domestic credit to private sector, % GDP		27.8	99 ○ ◇
4.1.3 Loans from microfinance institutions, % GDP		n/a	n/a
4.2 Investment		22.5	33
4.2.1 Market capitalization, % GDP		n/a	n/a
4.2.2 Venture capital investors, deals/bn PPP\$ GDP		0.3	13 ●
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP		0.0	82 ○
4.2.4 Venture capital received, value, % GDP		0.0	29
4.3 Trade, diversification, and market scale		45.4	91 ◇
4.3.1 Applied tariff rate, weighted avg., %		5.3	92 ◇
4.3.2 Domestic industry diversification	⊙	68.8	90 ○
4.3.3 Domestic market scale, bn PPP\$		84.6	89

Business sophistication		Score/Value	Rank
28.6			62 ◇
5.1 Knowledge workers		28.4	71 ◇
5.1.1 Knowledge-intensive employment, %	⊙	24.1	62 ◇
5.1.2 Firms offering formal training, %	⊙	53.3	17 ●
5.1.3 GERD performed by business, % GDP	⊙	0.1	61 ◇
5.1.4 GERD financed by business, %		4.6	82 ○ ◇
5.1.5 Females employed w/advanced degrees, %	⊙	10.4	72 ◇
5.2 Innovation linkages		20.7	85 ◇
5.2.1 University-industry R&D collaboration†		42.7	72 ◇
5.2.2 State of cluster development and depth†		45.6	75 ◇
5.2.3 GERD financed by abroad, % GDP	⊙	0.0	57
5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		0.0	68
5.2.5 Patent families/bn PPP\$ GDP		0.1	55 ◇
5.3 Knowledge absorption		36.7	45
5.3.1 Intellectual property payments, % total trade		1.0	42
5.3.2 High-tech imports, % total trade		7.3	87
5.3.3 ICT services imports, % total trade		5.0	4 ●◆
5.3.4 FDI net inflows, % GDP		1.9	79
5.3.5 Research talent, % in businesses	⊙	0.7	80 ○ ◇

Knowledge and technology outputs		Score/Value	Rank
22.4			62 ◇
6.1 Knowledge creation		11.2	70 ◇
6.1.1 Patents by origin/bn PPP\$ GDP	⊙	0.3	89
6.1.2 PCT patents by origin/bn PPP\$ GDP		n/a	n/a
6.1.3 Utility models by origin/bn PPP\$ GDP	⊙	0.3	40
6.1.4 Scientific and technical articles/bn PPP\$ GDP		18.0	53
6.1.5 Citable documents H-index		10.4	70 ◇
6.2 Knowledge impact		28.4	62
6.2.1 Labor productivity growth, %		1.1	60
6.2.2 New businesses/th pop. 15-64		2.3	54
6.2.3 Software spending, % GDP		0.2	65
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP		15.2	19 ●
6.2.5 High-tech manufacturing, %	⊙	15.0	77 ◇
6.3 Knowledge diffusion		27.7	52
6.3.1 Intellectual property receipts, % total trade		0.2	43
6.3.2 Production and export complexity		41.9	61 ◇
6.3.3 High-tech exports, % total trade		0.9	76 ◇
6.3.4 ICT services exports, % total trade		6.2	16 ●







Creative outputs		Score/Value	Rank
13.5			85 ◇
7.1 Intangible assets		13.9	92 ◇
7.1.1 Intangible asset intensity, top 15, %		n/a	n/a
7.1.2 Trademarks by origin/bn PPP\$ GDP		51.8	45
7.1.3 Global brand value, top 5,000, % GDP		0.0	77 ○ ◇
7.1.4 Industrial designs by origin/bn PPP\$ GDP	⊙	0.7	80
7.2 Creative goods and services		17.6	60
7.2.1 Cultural and creative services exports, % total trade		1.1	29
7.2.2 National feature films/mn pop. 15-69		4.2	28
7.2.3 Entertainment and media market/th pop. 15-69		n/a	n/a
7.2.4 Printing and other media, % manufacturing	⊙	1.1	40
7.2.5 Creative goods exports, % total trade		0.1	105 ○
7.3 Online creativity		8.6	49 ◇
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		6.5	50
7.3.2 Country-code TLDs/th pop. 15-69		11.5	40
7.3.3 GitHub commit pushes received/mn pop. 15-69		9.9	44
7.3.4 Mobile app creation/bn PPP\$ GDP		6.3	54

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Uzbekistan

82

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
91	68	Lower middle	CSA	33.9	291.2	8,452

	Score/Value	Rank		Score/Value	Rank
 Institutions	57.3	63	 Business sophistication	25.3	74
1.1 Political environment	52.1	94	5.1 Knowledge workers	28.4	70
1.1.1 Political and operational stability*	65.5	74	5.1.1 Knowledge-intensive employment, %	n/a	n/a
1.1.2 Government effectiveness*	38.8	98	5.1.2 Firms offering formal training, %	16.9	88
1.2 Regulatory environment	50.7	104	5.1.3 GERD performed by business, % GDP	⊙ 0.1	69
1.2.1 Regulatory quality*	21.3	123	5.1.4 GERD financed by business, %	⊙ 42.4	39
1.2.2 Rule of law*	18.5	123	⊙ 13.7	56	◆
1.2.3 Cost of redundancy dismissal	17.3	73	5.2 Innovation linkages	24.7	59
1.3 Business environment	69.2	[21]	5.2.1 University-industry R&D collaboration†	56.0	29
1.3.1 Policies for doing business†	69.2	22	◆	59.9	27
1.3.2 Entrepreneurship policies and culture*	n/a	n/a	5.2.2 State of cluster development and depth†	◆	93
			5.2.3 GERD financed by abroad, % GDP	⊙ 0.0	93
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	66
			5.2.5 Patent families/bn PPP\$ GDP	0.0	91
 Human capital and research	30.8	65	5.3 Knowledge absorption	22.8	100
2.1 Education	57.4	[50]	5.3.1 Intellectual property payments, % total trade	0.4	74
2.1.1 Expenditure on education, % GDP	4.9	45	5.3.2 High-tech imports, % total trade	9.1	54
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.3 ICT services imports, % total trade	0.7	98
2.1.3 School life expectancy, years	12.5	88	5.3.4 FDI net inflows, % GDP	2.6	54
2.1.4 PISA scales in reading, maths and science	n/a	n/a	5.3.5 Research talent, % in businesses	⊙ 12.9	58
2.1.5 Pupil-teacher ratio, secondary	10.9	37			
2.2 Tertiary education	33.9	54	 Knowledge and technology outputs	17.9	80
2.2.1 Tertiary enrolment, % gross	15.9	101	6.1 Knowledge creation	9.1	78
2.2.2 Graduates in science and engineering, %	36.9	6	6.1.1 Patents by origin/bn PPP\$ GDP	1.3	56
2.2.3 Tertiary inbound mobility, %	⊙ 0.2	106	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.0	95
2.3 Research and development (R&D)	1.2	93	6.1.3 Utility models by origin/bn PPP\$ GDP	1.3	18
2.3.1 Researchers, FTE/mn pop.	423.9	73	6.1.4 Scientific and technical articles/bn PPP\$ GDP	2.4	124
2.3.2 Gross expenditure on R&D, % GDP	0.1	98	6.1.5 Citable documents H-index	3.4	113
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38			
2.3.4 QS university ranking, top 3*	0.0	72	6.2 Knowledge impact	33.9	42
			6.2.1 Labor productivity growth, %	4.7	7
			6.2.2 New businesses/th pop. 15-64	2.7	49
			6.2.3 Software spending, % GDP	n/a	n/a
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	1.5	92
			6.2.5 High-tech manufacturing, %	27.3	46
 Infrastructure	41.7	74	6.3 Knowledge diffusion	10.7	101
3.1 Information and communication technologies (ICTs)	76.1	55	6.3.1 Intellectual property receipts, % total trade	0.0	106
3.1.1 ICT access*	82.7	78	6.3.2 Production and export complexity	30.3	85
3.1.2 ICT use*	62.3	66	6.3.3 High-tech exports, % total trade	0.3	98
3.1.3 Government's online service*	78.2	46	6.3.4 ICT services exports, % total trade	0.9	87
3.1.4 E-participation*	81.0	46			
3.2 General infrastructure	32.6	56	 Creative outputs	7.7	[102]
3.2.1 Electricity output, GWh/mn pop.	⊙ 1,891.9	84	7.1 Intangible assets	12.5	[94]
3.2.2 Logistics performance*	24.7	92	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.2.3 Gross capital formation, % GDP	40.6	6	7.1.2 Trademarks by origin/bn PPP\$ GDP	30.9	75
3.3 Ecological sustainability	16.4	117	7.1.3 Global brand value, top 5,000, % GDP	n/a	n/a
3.3.1 GDP/unit of energy use	5.2	118	7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.6	82
3.3.2 Environmental performance*	38.2	77	7.2 Creative goods and services	5.3	[100]
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.1	125	7.2.1 Cultural and creative services exports, % total trade	0.1	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 Printing and other media, % manufacturing	0.5	79
			7.2.5 Creative goods exports, % total trade	0.3	68
 Market sophistication	33.9	60	7.3 Online creativity	0.5	109
4.1 Credit	7.1	119	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	1.2	79
4.1.2 Domestic credit to private sector, % GDP	35.7	87	7.3.3 GitHub commit pushes received/mn pop. 15-69	0.9	104
4.1.3 Loans from microfinance institutions, % GDP	0.2	51	7.3.4 Mobile app creation/bn PPP\$ GDP	0.0	107
4.2 Investment	n/a	[n/a]			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a			
4.2.4 Venture capital received, value, % GDP	n/a	n/a			
4.3 Trade, diversification, and market scale	60.7	51			
4.3.1 Applied tariff rate, weighted avg., %	2.6	69			
4.3.2 Domestic industry diversification	92.9	37			
4.3.3 Domestic market scale, bn PPP\$	291.2	59			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Viet Nam

48

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
41	59	Lower middle	SEAO	98.2	1,141.3	11,608

		Score/Value	Rank			Score/Value	Rank
Institutions		60.6	51	Business sophistication		31.6	50
1.1	Political environment	65.2	50	5.1	Knowledge workers	29.4	68
1.1.1	Political and operational stability*	76.4	37	5.1.1	Knowledge-intensive employment, %	10.7	106
1.1.2	Government effectiveness*	54.0	57	5.1.2	Firms offering formal training, %	22.2	69
1.2	Regulatory environment	54.6	96	5.1.3	GERD performed by business, % GDP	0.4	45
1.2.1	Regulatory quality*	41.2	83	5.1.4	GERD financed by business, %	64.1	10
1.2.2	Rule of law*	42.6	70	5.1.5	Females employed w/advanced degrees, %	7.3	85
1.2.3	Cost of redundancy dismissal	24.6	105	5.2	Innovation linkages	26.8	48
1.3	Business environment	62.0	30	5.2.1	University-industry R&D collaboration†	58.2	26
1.3.1	Policies for doing business†	63.3	31	5.2.2	State of cluster development and depth†	65.1	14
1.3.2	Entrepreneurship policies and culture*	60.7	21	5.2.3	GERD financed by abroad, % GDP	0.0	59
Human capital and research		27.2	80	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	80
2.1	Education	55.1	[56]	5.2.5	Patent families/bn PPP\$ GDP	0.0	73
2.1.1	Expenditure on education, % GDP	4.1	75	5.3	Knowledge absorption	38.7	41
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	5.3.1	Intellectual property payments, % total trade	0.2	87
2.1.3	School life expectancy, years	n/a	n/a	5.3.2	High-tech imports, % total trade	31.4	1
2.1.4	PISA scales in reading, maths and science	502.0	16	5.3.3	ICT services imports, % total trade	0.1	130
2.1.5	Pupil-teacher ratio, secondary	19.7	93	5.3.4	FDI net inflows, % GDP	6.1	15
2.2	Tertiary education	20.8	90	5.3.5	Research talent, % in businesses	24.1	51
2.2.1	Tertiary enrolment, % gross	28.6	87	Knowledge and technology outputs		26.0	52
2.2.2	Graduates in science and engineering, %	22.7	54	6.1	Knowledge creation	8.6	84
2.2.3	Tertiary inbound mobility, %	0.4	103	6.1.1	Patents by origin/bn PPP\$ GDP	1.0	66
2.3	Research and development (R&D)	5.7	68	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	85
2.3.1	Researchers, FTE/mn pop.	756.7	60	6.1.3	Utility models by origin/bn PPP\$ GDP	0.4	37
2.3.2	Gross expenditure on R&D, % GDP	0.5	59	6.1.4	Scientific and technical articles/bn PPP\$ GDP	9.8	90
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	6.1.5	Citable documents H-index	13.2	58
2.3.4	QS university ranking, top 3*	8.1	66	6.2	Knowledge impact	34.8	40
Infrastructure		42.5	71	6.2.1	Labor productivity growth, %	5.6	3
3.1	Information and communication technologies (ICTs)	72.1	70	6.2.2	New businesses/th pop. 15-64	1.7	66
3.1.1	ICT access*	90.5	41	6.2.3	Software spending, % GDP	0.3	45
3.1.2	ICT use*	62.2	69	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	4.1	65
3.1.3	Government's online service*	65.3	78	6.2.5	High-tech manufacturing, %	29.9	44
3.1.4	E-participation*	70.2	70	6.3	Knowledge diffusion	34.7	44
3.2	General infrastructure	38.5	42	6.3.1	Intellectual property receipts, % total trade	0.0	100
3.2.1	Electricity output, GWh/mn pop.	2,467.7	72	6.3.2	Production and export complexity	42.8	56
3.2.2	Logistics performance*	56.7	38	6.3.3	High-tech exports, % total trade	37.3	3
3.2.3	Gross capital formation, % GDP	31.5	19	6.3.4	ICT services exports, % total trade	0.3	120
3.3	Ecological sustainability	17.0	113	Creative outputs		30.8	35
3.3.1	GDP/unit of energy use	8.1	91	7.1	Intangible assets	44.9	28
3.3.2	Environmental performance*	20.1	128	7.1.1	Intangible asset intensity, top 15, %	65.3	30
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	1.8	54	7.1.2	Trademarks by origin/bn PPP\$ GDP	72.4	24
Market sophistication		38.4	43	7.1.3	Global brand value, top 5,000, % GDP	88.2	24
4.1	Credit	31.9	47	7.1.4	Industrial designs by origin/bn PPP\$ GDP	2.1	46
4.1.1	Finance for startups and scaleups*	37.9	43	7.2	Creative goods and services	24.0	50
4.1.2	Domestic credit to private sector, % GDP	147.7	11	7.2.1	Cultural and creative services exports, % total trade	0.0	94
4.1.3	Loans from microfinance institutions, % GDP	0.1	52	7.2.2	National feature films/mn pop. 15-69	0.5	68
4.2	Investment	11.4	52	7.2.3	Entertainment and media market/th pop. 15-69	3.0	51
4.2.1	Market capitalization, % GDP	60.0	31	7.2.4	Printing and other media, % manufacturing	0.9	55
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.0	77	7.2.5	Creative goods exports, % total trade	7.8	8
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	48	7.3	Online creativity	9.6	45
4.2.4	Venture capital received, value, % GDP	0.0	40	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	2.5	71
4.3	Trade, diversification, and market scale	71.8	19	7.3.2	Country-code TLDs/th pop. 15-69	2.1	70
4.3.1	Applied tariff rate, weighted avg., %	1.3	17	7.3.3	GitHub commit pushes received/mn pop. 15-69	4.5	63
4.3.2	Domestic industry diversification	98.6	9	7.3.4	Mobile app creation/bn PPP\$ GDP	29.2	8
4.3.3	Domestic market scale, bn PPP\$	1,141.3	24				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Yemen

128

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
109	132	Low	NAWA	30.5	60.8	1,827

Institutions		Score/Value	Rank
1.1 Political environment		17.5	132 ○ ◇
1.1.1	Political and operational stability*	0.0	132 ○ ◇
1.1.2	Government effectiveness*	0.0	132 ○ ◇
1.2 Regulatory environment		30.8	129 ◇
1.2.1	Regulatory quality*	0.0	132 ○ ◇
1.2.2	Rule of law*	0.0	132 ○ ◇
1.2.3	Cost of redundancy dismissal	27.4	111 ◇
1.3 Business environment		21.6	[124] ◇
1.3.1	Policies for doing business [†]	21.6	126 ◇
1.3.2	Entrepreneurship policies and culture*	n/a	n/a

Human capital and research		Score/Value	Rank
2.1 Education		11.3	[124] ◇
2.1.1	Expenditure on education, % GDP	26.1	[125] n/a
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a
2.1.3	School life expectancy, years	11.8	92 ○
2.1.4	PISA scales in reading, maths and science	9.1	110 ○
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a
2.2	Tertiary education	26.8	111 ○
2.2.1	Tertiary enrolment, % gross	7.7	113 ○
2.2.2	Graduates in science and engineering, %	10.2	112 ○
2.2.3	Tertiary inbound mobility, %	n/a	n/a
2.3	Research and development (R&D)	4.3	56 ●
2.3.1	Researchers, FTE/mn pop.	0.0	[120] n/a
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇
2.3.4	QS university ranking, top 3*	0.0	72 ○ ◇

Infrastructure		Score/Value	Rank
3.1 Information and communication technologies (ICTs)		25.3	120 ◇
3.1.1	ICT access*	28.7	129 ◇
3.1.2	ICT use*	39.9	128
3.1.3	Government's online service*	11.5	131 ○ ◇
3.1.4	E-participation*	32.4	122
3.2	General infrastructure	30.9	122
3.2.1	Electricity output, GWh/mn pop.	3.6	131 ◇
3.2.2	Logistics performance*	123.5	123 ○
3.2.3	Gross capital formation, % GDP	10.2	118
3.3	Ecological sustainability	6.5	126 ○ ◇
3.3.1	GDP/unit of energy use	43.7	26 ● ◆
3.3.2	Environmental performance*	28.7	3 ● ◆
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	n/a	n/a
		0.2	109

Market sophistication		Score/Value	Rank
4.1 Credit		26.2	87 ● ◆
4.1.1	Finance for startups and scaleups*	6.5	122
4.1.2	Domestic credit to private sector, % GDP	n/a	n/a
4.1.3	Loans from microfinance institutions, % GDP	5.6	129 ○ ◇
4.2	Investment	0.9	28 ●
4.2.1	Market capitalization, % GDP	n/a	[n/a] n/a
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a
4.2.4	Venture capital received, value, % GDP	n/a	n/a
4.3	Trade, diversification, and market scale	45.9	90 ● ◆
4.3.1	Applied tariff rate, weighted avg., %	5.0	91 ● ◆
4.3.2	Domestic industry diversification	69.0	89 ○
4.3.3	Domestic market scale, bn PPP\$	60.8	99

Business sophistication		Score/Value	Rank
5.1 Knowledge workers		15.7	127
5.1.1	Knowledge-intensive employment, %	10.3	[118] ○
5.1.2	Firms offering formal training, %	12.4	99 ● ◆
5.1.3	GERD performed by business, % GDP	14.3	92 ◇
5.1.4	GERD financed by business, %	n/a	n/a
5.1.5	Females employed w/advanced degrees, %	n/a	n/a
5.2	Innovation linkages	1.1	114 ○
5.2.1	University-industry R&D collaboration [†]	14.3	124 ○
5.2.2	State of cluster development and depth [†]	20.7	127 ○
5.2.3	GERD financed by abroad, % GDP	33.1	121 ○
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	98 ○
5.3	Knowledge absorption	0.0	101 ○ ◇
5.3.1	Intellectual property payments, % total trade	22.6	101
5.3.2	High-tech imports, % total trade	1.6	23 ● ◆
5.3.3	ICT services imports, % total trade	2.3	129 ◇
5.3.4	FDI net inflows, % GDP	0.4	116 ◇
5.3.5	Research talent, % in businesses	-1.4	124 ◇

Knowledge and technology outputs		Score/Value	Rank
6.1 Knowledge creation		6.2	124
6.1.1	Patents by origin/bn PPP\$ GDP	8.7	82 ●
6.1.2	PCT patents by origin/bn PPP\$ GDP	1.0	63 ● ◆
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	n/a
6.1.4	Scientific and technical articles/bn PPP\$ GDP	0.0	73 ○
6.1.5	Citable documents H-index	17.1	58 ● ◆
6.2	Knowledge impact	2.9	119
6.2.1	Labor productivity growth, %	1.0	131 ○
6.2.2	New businesses/th pop. 15-64	-5.5	118 ○ ◇
6.2.3	Software spending, % GDP	n/a	n/a
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	0.0	107
6.2.5	High-tech manufacturing, %	0.3	128
6.3	Knowledge diffusion	1.2	110 ○ ◇
6.3.1	Intellectual property receipts, % total trade	9.1	104 ○
6.3.2	Production and export complexity	0.0	86
6.3.3	High-tech exports, % total trade	15.2	113
6.3.4	ICT services exports, % total trade	0.1	121
6.4	ICT services exports, % total trade	2.6	52 ●








Creative outputs		Score/Value	Rank
7.1 Intangible assets		10.4	95 ● ◆
7.1.1	Intangible asset intensity, top 15, %	20.7	76 ● ◆
7.1.2	Trademarks by origin/bn PPP\$ GDP	n/a	n/a
7.1.3	Global brand value, top 5,000, % GDP	76.2	22 ● ◆
7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.0	77 ○ ◇
7.2	Creative goods and services	1.0	68 ●
7.2.1	Cultural and creative services exports, % total trade	0.0	[132] 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	Printing and other media, % manufacturing	0.0	62 ○ ◇
7.2.5	Creative goods exports, % total trade	n/a	n/a
7.3	Online creativity	0.0	125 ○
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.2	123
7.3.2	Country-code TLDs/th pop. 15-69	0.3	112
7.3.3	GitHub commit pushes received/mn pop. 15-69	0.0	129
7.3.4	Mobile app creation/bn PPP\$ GDP	0.1	124

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ○ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Zambia

118

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
115	118	Lower middle	SSA	18.9	66.4	3,410








		Score/Value	Rank			Score/Value	Rank
	Institutions	37.5	126		Business sophistication	21.3	100
1.1	Political environment	45.7	109	5.1	Knowledge workers	23.1	[84]
1.1.1	Political and operational stability*	58.2	103	5.1.1	Knowledge-intensive employment, %	10.2	107
1.1.2	Government effectiveness*	33.2	115	5.1.2	Firms offering formal training, %	36.6	41 ●
1.2	Regulatory environment	22.7	130 ○ ◇	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	29.5	105	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	29.9	101	5.1.5	Females employed w/advanced degrees, %	4.5	94
1.2.3	Cost of redundancy dismissal	50.6	129 ○ ◇	5.2	Innovation linkages	22.1	71 ●
1.3	Business environment	44.2	[76]	5.2.1	University-industry R&D collaboration†	38.3	90
1.3.1	Policies for doing business†	44.2	81 ●	5.2.2	State of cluster development and depth†	44.2	82 ●
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	72 ●
				5.2.5	Patent families/bn PPP\$ GDP	0.0	101 ○ ◇
				5.3	Knowledge absorption	18.6	120
				5.3.1	Intellectual property payments, % total trade	0.3	85
				5.3.2	High-tech imports, % total trade	5.6	114
				5.3.3	ICT services imports, % total trade	0.4	114
				5.3.4	FDI net inflows, % GDP	1.0	102
				5.3.5	Research talent, % in businesses	n/a	n/a
	Human capital and research	14.8	[118]		Knowledge and technology outputs	8.6	116
2.1	Education	44.4	[83]	6.1	Knowledge creation	5.6	104
2.1.1	Expenditure on education, % GDP	3.7	90	6.1.1	Patents by origin/bn PPP\$ GDP	0.3	92
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	101 ○ ◇
2.1.3	School life expectancy, years	n/a	n/a	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	10.5	84
2.1.5	Pupil-teacher ratio, secondary	21.1	98	6.1.5	Citable documents H-index	6.1	91
2.2	Tertiary education	0.0	[129]	6.2	Knowledge impact	12.6	112
2.2.1	Tertiary enrolment, % gross	4.1	128 ○ ◇	6.2.1	Labor productivity growth, %	-0.3	97 ○ ◇
2.2.2	Graduates in science and engineering, %	n/a	n/a	6.2.2	New businesses/th pop. 15-64	1.1	79
2.2.3	Tertiary inbound mobility, %	n/a	n/a	6.2.3	Software spending, % GDP	0.0	108 ○ ◇
2.3	Research and development (R&D)	0.0	[120]	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	0.4	122
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	6.2.5	High-tech manufacturing, %	10.1	89
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	6.3	Knowledge diffusion	7.5	113
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	6.3.1	Intellectual property receipts, % total trade	0.0	113 ○ ◇
2.3.4	QS university ranking, top 3*	0.0	72 ○ ◇	6.3.2	Production and export complexity	24.8	92
				6.3.3	High-tech exports, % total trade	0.2	114
				6.3.4	ICT services exports, % total trade	0.3	119
	Infrastructure	26.7	116		Creative outputs	5.7	110
3.1	Information and communication technologies (ICTs)	37.5	122 ○ ◇	7.1	Intangible assets	11.2	97
3.1.1	ICT access*	67.9	102	7.1.1	Intangible asset intensity, top 15, %	n/a	n/a
3.1.2	ICT use*	25.4	119 ○ ◇	7.1.2	Trademarks by origin/bn PPP\$ GDP	31.4	72 ●
3.1.3	Government's online service*	25.9	127 ○ ◇	7.1.3	Global brand value, top 5,000, % GDP	0.0	77 ○ ◇
3.1.4	E-participation*	30.9	122 ○ ◇	7.1.4	Industrial designs by origin/bn PPP\$ GDP	2.0	49 ●
3.2	General infrastructure	25.3	79 ●	7.2	Creative goods and services	0.2	[129]
3.2.1	Electricity output, GWh/mn pop.	824.8	100	7.2.1	Cultural and creative services exports, % total trade	0.0	113 ○ ◇
3.2.2	Logistics performance*	22.3	102	7.2.2	National feature films/mn pop. 15-69	n/a	n/a
3.2.3	Gross capital formation, % GDP	33.0	12 ●	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
3.3	Ecological sustainability	17.3	109	7.2.4	Printing and other media, % manufacturing	n/a	n/a
3.3.1	GDP/unit of energy use	5.9	113	7.2.5	Creative goods exports, % total trade	0.0	113
3.3.2	Environmental performance*	38.4	76 ●	7.3	Online creativity	0.2	122
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.2	119	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.1	123
				7.3.2	Country-code TLDs/th pop. 15-69	0.1	115
				7.3.3	GitHub commit pushes received/mn pop. 15-69	0.3	115
				7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	n/a
	Market sophistication	22.0	106				
4.1	Credit	12.8	106				
4.1.1	Finance for startups and scaleups*	n/a	n/a				
4.1.2	Domestic credit to private sector, % GDP	15.2	117				
4.1.3	Loans from microfinance institutions, % GDP	1.5	21 ●				
4.2	Investment	5.2	75				
4.2.1	Market capitalization, % GDP	13.6	68				
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a				
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.0	55 ●				
4.2.4	Venture capital received, value, % GDP	0.0	68				
4.3	Trade, diversification, and market scale	48.1	85				
4.3.1	Applied tariff rate, weighted avg., %	4.8	89				
4.3.2	Domestic industry diversification	74.1	79				
4.3.3	Domestic market scale, bn PPP\$	66.4	93				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Zimbabwe

107

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
93	120	Lower middle	SSA	15.1	37.3	2,408

		Score/Value	Rank			Score/Value	Rank
	Institutions	33.3	128		Business sophistication	22.5	90
1.1	Political environment	34.1	129	5.1	Knowledge workers	24.1	[81]
1.1.1	Political and operational stability*	45.5	126	5.1.1	Knowledge-intensive employment, %	7.5	112
1.1.2	Government effectiveness*	22.8	129	5.1.2	Firms offering formal training, %	26.4	62
1.2	Regulatory environment	38.5	124	5.1.3	GERD performed by business, % GDP	n/a	n/a
1.2.1	Regulatory quality*	9.4	130	5.1.4	GERD financed by business, %	n/a	n/a
1.2.2	Rule of law*	13.0	129	5.1.5	Females employed w/advanced degrees, %	10.9	69
1.2.3	Cost of redundancy dismissal	25.3	106	5.2	Innovation linkages	19.6	96
1.3	Business environment	27.2	[115]	5.2.1	University-industry R&D collaboration†	29.0	120
1.3.1	Policies for doing business†	27.2	121	5.2.2	State of cluster development and depth†	31.4	124
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	0.1	28
				5.2.5	Patent families/bn PPP\$ GDP	0.0	101
				5.3	Knowledge absorption	23.8	94
				5.3.1	Intellectual property payments, % total trade	0.2	90
				5.3.2	High-tech imports, % total trade	9.1	53
				5.3.3	ICT services imports, % total trade	0.9	89
				5.3.4	FDI net inflows, % GDP	2.0	73
				5.3.5	Research talent, % in businesses	n/a	n/a
	Human capital and research	21.6	92		Knowledge and technology outputs	12.3	99
2.1	Education	39.9	96	6.1	Knowledge creation	8.7	81
2.1.1	Expenditure on education, % GDP	3.9	85	6.1.1	Patents by origin/bn PPP\$ GDP	0.2	98
2.1.2	Government funding/pupil, secondary, % GDP/cap	22.2	38	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.0	86
2.1.3	School life expectancy, years	11.4	94	6.1.3	Utility models by origin/bn PPP\$ GDP	0.2	48
2.1.4	PISA scales in reading, maths and science	n/a	n/a	6.1.4	Scientific and technical articles/bn PPP\$ GDP	21.0	43
2.1.5	Pupil-teacher ratio, secondary	22.5	99	6.1.5	Citable documents H-index	6.9	88
2.2	Tertiary education	24.9	82	6.2	Knowledge impact	21.0	88
2.2.1	Tertiary enrolment, % gross	8.9	116	6.2.1	Labor productivity growth, %	-0.8	100
2.2.2	Graduates in science and engineering, %	30.2	17	6.2.2	New businesses/th pop. 15-64	2.5	51
2.2.3	Tertiary inbound mobility, %	0.5	99	6.2.3	Software spending, % GDP	0.2	56
2.3	Research and development (R&D)	0.2	113	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	4.5	61
2.3.1	Researchers, FTE/mn pop.	99.5	89	6.2.5	High-tech manufacturing, %	17.5	68
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	6.3	Knowledge diffusion	7.0	114
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38	6.3.1	Intellectual property receipts, % total trade	0.0	81
2.3.4	QS university ranking, top 3*	0.0	72	6.3.2	Production and export complexity	20.2	102
				6.3.3	High-tech exports, % total trade	0.2	105
				6.3.4	ICT services exports, % total trade	0.2	123
	Infrastructure	23.6	126		Creative outputs	12.3	89
3.1	Information and communication technologies (ICTs)	48.1	107	7.1	Intangible assets	17.7	85
3.1.1	ICT access*	64.4	107	7.1.1	Intangible asset intensity, top 15, %	28.0	69
3.1.2	ICT use*	30.4	112	7.1.2	Trademarks by origin/bn PPP\$ GDP	4.1	125
3.1.3	Government's online service*	52.3	99	7.1.3	Global brand value, top 5,000, % GDP	0.0	77
3.1.4	E-participation*	45.2	108	7.1.4	Industrial designs by origin/bn PPP\$ GDP	n/a	n/a
3.2	General infrastructure	2.9	132	7.2	Creative goods and services	13.2	[71]
3.2.1	Electricity output, GWh/mn pop.	531.7	107	7.2.1	Cultural and creative services exports, % total trade	n/a	n/a
3.2.2	Logistics performance*	3.3	122	7.2.2	National feature films/mn pop. 15-69	0.2	74
3.2.3	Gross capital formation, % GDP	n/a	n/a	7.2.3	Entertainment and media market/th pop. 15-69	n/a	n/a
3.3	Ecological sustainability	19.9	93	7.2.4	Printing and other media, % manufacturing	0.5	78
3.3.1	GDP/unit of energy use	3.4	128	7.2.5	Creative goods exports, % total trade	2.3	23
3.3.2	Environmental performance*	46.2	54	7.3	Online creativity	0.8	105
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	1.5	58	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	0.5	109
				7.3.2	Country-code TLDs/th pop. 15-69	1.5	74
				7.3.3	GitHub commit pushes received/mn pop. 15-69	0.4	113
				7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	n/a
	Market sophistication	18.5	114				
4.1	Credit	2.1	129				
4.1.1	Finance for startups and scaleups*	n/a	n/a				
4.1.2	Domestic credit to private sector, % GDP	6.5	128				
4.1.3	Loans from microfinance institutions, % GDP	0.3	49				
4.2	Investment	n/a	[n/a]				
4.2.1	Market capitalization, % GDP	n/a	n/a				
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a				
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a				
4.2.4	Venture capital received, value, % GDP	n/a	n/a				
4.3	Trade, diversification, and market scale	34.9	110				
4.3.1	Applied tariff rate, weighted avg., %	5.0	90				
4.3.2	Domestic industry diversification	36.3	106				
4.3.3	Domestic market scale, bn PPP\$	37.3	117				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.