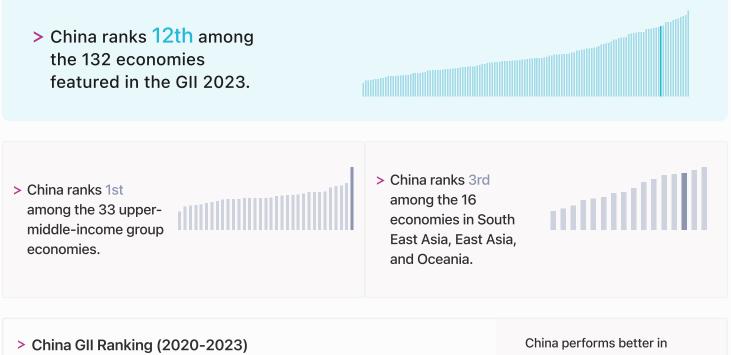


The Global Innovation Index (GII) ranks world economies according to their innovation capabilities.

Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation**.

# China ranking in the Global Innovation Index 2023



The table shows the rankings of China over the past four years. Data availability and changes to the GII model framework influence year-on-year comparisons of the GII rankings. The statistical confidence interval for the ranking of China in the GII 2023 is between ranks 11 and 14.

	GII Position	Innovation Inputs	Innovation Outputs
2020	14th	26th	6th
2021	12th	25th	7th
2022	11th	21st	8th
2023	12th	25th	8th

China performs better in innovation outputs than innovation inputs in 2023.

> This year China ranks 25th in innovation inputs. This position is lower than last year.

China ranks 8th in innovation outputs. This position is the same as last year.

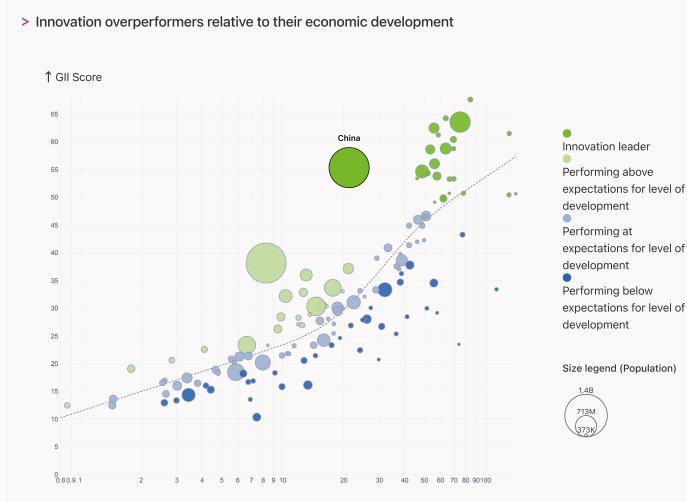


### → Expected vs. observed innovation performance

The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected and those below are performing below expectations.



> China is an innovation leader, ranking in the top 25 of the GII.

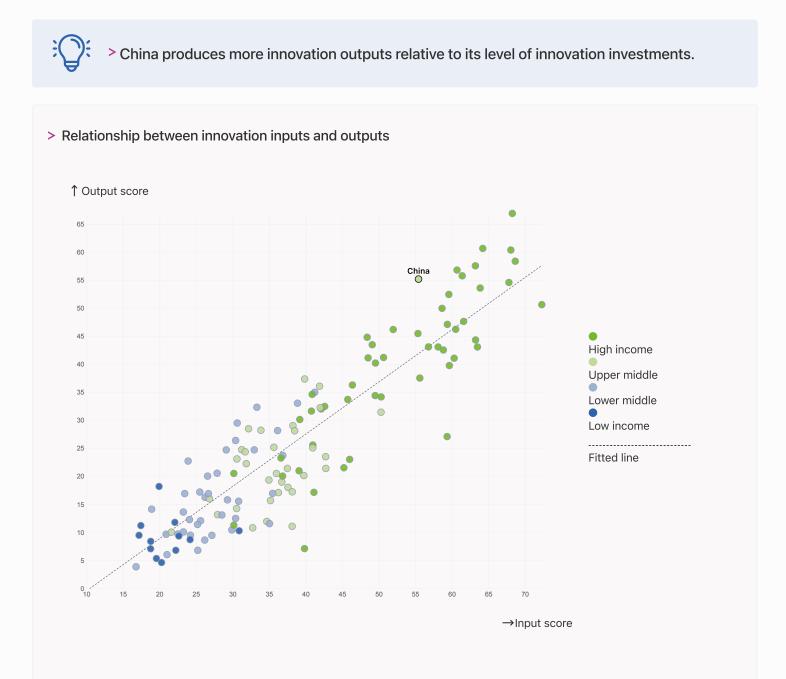


 $\rightarrow$ GDP per capita, PPP logarithmic scale (thousands of \$)



### → Effectively translating innovation investments into innovation outputs

The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

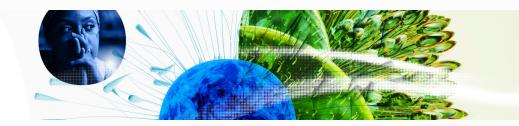




### → Overview of China's rankings in the seven areas of the GII in 2023

The chart shows the ranking for each of the seven areas that the GII comprises. The strongest areas for China are those that rank above the GII (shown in blue) and the weakest are those that rank below.

<ul> <li>↑ Support of the Knowledge and technology outputs</li> <li>● 6th Knowledge and technology outputs</li> </ul>	> Highest rankings China ranks highest in Knowledge and technology outputs (6th).
<ul> <li>12th Global Innovation Index</li> <li>13th Market sophistication</li> <li>14th Creative outputs</li> </ul>	> Lowest rankings
<ul> <li>20th Business sophistication</li> <li>22nd Human capital and research</li> </ul>	(43rd), Infrastructure (27th) and Human capital and research (22nd).
27th Infrastructure	The full WIPO Intellectual Property Statistics profile for China can be found on <u>this link.</u>
● 43rd Institutions	
► Lot	



### Benchmark of China against other country groupings for each of the seven areas of the GII Index

The charts shows the relative position of China (blue bar) against other country groupings (grey bars), for each of the seven areas of the GII Index.

# > Upper-Middle-Income economies

China performs above the uppermiddle-income group



#### > South East Asia, East Asia, And Oceania

China performs above the regional average in Knowledge and technology outputs, Creative outputs, Business sophistication, Market sophistication, Human capital and research, Infrastructure.

# Outputs China | Score: 61.51 Top 10 | Score: 58.96 SEAO | Score: 32.16 Upper middle income | Score: 22.36 \* South East Asia, East Asia, and Oceania Market sophistication

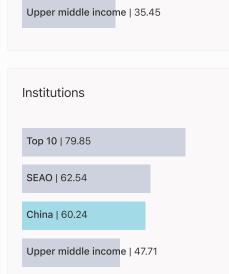
Top 10 | 61.93

China | 56.66

SEAO | 47.18

Knowledge and technology







### $\rightarrow$ Innovation strengths and weaknesses in China

The table below gives an overview of the indicator strengths and weaknesses of China in the GII 2023.

# 

> China's main innovation strengths are Creative goods exports, % total trade (rank 1), Domestic market scale, bn PPP\$ (rank 1) and Labor productivity growth, % (rank 1).

### Strengths

3

2.3.4

QS university ranking, top 3

#### Weaknesses

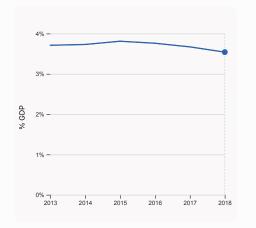
Rank	Code	Indicator name	Rank	Code	Indicator name
1	7.2.4	Creative goods exports, % total trade	118	3.3.2	Environmental performance
1	4.3.3	Domestic market scale, bn PPP\$	111	1.2.3	Cost of redundancy dismissal
1	6.2.1	Labor productivity growth, %	107	7.3.3	GitHub commits/mn pop. 15-69
1	2.1.4	PISA scales in reading, maths and science	101	2.2.3	Tertiary inbound mobility, %
1	7.1.2	Trademarks by origin/bn PPP\$ GDP	100	3.3.1	GDP/unit of energy use
1	6.1.3	Utility models by origin/bn PPP\$ GDP	89	1.2.1	Regulatory quality
2	3.2.3	Gross capital formation, % GDP	88	2.1.1	Expenditure on education, % GDP
2	4.3.2	Domestic industry diversification	82	5.3.4	FDI net inflows, % GDP
2	7.1.4	Industrial designs by origin/bn PPP\$ GDP	76	5.2.3	GERD financed by abroad, % GDP
2	6.1.1	Patents by origin/bn PPP\$ GDP	69	7.2.2	National feature films/mn pop. 15-69
2	2.3.3	Global corporate R&D investors, top 3, mn US\$			
2	5.2.2	State of cluster development			
3	5.1.4	GERD financed by business, %			



### → China's innovation system

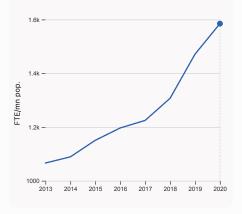
As far as practicable, the plots below present unscaled indicator data.

#### > Innovation inputs in China



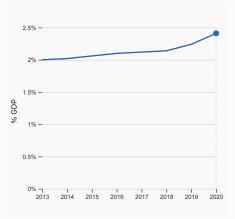
#### 2.1.1 Expenditure on education, % GDP

was equal to 3.54% GDP in 2018, down by 0.13 percentage points from the year prior – and equivalent to an indicator rank of 88.



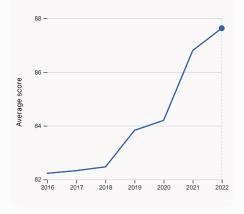
#### 2.3.1 Researchers, FTE/mn pop.

was equal to 1,584.87 FTE/mn pop. in 2020, up by 7.72% from the year prior – and equivalent to an indicator rank of 48.



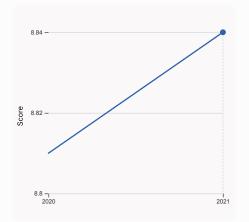
#### 2.3.2 Gross expenditure on R&D, % GDP

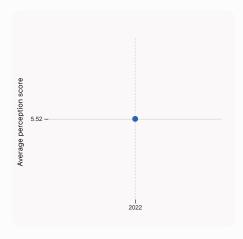
was equal to 2.41% GDP in 2020, up by 0.17 percentage points from the year prior – and equivalent to an indicator rank of 14.



#### 2.3.4 QS university ranking, top 3

was equal to an average score of 87.63 for the top 3 universities in 2022, up by 0.96% from the year prior – and equivalent to an indicator rank of 3.





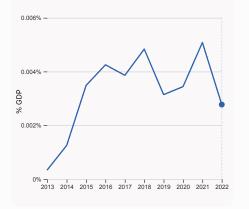
#### 3.1.1 ICT access

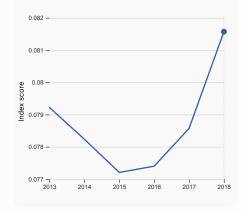
was equal to a score of 8.84 in 2021, up by 0.34% from the year prior – and equivalent to an indicator rank of 64.

4.1.1 Finance for startups and scaleups

was equal to an average perception score of 5.52 in 2022, equivalent to an indicator rank of 16.







#### 4.2.4 VC received, value, % GDP

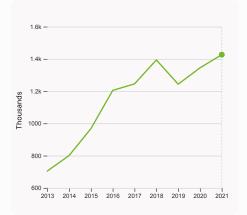
was equal to 0.00277% GDP in 2022, down by 0.0023 percentage points from the year prior – and equivalent to an indicator rank of 18.

#### 4.3.2 Domestic industry diversification

was equal to an index score of 0.082 in 2018, up by 3.82% from the year prior – and equivalent to an indicator rank of 2.

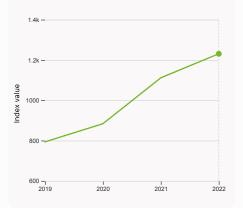


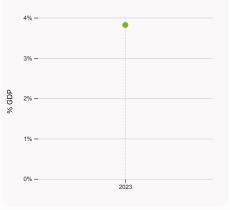
#### > Innovation outputs in China



#### 6.1.1 Patents by origin

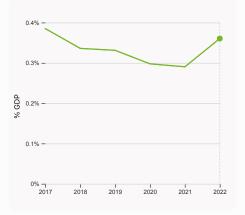
was equal to 1,426.64 Thousands in 2021, up by 6.085% from the year prior – and equivalent to an indicator rank of 2.





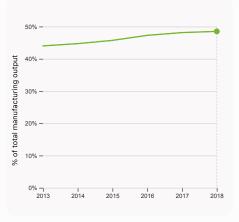
#### 6.2.2 Unicorn valuation, % GDP

was equal to 3.82 % GDP in 2023 – and equivalent to an indicator rank of 12.



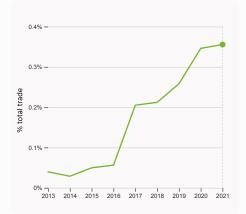
#### 6.2.3 Software spending, % GDP

was equal to 0.36% GDP in 2022, up by 0.07 percentage points from the year prior – and equivalent to an indicator rank of 27.



#### 6.2.4 High-tech manufacturing, %

was equal to 48.52% of total manufacturing output in 2018, up by 0.38 percentage points from the year prior – and equivalent to an indicator rank of 13.

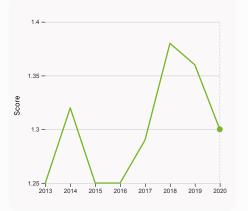


# 6.3.1 Intellectual property receipts, % total trade

was equal to 0.356% total trade in 2021, up by 0.0095 percentage points from the year prior – and equivalent to an indicator rank of 33.

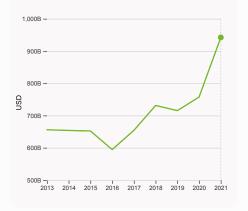
#### 6.1.5 Citable documents H-index

was equal to an index value of 1,231 in 2022, up by 10.7% from the year prior – and equivalent to an indicator rank of 11.



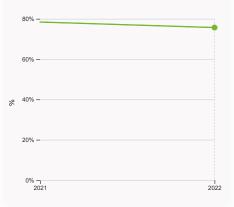
#### 6.3.2 Production and export complexity

was equal to a score of 1.3 in 2020, down by 4.41% from the year prior – and equivalent to an indicator rank of 17.



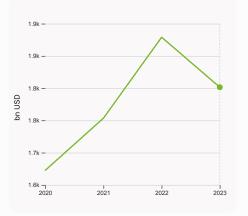
#### 6.3.3 High-tech exports

was equal to 942,314,811,992 USD in 2021, up by 24.4% from the year prior – and equivalent to an indicator rank of 5.



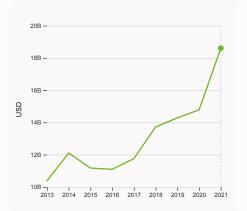
#### 7.1.1 Intangible asset intensity, top 15, %

was equal to 75.67% in 2022, down by 2.74 percentage points from the year prior – and equivalent to an indicator rank of 11.



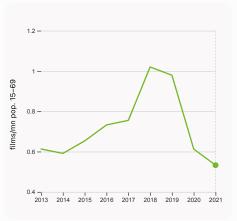
#### 7.1.3 Global brand value, top 5,000

was equal to 1,801.504 bn USD in 2023, down by 4.13% from the year prior – and equivalent to an indicator rank of 20.



#### 7.2.1 Cultural and creative services exports

was equal to 18,604,942,000 USD in 2021, up by 25.87% from the year prior – and equivalent to an indicator rank of 51.



#### 7.2.2 National feature films/mn pop. 15-69

was equal to 0.533 films/mn pop. 15–69 in 2021, down by 13.076% from the year prior – and equivalent to an indicator rank of 69.





### → China's innovation top performers

### > 2.3.3 Global corporate R&D investors from China

Rank	Firm	Industry		R&D Growth	R&D Intensity
			[mn EUR]	[%]	[%]
4	HUAWEI INVESTMENT & HOLDING	Technology Hardware & Equipment	19,534	1	16
17	ALIBABA GROUP HOLDING	Software & Computer Services	7,687	-3	7
18	TENCENT	Software & Computer Services	7,190	33	9
34	CHINA STATE CONSTRUCTION ENGINEERING	Construction & Materials	5,509	35	2

Source: European Commission's Joint Research Centre (https://iri.jrc.ec.europa.eu/scoreboard/2022-eu-industrial-rd-investment-scoreboard). Note: European Commission's Joint Research Centre ranks the top 2,500 firms by R&D investment annually.

### > 2.3.4 QS university ranking of China's top universities

Rank	University	Score
12	PEKING UNIVERSITY	91.30
14	TSINGHUA UNIVERSITY	90.10
34	FUDAN UNIVERSITY	81.50

Source: QS Quacquarelli Symonds Ltd (https://www.topuniversities.com/university-rankings/world-university-rankings/2023).

Note: QS Quacquarelli Symonds Ltd annually assesses over 1,200 universities across the globe and scores them between [0,100]. Ranks can represent a single value "x", a tie "x=" or a range "x-y".

# > 6.2.2 Top Unicorn Companies in China

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	BYTEDANCE	Artificial intelligence	Beijing	225
2	SHEIN	E-commerce & direct-to-consumer	Shenzhen	100
3	XIAOHONGSHU	E-commerce & direct-to-consumer	Shanghai	20

Source: CBInsights, Tracker – The Complete List of Unicorn Companies: https://www.cbinsights.com/research-unicorn-companies



### > 7.1.1 Top 15 intangible-asset intensive companies in China

Rank	Firm	Intensity, %
1	TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	69.40
2	KWEICHOW MOUTAI CO LTD	85.87
3	TENCENT HOLDINGS LTD	60.09

Source: Brand Finance (https://brandirectory.com/reports/gift-2022).

Note: Brand Finance only provides within economy ranks.

### > 7.1.3 Top 5,000 companies in China with highest global brand value

Rank	Brand	Industry	Brand Value, mn USD
1	ICBC	Banking	69,545.3
2	TIKTOK/DOUYIN	Media	65,696.1
3	CHINA CONSTRUCTION BANK	Banking	62,681.1

Source: Brand Finance (https://brandirectory.com). Note: Rank corresponds to within economy ranks.



# China

Output rankInput rank825	Income Upper middle	Region SEAO
		Value Rank
Institutions	60	0.2 43
<ul> <li>1.1 Institutional environment</li> <li>1.1.1 Operational stability for businesses*</li> <li>1.2.2 Government effectiveness*</li> <li>1.2 Regulatory environment</li> <li>1.2.1 Regulatory quality*</li> <li>1.2.2 Rule of law*</li> <li>1.2.3 Cost of redundancy dismissal</li> <li>1.3 Business environment</li> <li>1.3.1 Policies for doing business*</li> </ul>	5 6 4 3 4 2 7	6.4         44           2.8         65           0.0         37           9.5         100           4.0         89 ○           0.8         62           7.7.4         111 ○ ◇           4.9         14
1.3.2 Entrepreneurship policies and cultur	re <sup>+</sup> 7	5.4 10
R Human capital and research	49	9.8 22
<ul> <li>2.1 Education</li> <li>2.1.1 Expenditure on education, % GDP</li> <li>2.1.2 Government funding/pupil, seconda</li> <li>2.1.3 School life expectancy, years</li> <li>2.1.4 PISA scales in reading, maths and s</li> <li>2.1.5 Pupil-teacher ratio, secondary</li> <li>2.2 Tertiary education</li> <li>2.2.1 Tertiary enrolment, % gross</li> <li>2.2.2 Graduates in science and engineerin</li> <li>2.3.3 Tertiary inbound mobility, %</li> <li>2.3 Research and development (R&amp;D)</li> <li>2.3.1 Researchers, FTE/mn pop.</li> <li>2.3.2 Gross expenditure on R&amp;D, % GDP</li> <li>2.3.3 Global corporate R&amp;D investors, top</li> <li>2.3.4 QS university ranking, top 3*</li> </ul>	ry, % GDP/cap cience 57 ng, % 6 0 3, mn US\$ 9	n/a n/a n/a n/a 9.0 1 ● 3.3 62 0.6 88 3.6 50 n/a n/a 0.4 101 ○ ◇ 0.3 15 4.9 48
🍫 Infrastructure	56	6.4 27
<ul> <li>3.1 Information and communication tee</li> <li>3.1.1 ICT access*</li> <li>3.1.2 ICT use*</li> <li>3.1.3 Government's online service*</li> <li>3.1.4 E-participation*</li> <li>3.2 General infrastructure</li> <li>3.2.1 Electricity output, GWh/mn pop.</li> <li>3.2.2 Logistics performance*</li> <li>3.2.3 Gross capital formation, % GDP</li> <li>3.3 Ecological sustainability</li> <li>3.3.1 GDP/unit of energy use</li> <li>3.3.2 Environmental performance*</li> <li>3.3.3 ISO 14001 environment/bn PPP\$ GE</li> </ul>	8 8 8 5 6,01 7 4 3	6.0       18         2.7       64 $37.7$ 26 $57.6$ 15 $6.0$ 13 $2.4$ 13 $9.0$ 32 $2.7$ 18 $4.8$ 2 $0.7$ 50 $6.8$ 100 $\diamond$ $6.1$ 118 $\diamond$ $8.0$ 10 $\diamond$
네 Market sophistication	50	6.7 13
<ul> <li>4.1 Credit</li> <li>4.1.1 Finance for startups and scaleups<sup>†</sup></li> <li>4.1.2 Domestic credit to private sector, %</li> <li>4.1.3 Loans from microfinance institutions</li> <li>4.2 Investment</li> <li>4.2.1 Market capitalization, % GDP</li> <li>4.2.2 Venture capital (VC) investors, deal</li> <li>4.2.3 VC recipients, deals/bn PPP\$ GDP</li> <li>4.2.4 VC received, value, % GDP</li> <li>4.3 Trade, diversification, and market s</li> <li>4.3.1 Applied tariff rate, weighted avg., %</li> <li>4.3.2 Domestic industry diversification</li> <li>4.3.3 Domestic market scale, bn PPP\$</li> </ul>	7 GDP 18 s, % GDP 2 s/bn PPP\$ GDP scale 9	

Population (mn) 1425.9			ita, PPP\$ <b>).9</b>
		Score / Value	Rank
😑 Business sophistic	ation	54.1	20
5.1 Knowledge workers 5.1.1 Knowledge-intensive of 5.1.2 Firms offering formal 5.1.3 GERD performed by bus 5.1.4 GERD financed by bus 5.1.5 Females employed w/ 5.2 Innovation linkages 5.2.1 University-industry R& 5.2.2 State of cluster devel 5.2.3 GERD financed by abu	employment, % training, % usiness, % GDP siness, % advanced degrees, % &D collaboration <sup>+</sup> opment <sup>+</sup> road, % GDP c alliance deals/bn PPP\$ GDP P\$ GDP <b>n</b> ayments, % total trade total trade	66.1 n/a n/a € 1.8 77.5 n/a 43.8 86.8 91.4 0.0 0.0 0.0 1.7 52.5 1.4 22.6 1.2	12 n/a n/a 13 3 ● n/a 27 6 2 ● 76 ○ 70 23 14 24 6 76
5.3.4 FDI net inflows, % GD 5.3.5 Research talent, % in	P	1.6 © 58.5	82 O 17
$\checkmark$ Knowledge and teo		61.5	6
6.1 Knowledge creation 6.1.1 Patents by origin/bn P 6.1.2 PCT patents by origin/ 6.1.3 Utility models by origi 6.1.4 Scientific and technic 6.1.5 Citable documents H- 6.2 Knowledge impact 6.2.1 Labor productivity gro 6.2.2 Unicorn valuation, % 6.2.3 Software spending, % 6.2.4 High-tech manufactu 6.3 Knowledge diffusion 6.3.1 Intellectual property r 6.3.2 Production and expor 6.3.3 High-tech exports, % 6.3.4 ICT services exports, 6.3.5 ISO 9001 quality/bn P	PP\$ GDP /bn PPP\$ GDP n/bn PPP\$ GDP al articles/bn PPP\$ GDP index wwth, % GDP 5 GDP ring, % ecceipts, % total trade t complexity total trade % total trade	71.9 52.4 2.3 104.6 n/a 66.1 65.5 6.0 3.8 0.4 48.5 47.2 0.3 79.8 28.0 2.3 15.7	3 2 ● 14 1 ● n/a 11 3 1 ● 12 27 13 20 33 17 5 52 19
Creative outputs		48.9	14
<ul> <li>7.1 Intangible assets</li> <li>7.1.1 Intangible asset intens</li> <li>7.1.2 Trademarks by origin/l</li> <li>7.1.3 Global brand value, to</li> <li>7.1.4 Industrial designs by or</li> <li>7.2 Creative goods and se</li> <li>7.2.1 Cultural and creative se</li> <li>7.2.2 National feature films,</li> <li>7.2.3 Entertainment and me</li> <li>7.2.4 Creative goods export</li> <li>7.3 Online creativity</li> <li>7.3.1 Generic top-level dom</li> </ul>	on PPP\$ GDP p 5,000 prigin/bn PPP\$ GDP prvices services exports, % total trade (mn pop. 15-69 edia market/th pop. 15-69 ts, % total trade	80.5 75.7 337.9 9.4 28.9 31.4 0.6 0.5 11.1 11.3 3.1 2.8	$ \begin{array}{c} 1 \\ 11 \\ 20 \\ 2 \bullet \\ 28 \\ 51 \\ 69 \circ \\ 32 \\ 1 \bullet \\ 123 \\ 74 \end{array} $
7.3.2 Country-code TLDs/th 7.3.3 GitHub commits/mn p	5.0 1.4	56 107 〇	

12

 7.3.3 GitHub commits/mn pop. 15-69
 1.4
 107 O

 7.3.4 Mobile app creation/bn PPP\$ GDP
 n/a
 n/a

NOTES: • indicates a strength; O a weakness; • an income group strength;  $\diamond$  an income group weakness; \* an index; <sup>+</sup> 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/gii-ranking. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.



### → Data availability

The following tables list indicators that are either missing or outdated for China.



> China has missing data for seven indicators and outdated data for seven indicators.

### > Missing data for China

Code	Indicator name	Economy Year	Model Year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2019	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	n/a	2020	UNESCO Institute for Statistics
2.2.2	Graduates in science and engineering, %	n/a	2020	UNESCO Institute for Statistics; Eurostat; OECD
5.1.1	Knowledge-intensive employment, %	n/a	2022	International Labour Organization
5.1.2	Firms offering formal training, %	n/a	2019	World Bank Enterprise Surveys
5.1.5	Females employed w/advanced degrees, %	n/a	2022	International Labour Organization
7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	2022	data.ia; International Monetary Fund

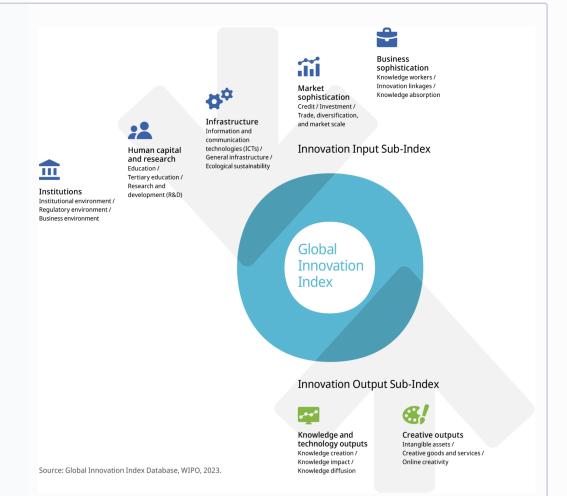
### > Outdated data for China

Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	2018	2021	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2020	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
2.3.2	Gross expenditure on R&D, % GDP	2020	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
4.3.2	Domestic industry diversification	2018	2020	United Nations Industrial Development Organization
5.1.3	GERD performed by business, % GDP	2020	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.3.5	Research talent, % in businesses	2020	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
6.2.4	High-tech manufacturing, %	2018	2020	United Nations Industrial Development Organization



### → About the Global Innovation Index

- The Global Innovation Index (GII) is published by the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations.
- Recognizing that innovation is a key driver of economic development, the GII aims to provide an innovation ranking and rich analysis referencing around 130 economies. Over the last decade, the GII has established itself as both a leading reference on innovation and a "tool for action" for economies that incorporate the GII into their innovation agendas.



The Index is a ranking of the innovation capabilities and results of world economies. It measures innovation based on criteria that include institutions, human capital and research, infrastructure, credit, investment, linkages; the creation, absorption and diffusion of knowledge; and creative outputs.

The GII has two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index, and seven pillars, each consisting of three sub-pillars.