GLOBAL INNOVATION INDEX 2020



CHINA

14th China ranks 14th among the 131 economies featured in the GII 2020.

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.

The following table shows the rankings of China over the past three years, noting that 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 2020 is between ranks 9 and 16.

	GII	Innovation inputs	Innovation outputs		
2020	14	26	6		
2019	14	26	5		
2018	17	27	10		

Rankings of China (2018–2020)

- China performs better in innovation outputs than innovation inputs in 2020.
- This year China ranks 26th in innovation inputs, the same as last year and higher compared to 2018.
- As for innovation outputs, China ranks 6th. This position is lower than last year and higher compared to 2018.



China ranks 1st among the 37 upper middle-income group economies.



China ranks 4th among the 17 economies in South East Asia, East Asia, and Oceania.



China retains its 14th place in 2020, having broken into the GII top 15 last year and establishing itself as an innovation leader.

China stands out for producing innovations that are comparable to those of the high-income group, including the top 10 economies, such as the Netherlands, the United Kingdom, and the United States of America. It maintains its world leadership in several indicators related to intellectual property: Patents by origin, Utility models, Trademarks, and Industrial designs. It also ranks within the top three economies in other indicators, such as Productivity growth and Creative goods exports.

This year, China registers gains in the GII area that captures the state of an economy's human capital and research systems, thanks to improvements in important variables, advancing its ranking in R&D expenditure and achieving 3rd place in R&D-intensive global companies. Progress is also visible in the GII area that measures the sophistication of the local market in relation to, for example, the credit and investment environments. Here, improvements are found in the indicators Domestic credit to private sector and Ease of protecting minority investors.

China is outperforming expectations in the new GII indicator Global brand value, ranking 17th and performing well above expectations for its income level. It hosts 408 of the top 5,000 brands, with a total value of US\$1.6 trillion. Of these 408 brands, nine rank within the top 25 most valuable brands worldwide, with the other 14 brands held by economies such as the United States of America, Germany, Japan, and the Republic of Korea. Examples of these highly valuable brands include the banks ICBC and China Construction Bank, and technology giant Huawei.

China also retains 1st place in the quality of innovation among middle-income economies for the eighth consecutive year. In the indicators that compose this GII metric, China ranks 3rd in the Quality of universities, with Tsinghua University, Peking University, and Fudan University within the top 50 universities worldwide. It is also the middle-income economy that makes the greatest efforts in the internationalization of its inventions: patent families account for 10% of China's innovation quality score, much higher than the average for middle-income economies, which is set at 4%.

China hosts 17 of the top science and technology clusters worldwide – with Shenzhen–Hong Kong– Guangzhou and Beijing taking the 2nd and 4th spots, respectively.



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.

Relative to GDP, China is performing above expectations for its level of development.



The positive relationship between innovation and development





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.

China produces more innovation outputs relative to its level of innovation investments.

Innovation input to output performance, 2020





BENCHMARKING CHINA AGAINST OTHER UPPER MIDDLE-INCOME ECONOMIES AND SOUTH EAST ASIA, EAST ASIA, AND OCEANIA

China's scores in the seven GII pillars



Upper middle-income group

China has high scores in all seven GII pillars, which are above average for the upper middle-income group.

South East Asia, East Asia, and Oceania

Compared to other economies in South East Asia, East Asia, and Oceania, China performs:

- above average in six out of the seven GII pillars: Human capital & research, Infrastructure, Market sophistication, Business sophistication, Knowledge & technology outputs, and Creative outputs; and
- below average in one of the GII pillars: Institutions.





OVERVIEW OF CHINA RANKINGS IN THE SEVEN GII AREAS

China performs best in Knowledge & technology outputs and its weakest performance is in Institutions.



*The highest possible ranking in each pillar is 1.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of China in the GII 2020.

Strengths			Weaknesses				
Code	Indicator name	Rank	Code	Indicator name	Rank		
2.1.4	PISA scales in reading, maths & science	1	1.2	Regulatory environment	102		
2.3.3	Global R&D companies, top 3, mn US\$	3	1.2.3	Cost of redundancy dismissal, salary weeks	109		
2.3.4	QS university ranking, average score top 3*	3	2.1.3	School life expectancy, years	87		
4.3	Trade, competition, and market scale	3	2.2.3	Tertiary inbound mobility, %	101		
4.3.3	Domestic market scale, bn PPP\$	1	3.3.1	GDP/unit of energy use	94		
5.1.2	Firms offering formal training, %	1	3.3.2	Environmental performance*	98		
5.1.4	GERD financed by business, %	4	4.1.3	Microfinance gross loans, % GDP	73		
6.1	Knowledge creation	4	5.2.3	GERD financed by abroad, % GDP	81		
6.1.1	Patents by origin/bn PPP\$ GDP	1	5.3.4	FDI net inflows, % GDP	100		
6.1.3	Utility models by origin/bn PPP\$ GDP	1	7.2.2	National feature films/mn pop. 15–69	93		
6.2.1	Growth rate of PPP\$ GDP/worker, %	2	7.2.4	Printing & other media, % manufacturing	72		
7.1	Intangible assets	1					
7.1.1	Trademarks by origin/bn PPP\$ GDP	1					
7.1.3	Industrial designs by origin/bn PPP\$ GDP	1					
7.2.5	Creative goods exports, % total trade	1					

NOTES: * indicates an index; ⁺ indicates a survey question. Strengths and weaknesses are listed for pillars and/or sub-pillars where the data minimum coverage (DMC) requirements were not met. For the sake of caution, these ranks are shown in square brackets [] in the country profile. This is to ensure that incomplete data coverage does not lead to erroneous conclusions being made about strengths or weaknesses, in particular about strong or weak sub-pillar rankings.





STRENGTHS

Gll strengths for China are found in five of the seven Gll pillars.

- Human capital & research (21): shows strengths in the indicators PISA scales (1), R&D-intensive global companies (3) and Quality of universities (3).
- Market sophistication (19): demonstrates strengths in the sub-pillar Trade, competition, and market scale (3) and in the indicator Domestic market scale (1).
- Business sophistication (15): displays strengths in the indicators Firms offering formal training (1) and R&D financed by business (4).
- Knowledge & technology outputs (7): reveals strengths in the sub-pillar Knowledge creation (4) and in the indicators Patents by origin (1), Utility models by origin (1) and Productivity growth (2).
- Creative outputs (12): shows strengths in the sub-pillar Intangible assets (1) and in the indicators Trademarks by origin (1), Industrial designs by origin (1) and Creative goods exports (1).

WEAKNESSES

GII weaknesses for China are found in six of the seven GII pillars.

- Institutions (62): exhibits weaknesses in the sub-pillar Regulatory environment (102) and in the indicator Cost of redundancy dismissal (109).
- Human capital & research (21): China shows weaknesses in the indicators School life expectancy (87) and Tertiary inbound mobility (101).
- Infrastructure (36): displays weaknesses in the indicators GDP/unit of energy use (94) and Environmental performance (98).
- Market sophistication (19): the indicator Microfinance gross loans (73) reveals a weakness.
- Business sophistication (15): demonstrates weaknesses in the indicators R&D financed by abroad (81) and FDI net inflows (100).
- Creative outputs (12): reveals weaknesses in the indicators National feature films (93) and Printing & other media (72).

CHINA

GII 2020 rank



E) 1.1 1.1.1	6	26	Upper middle	SEA		· · · · · · · · · · · · · · · · · · ·			-		
1.1 1.1.1			opperinduie	JEAN	2		1,433.8	27,308.9	17,027.5		14
1.1 1.1.1			s	Score/Value	Rank				Sc	ore/Value	e Rank
1.1 1.1.1	INSTITU	TIONS		64.6	62		۸	BUSINESS SOPHIS	STICATION	52.9	
1.1.1	Political	environment		64.9	47	+	5.1	Knowledge workers		77.9	[1]
	Political a	nd operational	stability*	73.2	49		5.1.1	Knowledge-intensive	employment, %	n/a	n/a
1.1.2	Governm	ent effectivene	SS*	60.8	45	•	5.1.2	Firms offering formal to	raining, %	79.2	1 • •
12	Pequiato	ry environmer	nt .	50.7	102	0	514	GERD financed by bus	siness %	76.6	4
1.2.1	Regulator	v quality*		38.2	82	Ŭ	5.1.5	Females employed w/	advanced degrees, %	n/a	n/a
1.2.2	Rule of la	w*		41.4	72						
1.2.3	Cost of re	dundancy disr	nissal, salary weeks	27.4	109	0	5.2	Innovation linkages		24.5	48 •
1 3	Business			70 4	20		5.2.1	University/industry res	earch collaboration+	56.5	29
1.3	Ease of st	environment.		78.1	25		5.2.2	GERD financed by abr	ppment+	0.0	81 0
1.3.2	Ease of re	esolvina insolve	encv*	62.1	46		5.2.4	JV-strategic alliance d	eals/bn PPP\$ GDP	0.0	76
		5	,				5.2.5	Patent families 2+ offic	ces/bn PPP\$ GDP	1.0	27 🔶
-	HUMAN	CAPITAL &	RESEARCH	49.4	21	•	5.3	Knowledge absorptio	on	56.3	6 🔸
							5.3.1	Intellectual property pa	ayments, % total trade	1.2	28
2.1	Educatio	n	- 9/ CDD	64.5	[12]		5.3.2	High-tech imports, % to	otal trade	23.9	5 •
21.1	Governme	int funding/puni	secondary % GDP/can	n/a	n/a		534	EDI net inflows % GDF	% total trade	15	100 O
2.1.3	School life	e expectancy,	/ears.@	12.4	87	00	5.3.5	Research talent, % in b	ousiness enterprise	61.3	12 🔹
2.1.4	PISA scal	es in reading, r	naths, & science	579.0	1	• •					
2.1.5	Fupil-tead	iner ratio, seco	riudiy	15.5	02		<u></u>	KNOWLEDGE & TEC	HNOLOGY OUTPUTS	55.1	7 🔶
2.2	Tertiary e	ducation		25.0	83					70.4	
2.2.1	l ertiary e	nrolment, % gr	OSS	50.6	58		6.11	Research Andread Resear		70.4	4 • •
2.2.2	Tertiary in	bound mobility	. %	0.4	101	00	612	PCT patents by origin/bit P	/bn PPP\$ GDP	2.2	15 .
	rondarj n		,, , , , , , , , , , , , , , , , , , , ,			• •	6.1.3	Utility models by origin	1/bn PPP\$ GDP	81.6	1
2.3	Research	& developme	nt (R&D)	58.8	16		6.1.4	Scientific & technical a	articles/bn PPP\$ GDP	13.8	39
2.3.1	Research	ers, FTE/mn pc	p	1,307.1	48		6.1.5	Citable documents H-i	index	57.0	13 🔶
2.3.2	Gross exp	enditure on Ra	&D, % GDP	2.2	13		6.2	Knowledge immed		50.4	c .
2.3.3	OS unive	sity ranking as	/g. exp. top 5, mm \$05 /erade score top 3*	91.8	3		6.2	Growth rate of PPP\$ G	SDP/worker %	50.4	2
21011	do driver	Sity runking, a	rerage score top o min	05.0	5		6.2.2	New businesses/th po	p. 15-64	n/a	n/a
							6.2.3	Computer software sp	ending, % GDP	0.0	23 🔶
*							6.2.4	ISO 9001 quality certifi	icates/bn PPP\$ GDP	11.7	24
3.1	Informatio	on & communic	ation technologies (ICT	s) 75.8	45		0.2.0	nigh- and medium-nig	n-teen manufacturing, /o	40.4	13
3.1.1	ICT acces	s*		61.5	71		6.3	Knowledge diffusion.		44.5	21 🔶
3.1.2	ICT use*			65.1	53	+	6.3.1	Intellectual property re	eceipts, % total trade	0.2	44
3.1.3	Governm	ent's online se	rvice*	86.1	34	1	6.3.2	High-tech net exports,	, % total trade	28.0	5 •
3.1.4	E-particip			90.5	29	•	6.3.4	FDI net outflows, % GE	DP	1.3	48
3.2	General i	nfrastructure.		48.1	6	٠					
3.2.1	Electricity	output, kWh/n	ın pop	4,/62.1	45		100			47.0	42 4
3.2.2	Gross car	penormatice	% GDP	43.4	20		Ŵ	CREATIVE OUTPU	15	47.0	12 🔹
	0.000 00l	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					7.1	Intangible assets		72.1	1 • •
3.3	Ecologica	al sustainabilit	y	32.5	54		7.1.1	Trademarks by origin/	bn PPP\$ GDP	281.9	1 • •
3.3.1	GDP/unit	of energy use.		6.8	94	0	7.1.2	Global brand value, to	p 5,000, % GDP	118.3	17 🔶
3.3.2	Environm	ental performa	nce*	37.3	98	0 \$	7.1.3	Industrial designs by c	origin/bn PPP\$ GDP	27.3	1 • •
3.3.3	150 14001	environmental o	enincales/bn PPP\$ GDP	5.4	19		7.1.4	ICI's & organizational	model creation+	59.7	46 •
đ	MARKE			58 5	19		7.2	Creative goods and s	ervices	39.7	12
	MARNE	SOPHISTIC	ATION	30.3	19		7.2.2	National feature films/	mn pop. 15-69	0.8	93 O
4.1	Credit			53.1	25	٠	7.2.3	Entertainment & Medi	a market/th pop. 15-69	9.7	37 🔹
4.1.1	Ease of g	etting credit*		60.0	74		7.2.4	Printing and other me	dia, % manufacturing	0.8	72 O
4.1.2	Domestic	credit to priva	te sector, % GDP	161.1	6	•	7.2.5	Creative goods expor	ts, % total trade	11.8	1 • •
4.1.3	wiici ofinal	ice gross loan	5, 10 GUT	0.0	13	0	73	Online creativity		41	[113]
4.2	Investme	nt		37.1	66		7.3.1	Generic top-level doma	ins (TLDs)/th pop. 15-69	2.2	74
4.2.1	Ease of p	rotecting mino	rity investors*	72.0	27		7.3.2	Country-code TLDs/th	pop. 15-69	6.1	47
4.2.2	Market ca	pitalization, %	GDP	61.3	24		7.3.3	Wikipedia edits/mn po	p. 15-69	n/a	n/a
4.2.3	Venture o	apital deals/br	PPP\$ GDP	0.1	32		7.3.4	Mobile app creation/b	n PPP\$ GDP	n/a	n/a
4.3	Trade, co	mpetition, and	d market scale	85.3	3	• •					
101	Applied to	aritt rate, weigh	ted avg., %	3.4	68						
4.3.1	IFT COPPOSE IN COMPANY	ILIOCAL COMPO	11101 IT	14.4	32	-					

NOTES:
Indicates a strength;
A weakness;
Indicates a strength;
A weakness;
Indicates that the economy's data are older than the base year; see Appendix II for details, including the year of the data, at http://globalinnovationindex.org. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.





DATA AVAILABILITY

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

Missing data

Code	Indicator name	Country	Model	Source
		year	year	Source
2.1.1	Expenditure on education, % GDP	n/a	2018	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2016	UNESCO Institute for Statistics
2.2.2	Graduates in science & engineering, %	n/a	2017	UNESCO Institute for Statistics
5.1.1	Knowledge-intensive employment, %	n/a	2018	International Labour Organization
5.1.5	Females employed w/advanced degrees, %	n/a	2018	International Labour Organization
6.2.2	New businesses/th pop. 15–64	n/a	2018	World Bank
7.3.3	Wikipedia edits/mn pop. 15–69	n/a	2019	Wikimedia Foundation
7.3.4	Mobile app creation/bn PPP\$ GDP	n/a	2019	App Annie

Outdated data

Code	Indicator namo	Country	Model	Sourco
		year	year	Source
2.1.3	School life expectancy, years	2010	2017	UNESCO Institute for Statistics
5.1.2	Firms offering formal training, %	2011	2018	World Bank
5.2.1	University/industry research collaboration ⁺	2017	2019	World Economic Forum
5.2.2	State of cluster development ⁺	2017	2019	World Economic Forum

ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. In 2020, the GII presents its 13th edition devoted to the theme *Who Will Finance Innovation?*

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.







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