



INDIA

40th India ranks 40th among the 132 economies featured in the GII 2022.

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 India 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 India in the GII 2022 is between ranks 39 and 41.

Rankings for India (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	48	57	45
2021	46	57	45
2022	40	42	39

- India performs better in innovation outputs than innovation inputs in 2022.
- This year India ranks 42nd in innovation inputs, higher than both 2021 and 2020.
- As for innovation outputs, India ranks 39th. This position is higher than both 2021 and 2020.

1st India ranks 1st among the 36 lower-middle-income group economies.

1st India ranks 1st among the 10 economies in Central and Southern Asia.

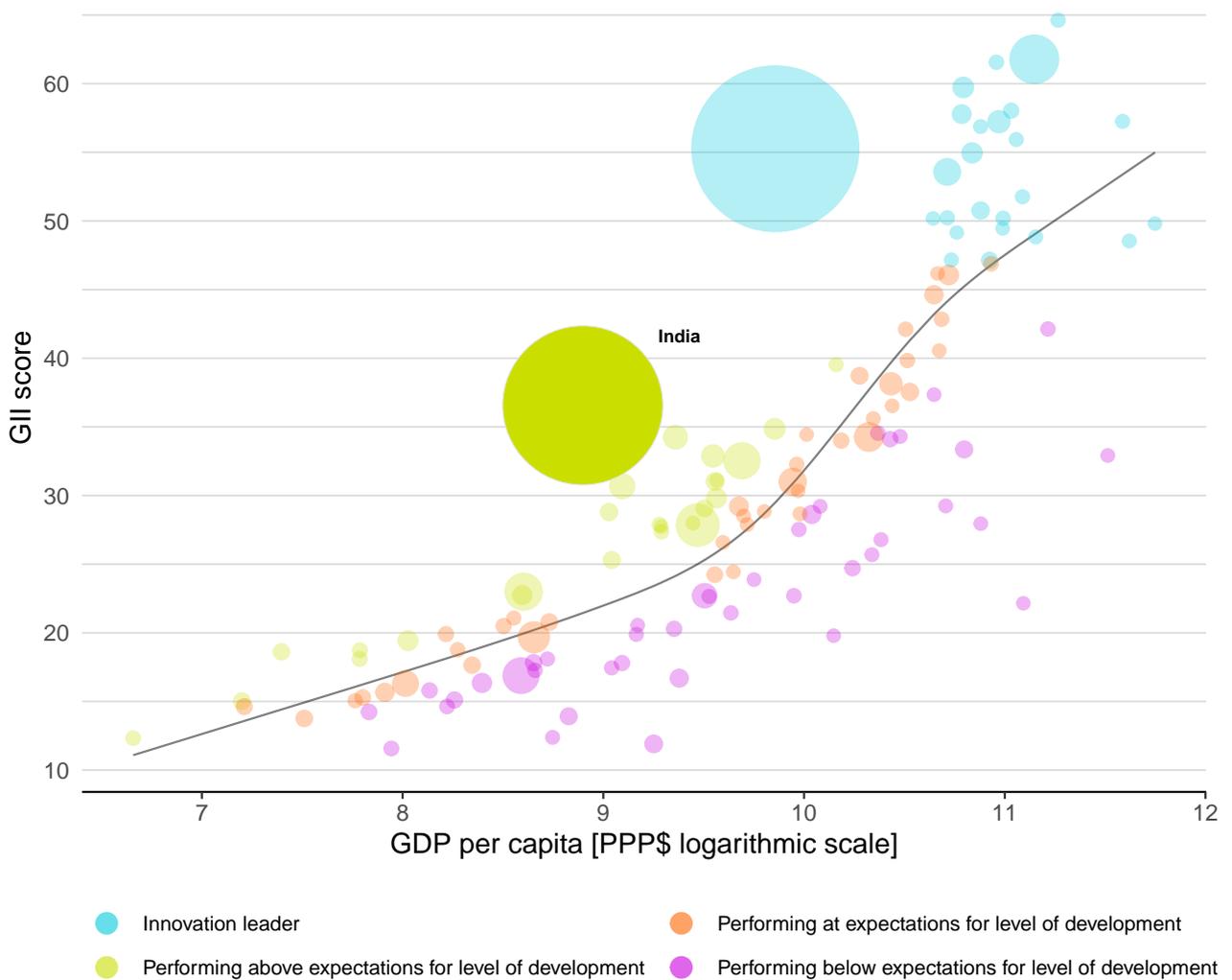


EXPECTED VS. OBSERVED INNOVATION PERFORMANCE

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, India's performance is above expectations for its level of development.

The positive relationship between innovation and development



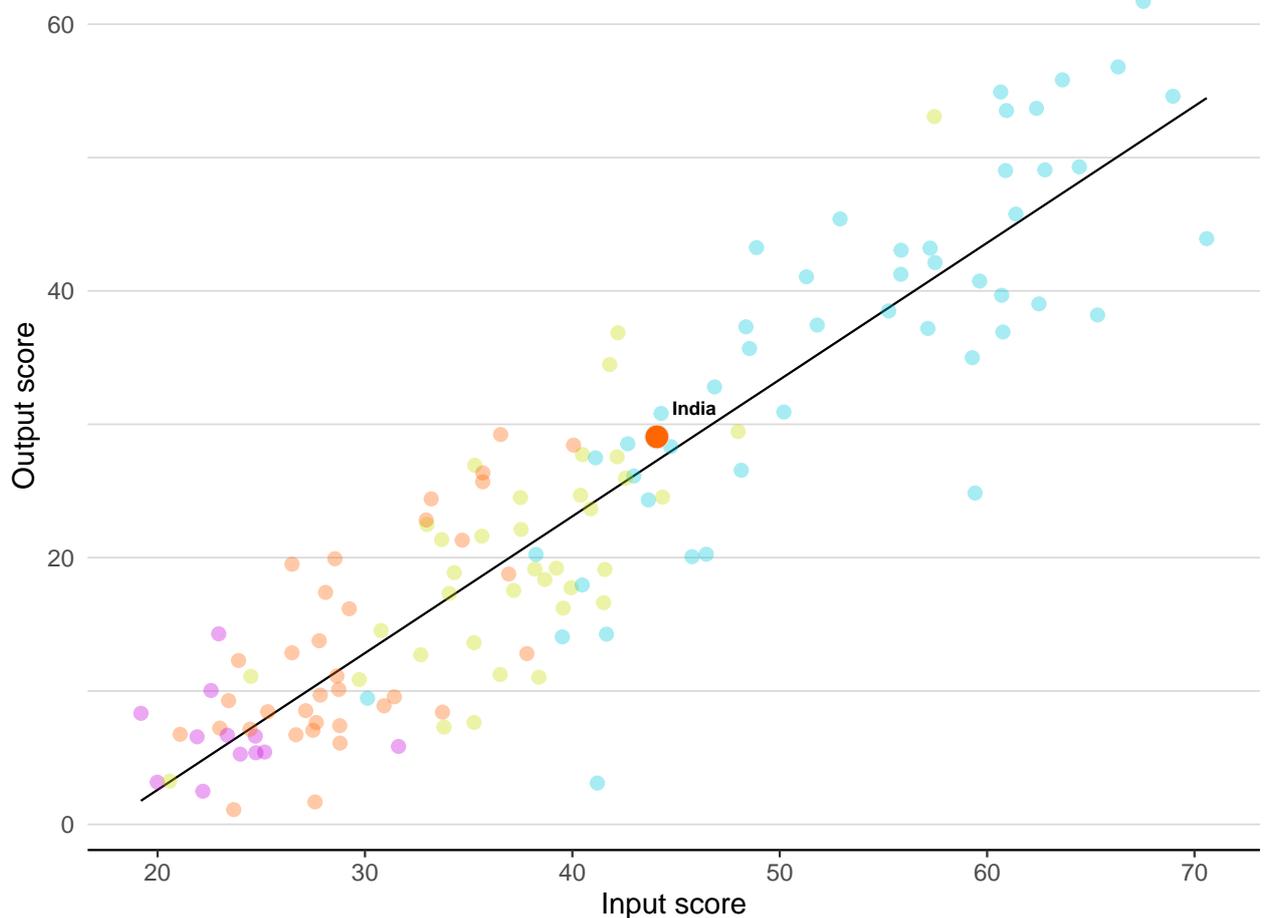


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

Innovation input to output performance



Income ● High income ● Upper middle ● Lower middle ● Low income — Fitted line



BENCHMARKING AGAINST OTHER LOWER MIDDLE-INCOME GROUP ECONOMIES AND CENTRAL AND SOUTHERN ASIA

The seven GII pillar scores for India



Lower-middle-income group economies

India performs above the lower-middle-income group average in all GII pillars.

Central and Southern Asia

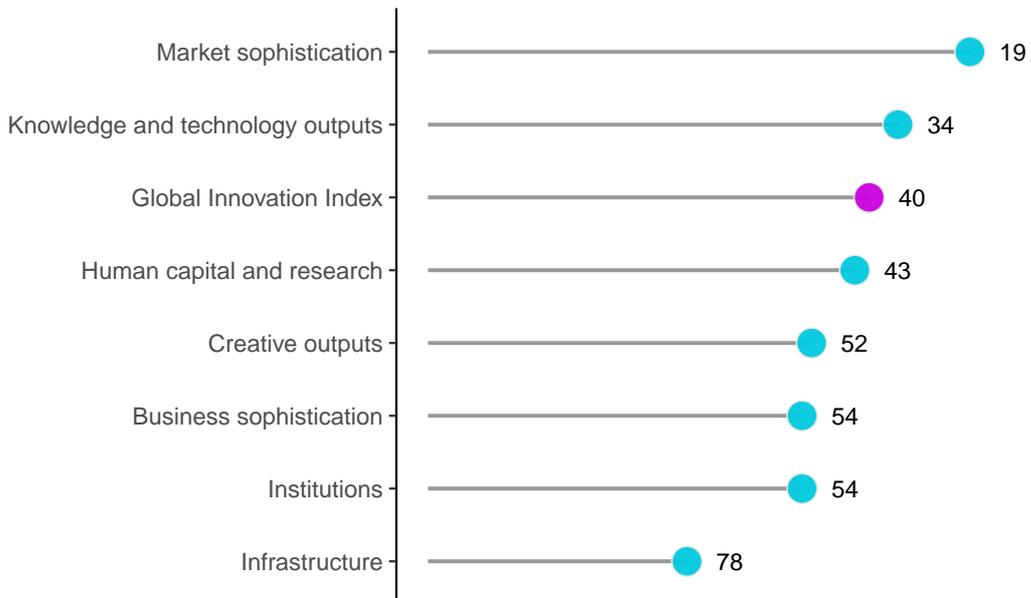
India performs above the regional average in all GII pillars.



OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

India performs best in Market sophistication and its weakest performance is in Infrastructure.

The seven GII pillar ranks for India



Note: The highest possible ranking in each pillar is 1.

The full WIPO Intellectual Property Statistics profile for India can be found at:

https://www.wipo.int/ipstats/en/statistics/country_profile/profile.jsp?code=IN.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the indicator strengths and weaknesses of India in the GII 2022.

Strengths and weaknesses for India

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
1.3.2	Entrepreneurship policies and culture	12	2.1.3	School life expectancy, years	92
2.2.2	Graduates in science and engineering, %	11	2.1.5	Pupil-teacher ratio, secondary	95
2.3.3	Global corporate R&D investors, top 3, mn USD	16	2.2.3	Tertiary inbound mobility, %	109
4.1.1	Finance for startups and scaleups	8	2.3.1	Researchers, FTE/mn pop.	82
4.2.4	Venture capital received, value, % GDP	6	3.1.1	ICT access	99
4.3.2	Domestic industry diversification	14	3.3.2	Environmental performance	130
4.3.3	Domestic market scale, bn PPP\$	1	5.1.5	Females employed w/advanced degrees, %	103
6.2.1	Labor productivity growth, %	12	6.2.2	New businesses/th pop. 15–64	114
6.3.4	ICT services exports, % total trade	1	7.2.3	Entertainment and media market/th pop. 15–69	56
7.2.1	Cultural and creative services exports, % total trade	12	7.2.4	Printing and other media, % manufacturing	86

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, %	2.6	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.

DATA AVAILABILITY

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

Missing data for India

Code	Indicator name	Economy year	Model year	Source
2.1.4	PISA scales in reading, maths and science	n/a	2018	OECD, PISA
5.2.3	GERD financed by abroad, % GDP	n/a	2019	UNESCO Institute for Statistics
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2020	World Intellectual Property Organization

Outdated data for India

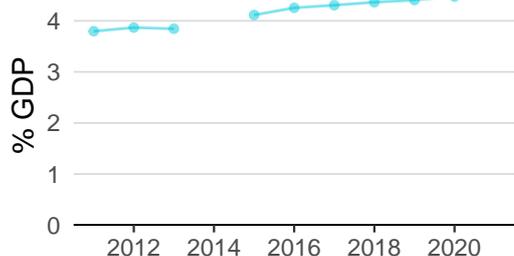
Code	Indicator name	Economy year	Model year	Source
2.3.1	Researchers, FTE/mn pop.	2018	2020	UNESCO Institute for Statistics
2.3.2	Gross expenditure on R&D, % GDP	2018	2020	UNESCO Institute for Statistics
4.3.2	Domestic industry diversification	2018	2019	United Nations Industrial Development Organization
5.1.1	Knowledge-intensive employment, %	2020	2021	International Labour Organization
5.1.2	Firms offering formal training, %	2014	2019	World Bank Enterprise Surveys
5.1.3	GERD performed by business, % GDP	2018	2020	UNESCO Institute for Statistics
5.1.4	GERD financed by business, %	2017	2019	UNESCO Institute for Statistics
5.1.5	Females employed w/advanced degrees, %	2020	2021	International Labour Organization
5.3.5	Research talent, % in businesses	2018	2020	UNESCO Institute for Statistics
6.2.5	High-tech manufacturing, %	2018	2019	United Nations Industrial Development Organization
7.2.4	Printing and other media, % manufacturing	2018	2019	United Nations Industrial Development Organization



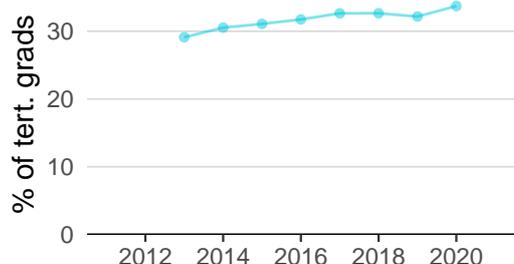
INDIA'S INNOVATION SYSTEM

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

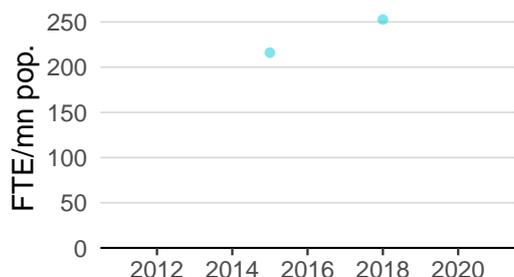
Innovation inputs



2.1.1 Expenditure on education was equal to 4.5% GDP in 2020—up by 2 percentage points from the year prior—and equivalent to an indicator rank of 60.



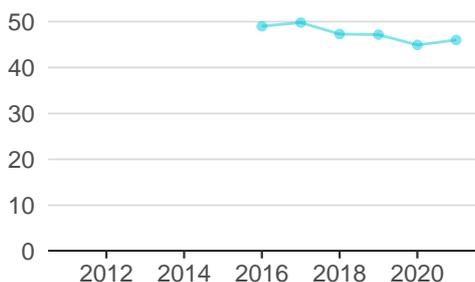
2.2.2 Graduates in science and engineering was equal to 33.7% of tert. grads in 2020—up by 5 percentage points from the year prior—and equivalent to an indicator rank of 11.



2.3.1 Researchers was equal to 252.7 FTE/mn pop. in 2018 and equivalent to an indicator rank of 82.



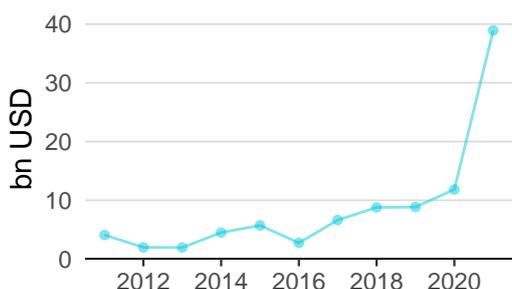
2.3.2 Gross expenditure on R&D was equal to 0.7% GDP in 2018—down by 2 percentage points from the year prior—and equivalent to an indicator rank of 53.



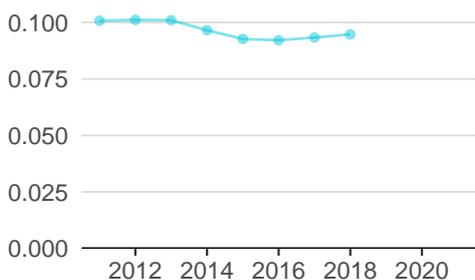
2.3.4 QS university ranking was equal to 46.0 in 2021—up by 2 percentage points from the year prior—and equivalent to an indicator rank of 24.



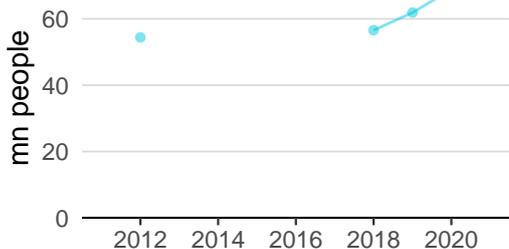
3.1.1 ICT access was equal to 7.0 in 2020 and equivalent to an indicator rank of 99.



4.2.4 Venture capital received was equal to 38.9 bn USD in 2021—up by 229 percentage points from the year prior—and equivalent to an indicator rank of 6.

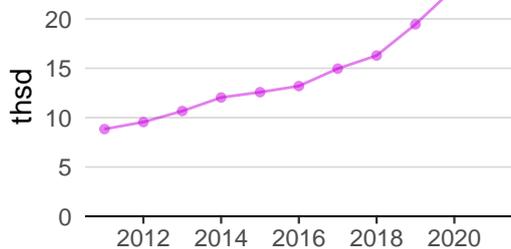


4.3.2 Domestic industry diversification was equal to 0.1 in 2018—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 14.

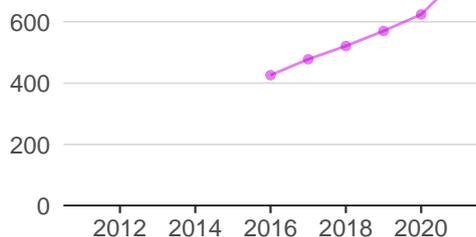


5.1.1 Knowledge-intensive employment was equal to 68.9 mn people in 2020—up by 11 percentage points from the year prior—and equivalent to an indicator rank of 86.

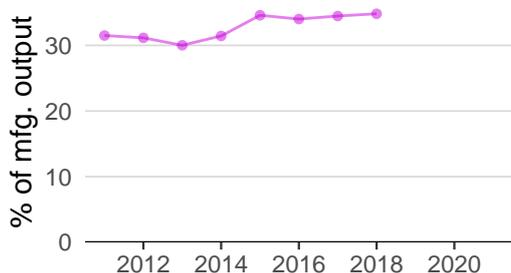
Innovation outputs



6.1.1 Patents by origin was equal to 23.1 thsd in 2020—up by 19 percentage points from the year prior—and equivalent to an indicator rank of 28.



6.1.5 Citable documents H-index was equal to 745.0 in 2021—up by 19 percentage points from the year prior—and equivalent to an indicator rank of 21.



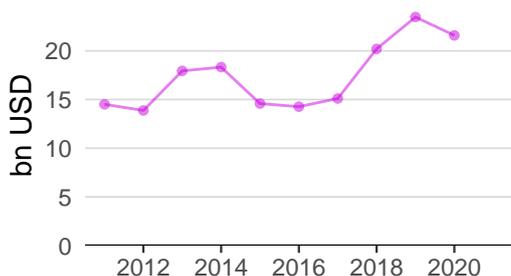
6.2.5 High-tech manufacturing was equal to 34.8% of mfg. output in 2018—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 37.



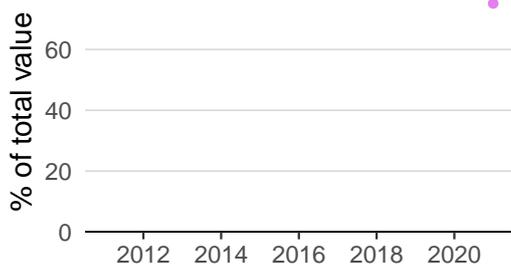
6.3.1 Intellectual property receipts was equal to 1.3 bn USD in 2020—up by 44 percentage points from the year prior—and equivalent to an indicator rank of 46.



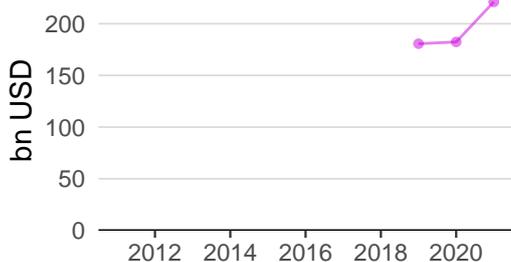
6.3.2 Production and export complexity was equal to 0.5 in 2019—down by 14 percentage points from the year prior—and equivalent to an indicator rank of 43.



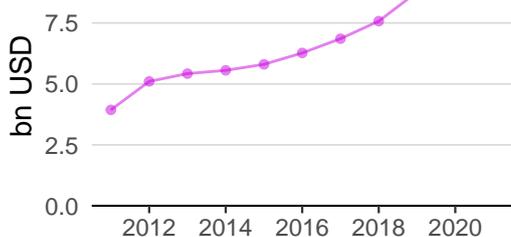
6.3.3 High-tech exports was equal to 21.6 bn USD in 2020—down by 8 percentage points from the year prior—and equivalent to an indicator rank of 39.



7.1.1 Intangible asset intensity was equal to 75.1% of total value in 2021 and equivalent to an indicator rank of 14.



7.1.3 Global brand value was equal to 221.1 bn USD in 2021—up by 21 percentage points from the year prior—and equivalent to an indicator rank of 29.



7.2.1 Cultural and creative services exports was equal to 9.4 bn USD in 2020—up by 7 percentage points from the year prior—and equivalent to an indicator rank of 12.

INDIA'S INNOVATION TOP PERFORMERS

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank
		[mn EUR]	[%]	[%]	
TATA MOTORS	Automobiles & Parts	1,965	3.8	7.1	79
SUN PHARMACEUTICAL INDUSTRIES	Pharmaceuticals & Biotechnology	233	8.8	6.3	581
AUROBINDO PHARMA	Pharmaceuticals & Biotechnology	176	62.9	6.4	751

Source: European Commission's Joint Research Centre (<https://iri.jrc.ec.europa.eu/scoreboard/2021-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

University	Score	Rank
INDIAN INSTITUTE OF TECHNOLOGY BOMBAY	46.4	177
INDIAN INSTITUTE OF TECHNOLOGY DELHI	45.9	185
INDIAN INSTITUTE OF SCIENCE BANGALORE	45.7	186=

Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2022>).
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".

7.1.1 Intangible asset intensity, top 15

Firm	Rank
TATA CONSULTANCY	1
RELIANCE INDUSTRIES	2
HDFC BANK LIMITED	3

Source: Brand Finance (<https://brandirectory.com/reports/gift-2021>).
Note: Brand Finance only provides within economy ranks.

7.1.3 Global brand value, top 5,000

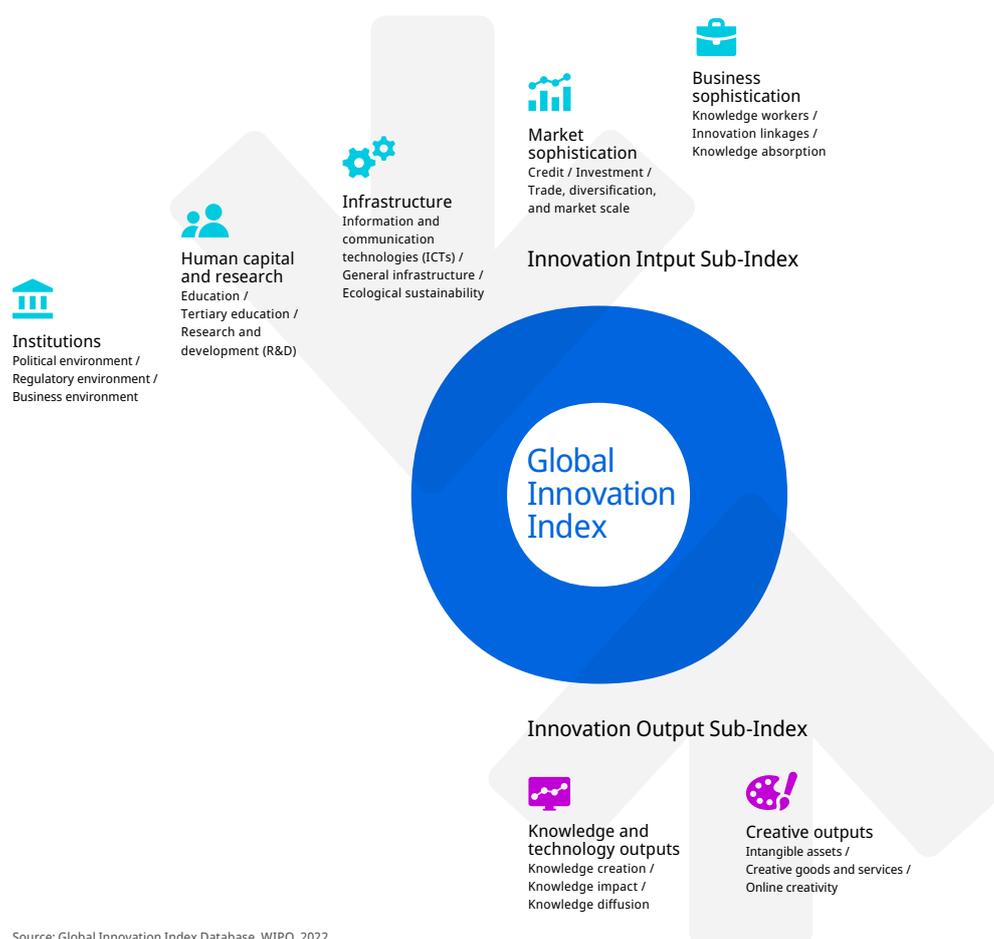
Brand	Industry	Rank
TATA GROUP	Engineering & Construction	1
INFOSYS	Tech	2
LIC	Insurance	3

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

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.