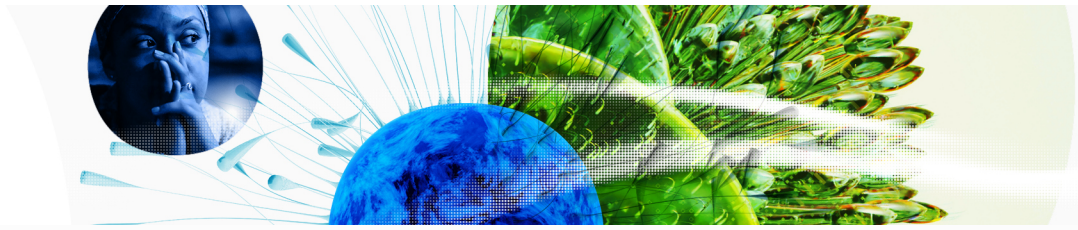
Global Innovation Index 2023



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

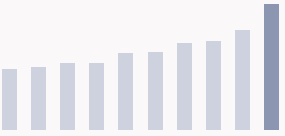
Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation**.

India ranking in the Global Innovation Index 2023

> India ranks 40th among the 132 economies featured in the GII 2023.

> India ranks 1st among the 37 lower-middle-income group economies.

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



> India GII Ranking (2020-2023)

The table shows the rankings of India 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 India in the GII 2023 is between ranks 37 and 43.

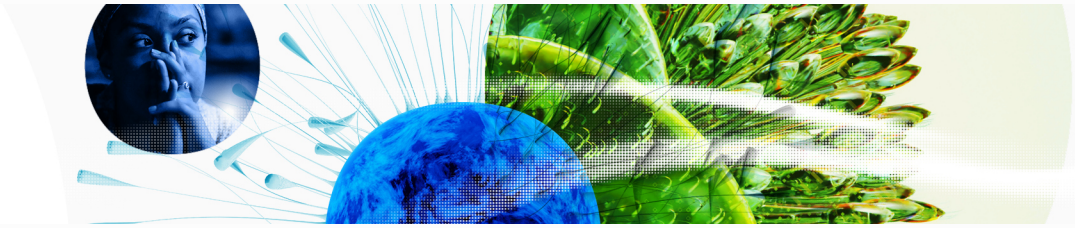
	GII Position	Innovation Inputs	Innovation Outputs
2020	48th	57th	45th
2021	46th	57th	45th
2022	40th	42nd	39th
2023	40th	46th	35th

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

This year India ranks 46th in innovation inputs. This position is lower than last year.

India ranks 35th in innovation outputs. This position is higher than last year.

Global Innovation Index 2023

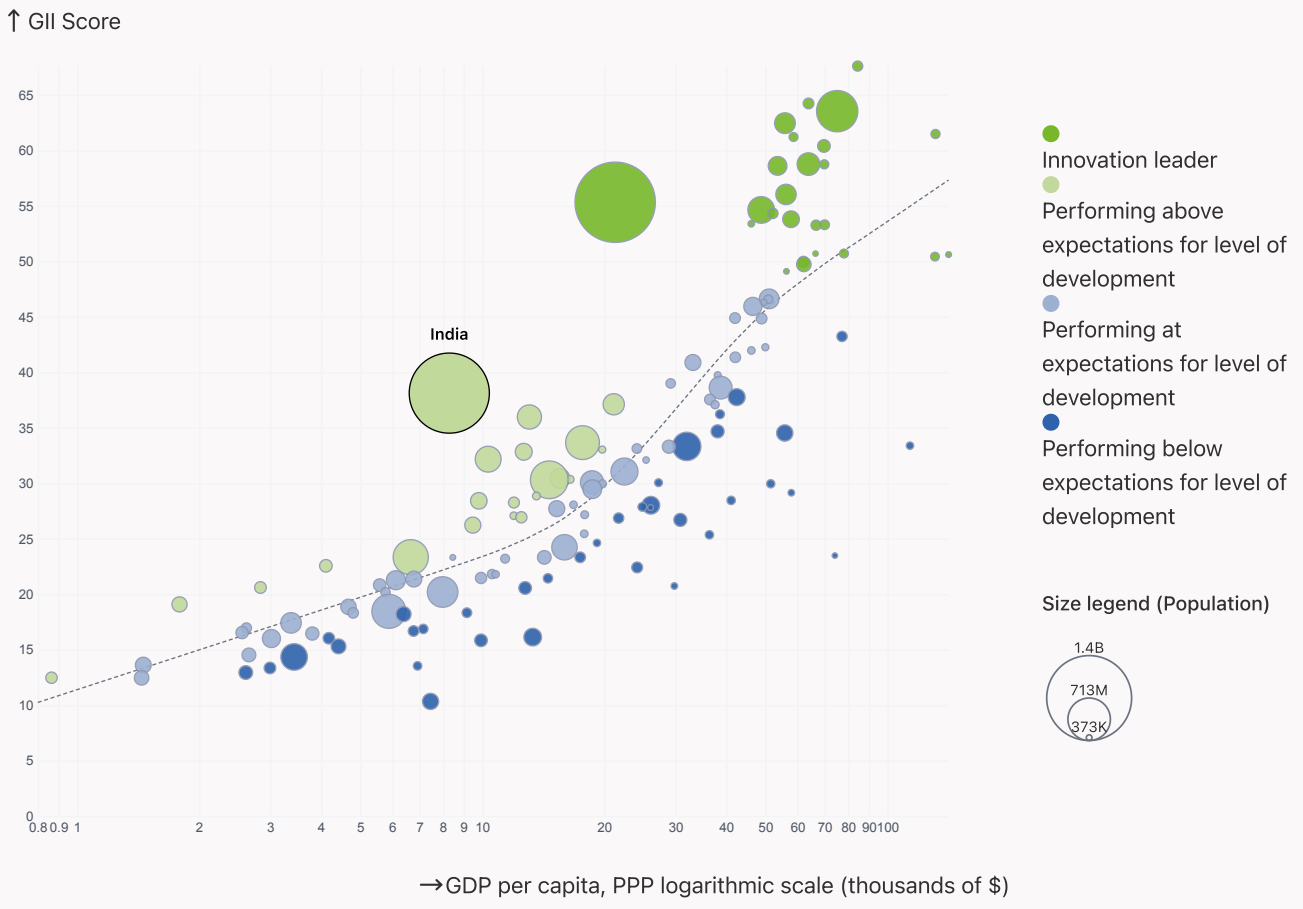


→ Expected vs. observed innovation performance

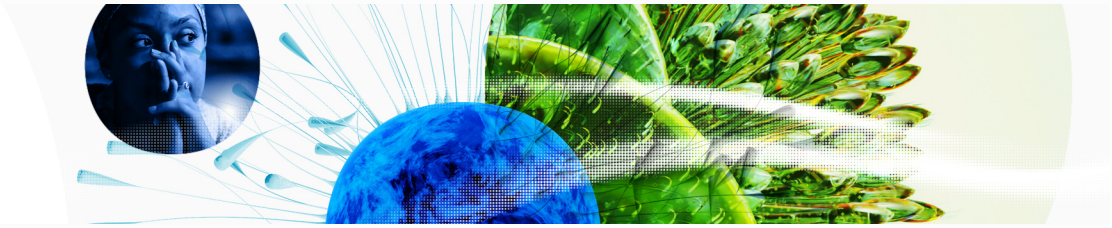
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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

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

> Innovation overperformers relative to their economic development



Global Innovation Index 2023

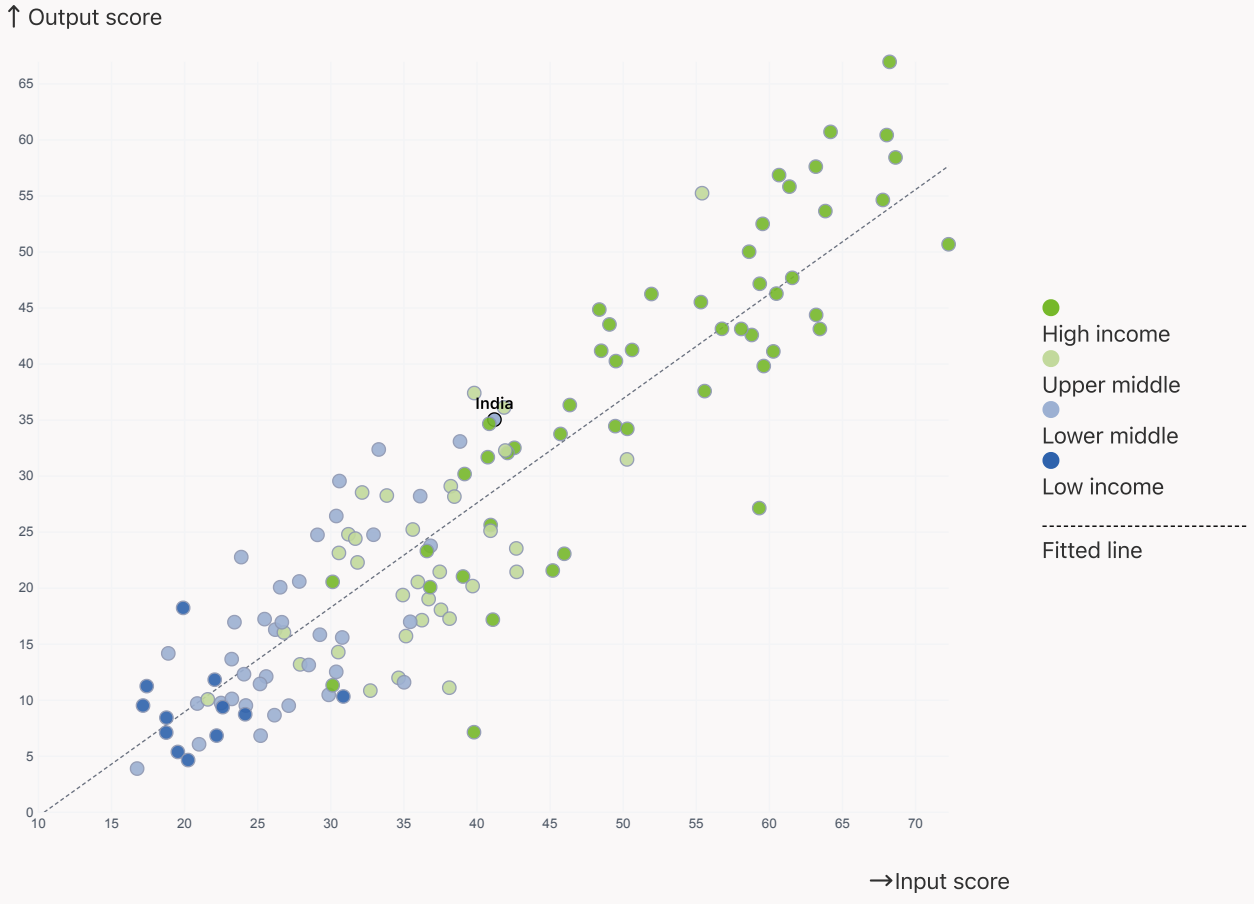


→ Effectively translating innovation investments into innovation outputs

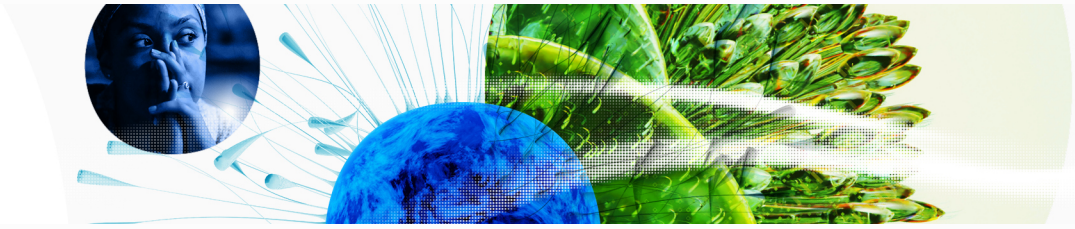
The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

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

> Relationship between innovation inputs and outputs

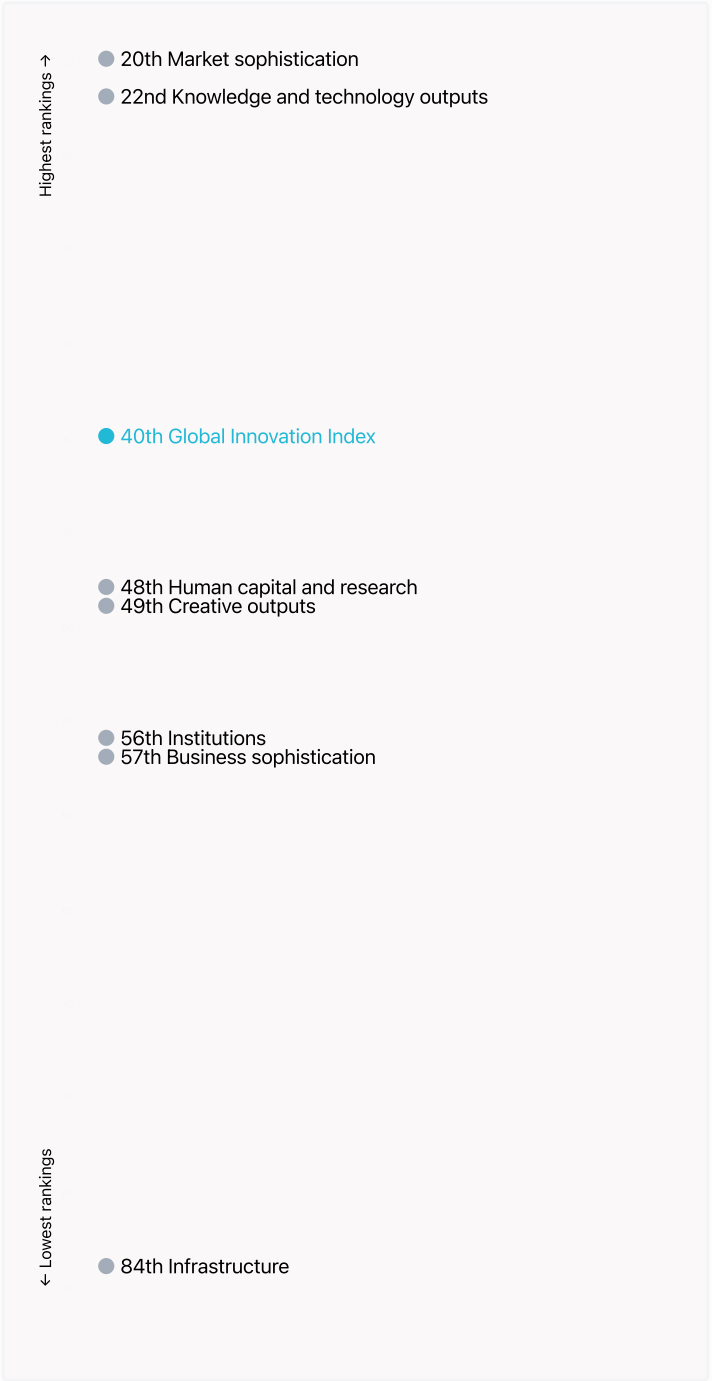


Global Innovation Index 2023



→ Overview of India'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 India are those that rank above the GII (shown in blue) and the weakest are those that rank below.



> Highest rankings

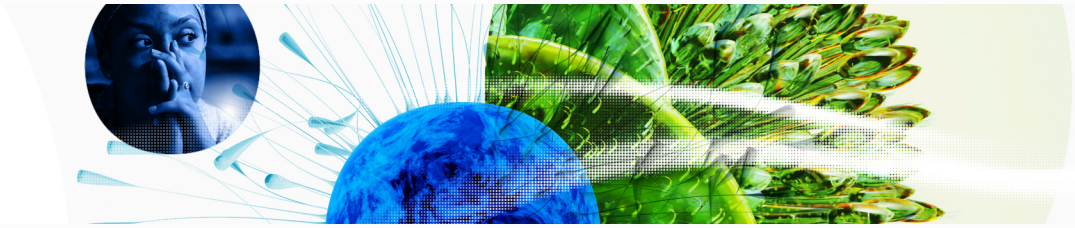
India ranks highest in Market sophistication (20th) and Knowledge and technology outputs (22nd).

> Lowest rankings

India ranks lowest in Infrastructure (84th), Business sophistication (57th) and Institutions (56th).

The full WIPO Intellectual Property Statistics profile for India can be found on this link.

Global Innovation Index 2023



→ Benchmark of India against other country groupings for each of the seven areas of the GII Index

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

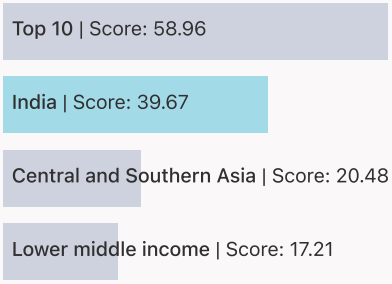
> Lower-Middle-Income economies

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

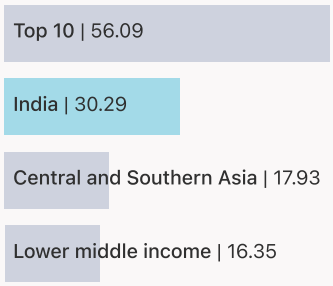
> Central And Southern Asia

India performs above the regional average in all the pillars.

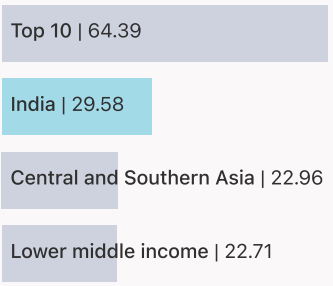
Knowledge and technology outputs



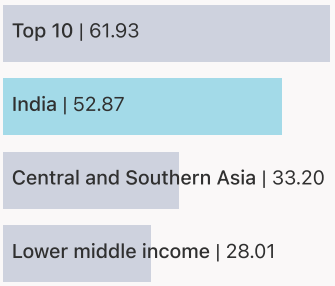
Creative outputs



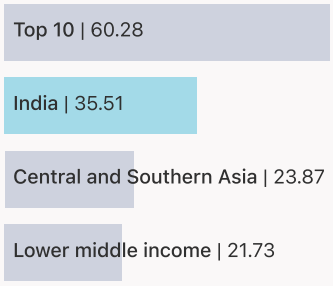
Business sophistication



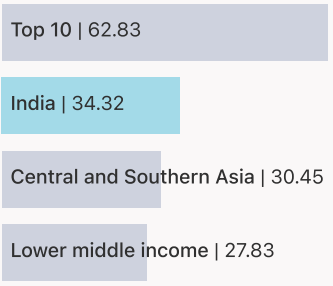
Market sophistication



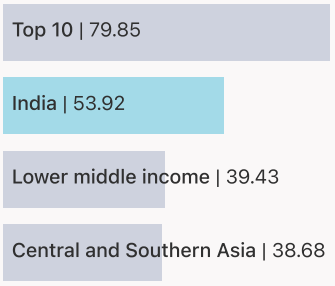
Human capital and research



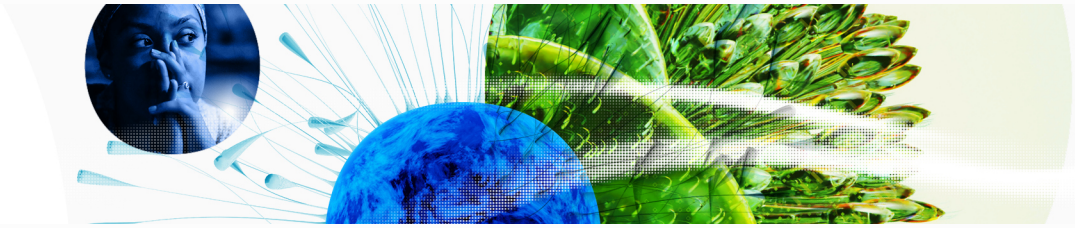
Infrastructure



Institutions



Global Innovation Index 2023



→ Innovation strengths and weaknesses in India

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

> India's main innovation strengths are **Domestic market scale, bn PPP$** (rank 1), **ICT services exports, % total trade** (rank 5) and **VC received, value, % GDP** (rank 6).

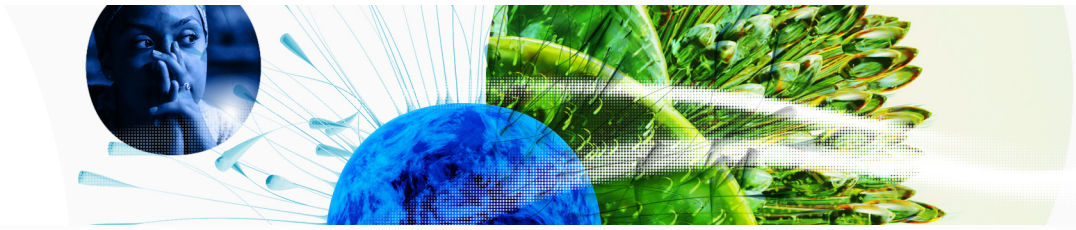
Strengths

Rank	Code	Indicator name
1	4.3.3	Domestic market scale, bn PPP$
5	6.3.4	ICT services exports, % total trade
6	4.2.4	VC received, value, % GDP
8	7.1.1	Intangible asset intensity, top 15, %
9	4.1.1	Finance for startups and scaleups
9	6.2.2	Unicorn valuation, % GDP
10	4.3.2	Domestic industry diversification
11	2.2.2	Graduates in science and engineering, %
13	2.3.3	Global corporate R&D investors, top 3, mn US$
16	3.2.3	Gross capital formation, % GDP

Weaknesses

Rank	Code	Indicator name
131	3.3.2	Environmental performance
110	2.2.3	Tertiary inbound mobility, %
106	5.1.5	Females employed w/advanced degrees, %
103	3.1.2	ICT use
101	3.1.1	ICT access
101	2.1.5	Pupil-teacher ratio, secondary
99	5.1.1	Knowledge-intensive employment, %
86	2.1.3	School life expectancy, years
81	2.3.1	Researchers, FTE/mn pop.
55	7.2.3	Entertainment and media market/th pop. 15-69

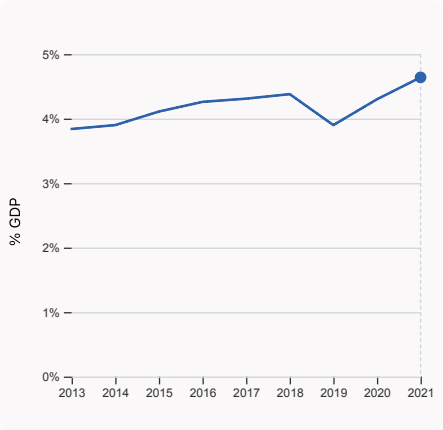
Global Innovation Index 2023



→ India's innovation system

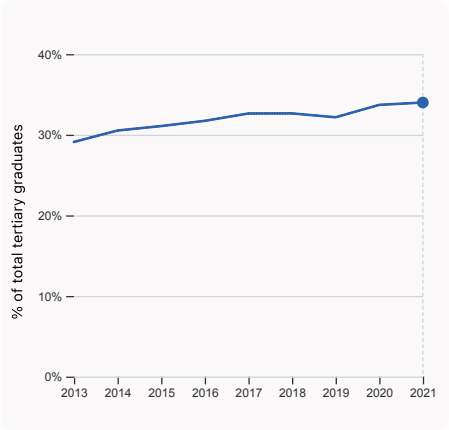
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in India



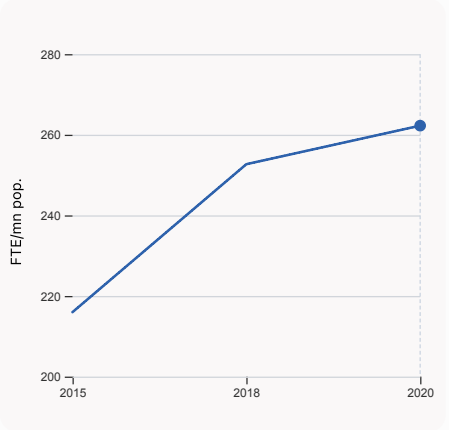
2.1.1 Expenditure on education, % GDP

was equal to 4.64% GDP in 2021, up by 0.34 percentage points from the year prior – and equivalent to an indicator rank of 49.



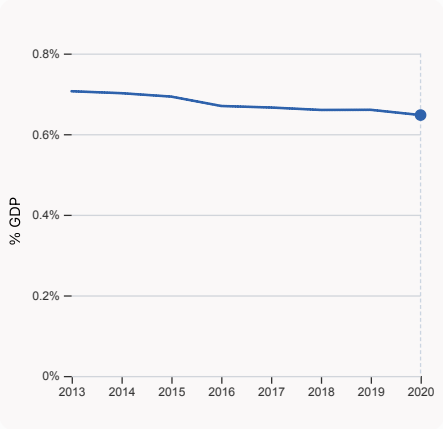
2.2.2 Graduates in science and engineering, %

was equal to 34% of total tertiary graduates in 2021, up by 0.29 percentage points from the year prior – and equivalent to an indicator rank of 11.



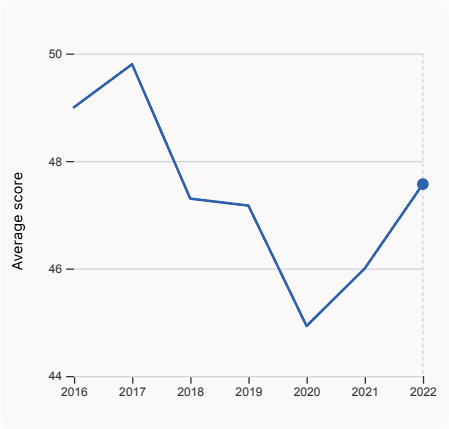
2.3.1 Researchers, FTE/mn pop.

was equal to 262.26 FTE/mn pop. in 2020, up by 3.78% from the year prior – and equivalent to an indicator rank of 81.



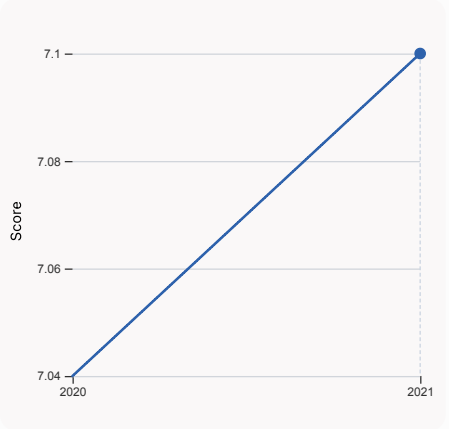
2.3.2 Gross expenditure on R&D, % GDP

was equal to 0.647% GDP in 2020, down by 0.013 percentage points from the year prior – and equivalent to an indicator rank of 54.



2.3.4 QS university ranking, top 3

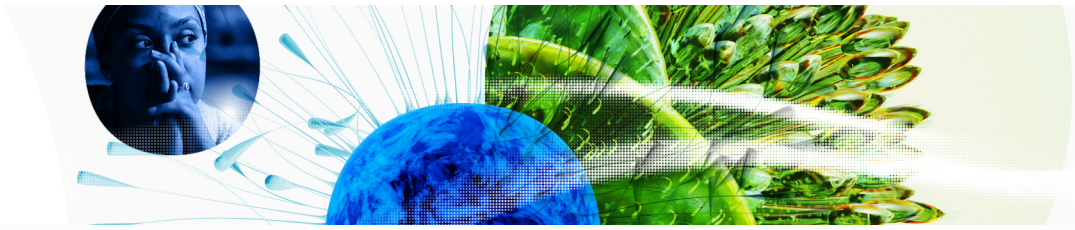
was equal to an average score of 47.57 for the top 3 universities in 2022, up by 3.41% from the year prior – and equivalent to an indicator rank of 22.

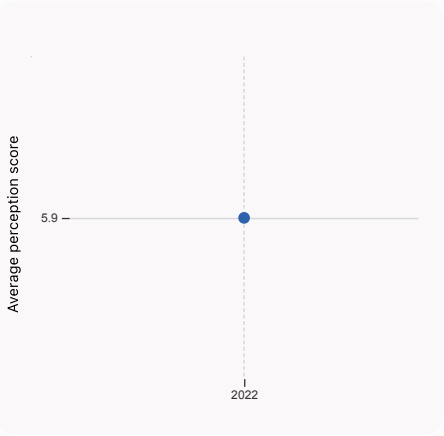


3.1.1 ICT access

was equal to a score of 7.1 in 2021, up by 0.85% from the year prior – and equivalent to an indicator rank of 101.

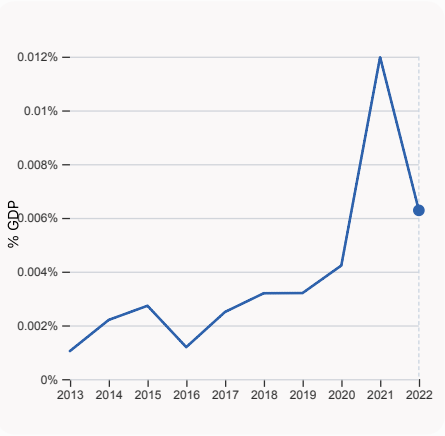
Global Innovation Index 2023





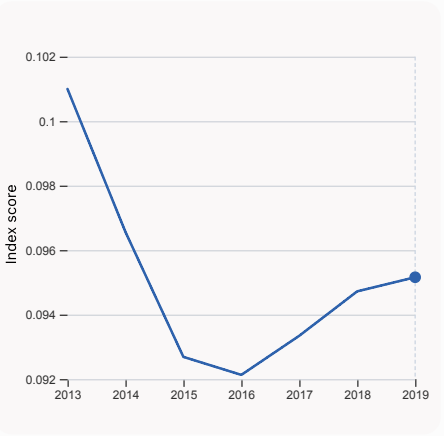
4.1.1 Finance for startups and scaleups

was equal to an average perception score of 5.9 in 2022, equivalent to an indicator rank of 9.



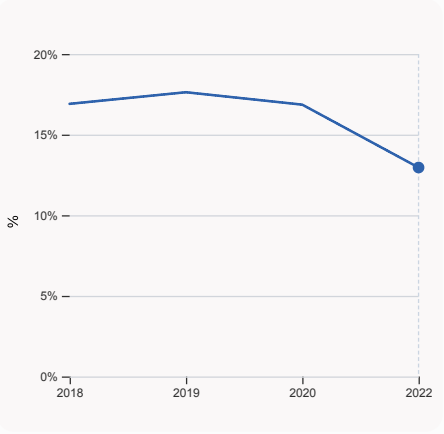
4.2.4 VC received, value, % GDP

was equal to 0.00628% GDP in 2022, down by 0.0057 percentage points from the year prior – and equivalent to an indicator rank of 6.



4.3.2 Domestic industry diversification

was equal to an index score of 0.095 in 2019, up by 0.46% from the year prior – and equivalent to an indicator rank of 10.



5.1.1 Knowledge-intensive employment, %

was equal to 12.96% in 2022, down by 3.9 percentage points from the year prior – and equivalent to an indicator rank of 99.

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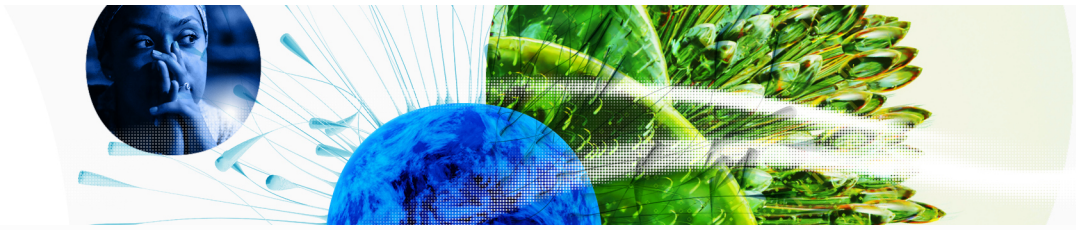
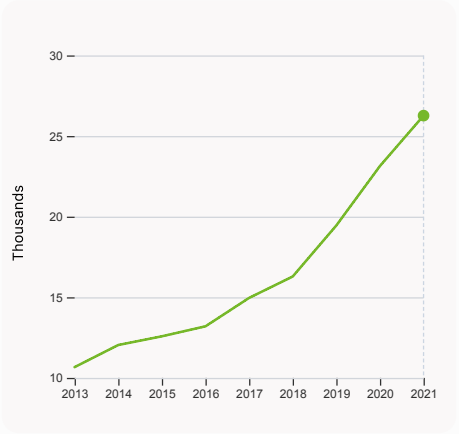
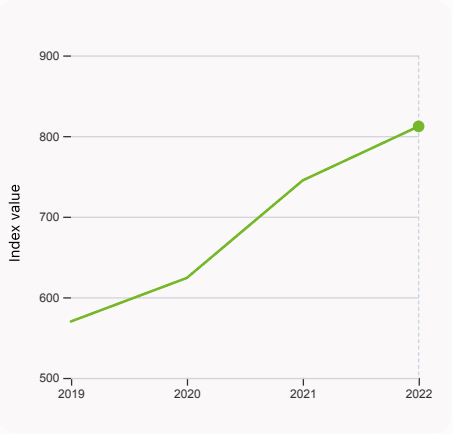


> Innovation outputs in India



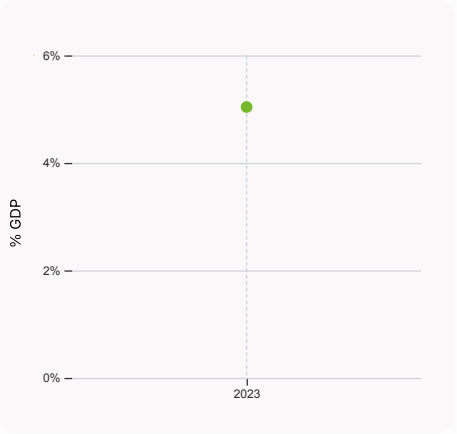
6.1.1 Patents by origin

was equal to 26.27 Thousands in 2021, up by 13.51% from the year prior – and equivalent to an indicator rank of 28.



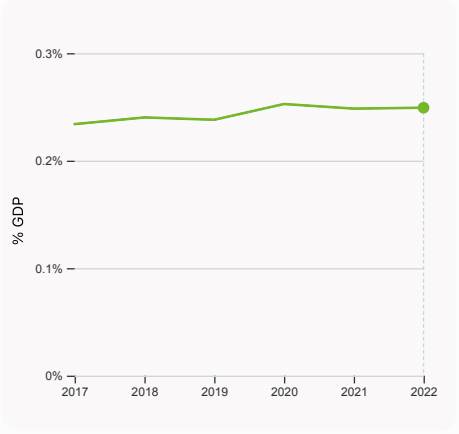
6.1.5 Citable documents H-index

was equal to an index value of 812 in 2022, up by 8.99% from the year prior – and equivalent to an indicator rank of 20.



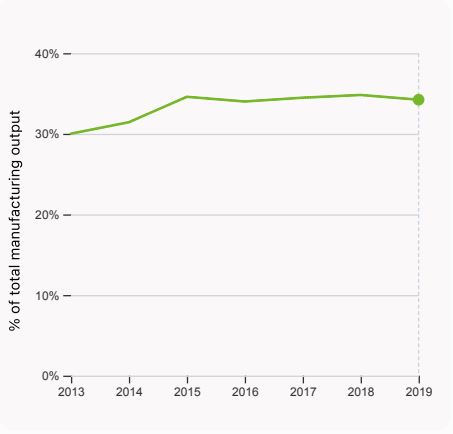
6.2.2 Unicorn valuation, % GDP

was equal to 5.04 % GDP in 2023 – and equivalent to an indicator rank of 9.



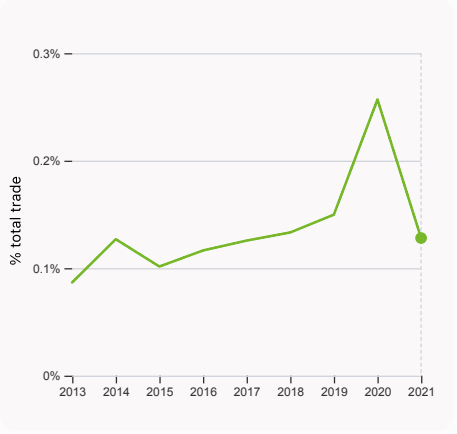
6.2.3 Software spending, % GDP

was equal to 0.249% GDP in 2022, up by 0.00084 percentage points from the year prior – and equivalent to an indicator rank of 56.



6.2.4 High-tech manufacturing, %

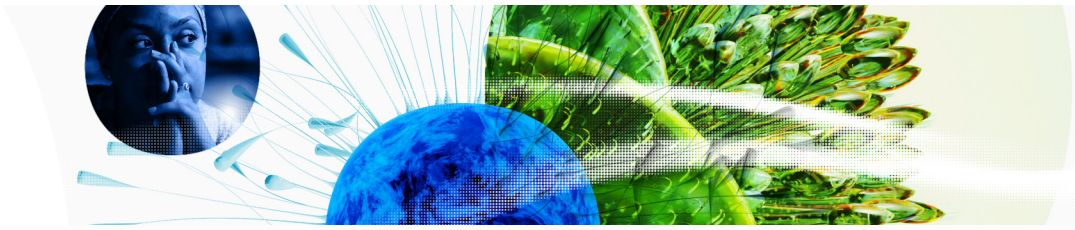
was equal to 34.23% of total manufacturing output in 2019, down by 0.59 percentage points from the year prior – and equivalent to an indicator rank of 35.

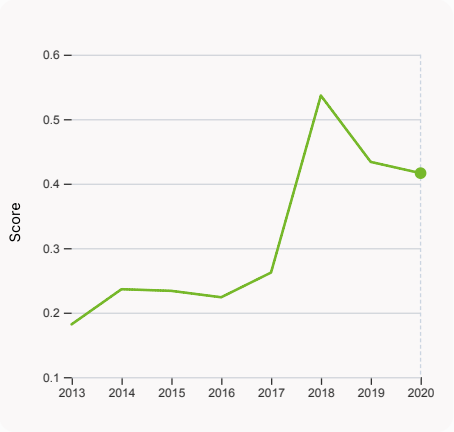


6.3.1 Intellectual property receipts, % total trade

was equal to 0.128% total trade in 2021, down by 0.13 percentage points from the year prior – and equivalent to an indicator rank of 45.

Global Innovation Index 2023



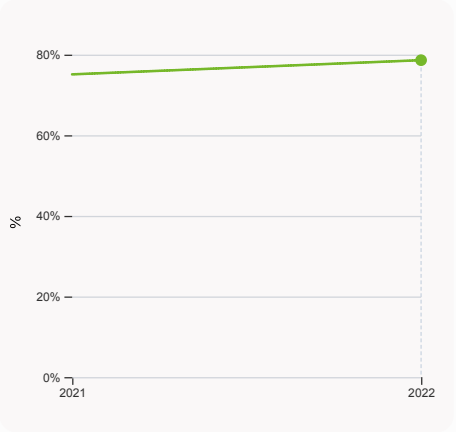


6.3.2 Production and export complexity

was equal to a score of 0.416 in 2020, down by 4.021% from the year prior – and equivalent to an indicator rank of 46.

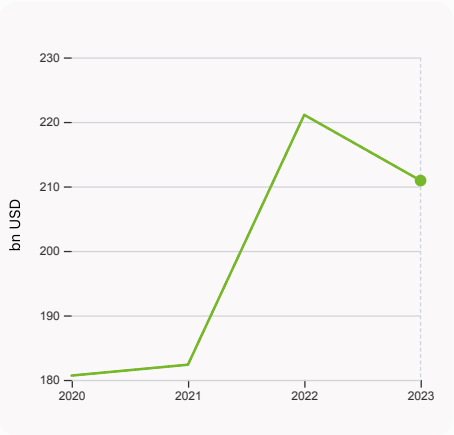
6.3.3 High-tech exports

was equal to 27,446,653,221 USD in 2021, up by 27.17% from the year prior – and equivalent to an indicator rank of 41.



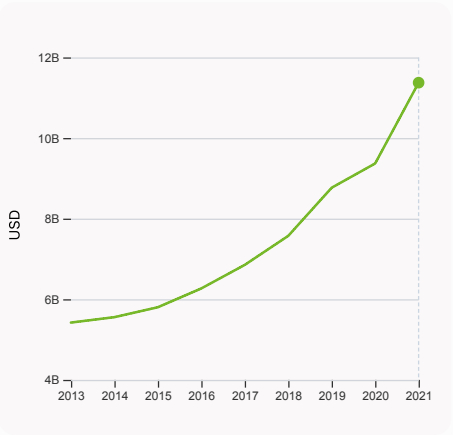
7.1.1 Intangible asset intensity, top 15, %

was equal to 78.63% in 2022, up by 3.52 percentage points from the year prior – and equivalent to an indicator rank of 8.



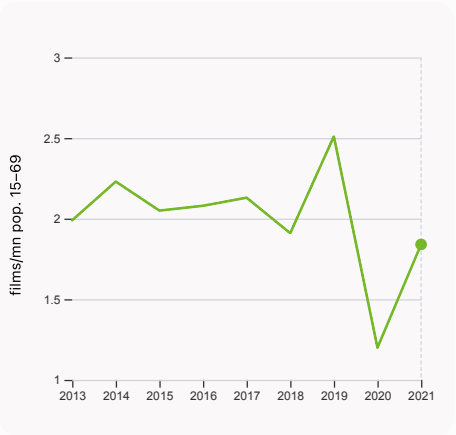
7.1.3 Global brand value, top 5,000

was equal to 210.907 bn USD in 2023, down by 4.61% from the year prior – and equivalent to an indicator rank of 31.



7.2.1 Cultural and creative services exports

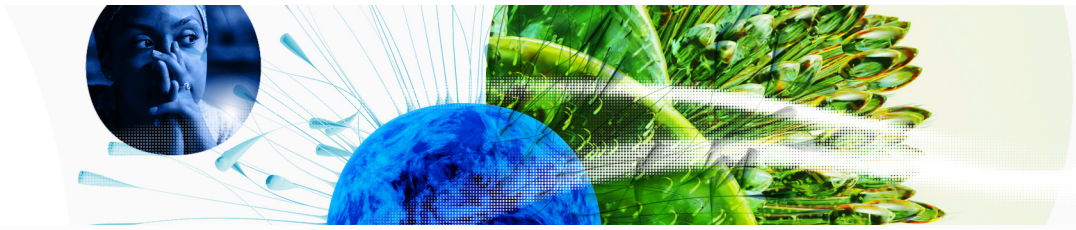
was equal to 11,373,312,000 USD in 2021, up by 21.4% from the year prior – and equivalent to an indicator rank of 18.

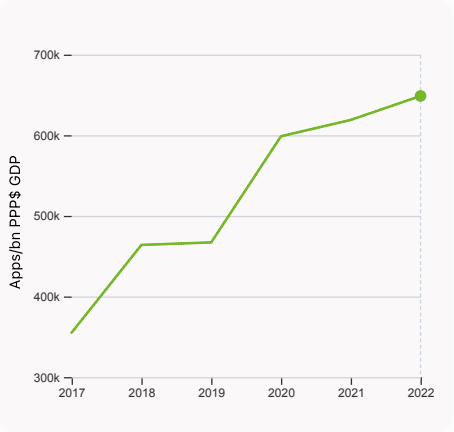


7.2.2 National feature films/mn pop. 15-69

was equal to 1.84 films/mn pop. 15–69 in 2021, up by 53.33% from the year prior – and equivalent to an indicator rank of 49.

Global Innovation Index 2023

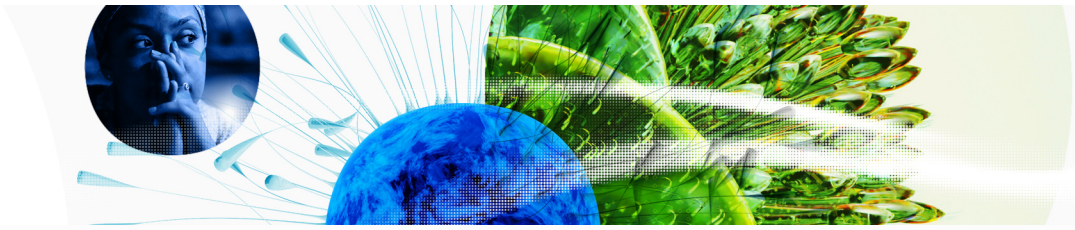




7.3.4 Mobile app creation/bn PPP$ GDP

was equal to 648,780.24 Apps/bn PPP$ GDP in 2022, up by 4.8% from the year prior – and equivalent to an indicator rank of 36.

Global Innovation Index 2023



→ India's innovation top performers

> 2.3.3 Global corporate R&D investors from India

Rank	Firm	Industry	R&D	R&D Growth	R&D Intensity
			[mn EUR]	[%]	[%]
58	TATA MOTORS	Automobiles & Parts	3,067	47	9
663	SUN PHARMACEUTICAL INDUSTRIES	Pharmaceuticals & Biotechnology	248	9	5
812	AUROBINDO PHARMA	Pharmaceuticals & Biotechnology	196	5	7
816	DR REDDY'S LABORATORIES	Pharmaceuticals & Biotechnology	195	6	8

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 India's top universities

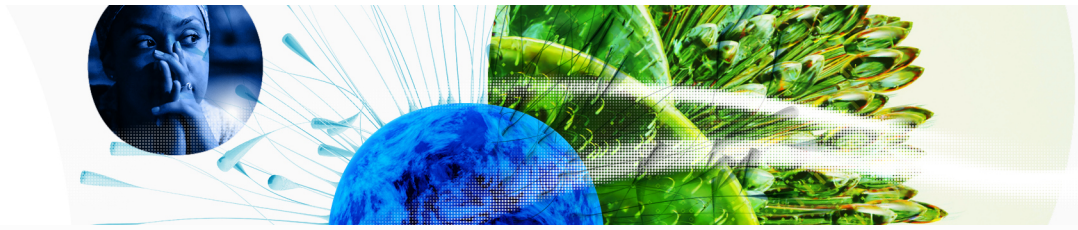
Rank	University	Score
155	INDIAN INSTITUTE OF SCIENCE	49.50
172	INDIAN INSTITUTE OF TECHNOLOGY BOMBAY (IITB)	46.70
174	INDIAN INSTITUTE OF TECHNOLOGY DELHI (IITD)	46.50

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 India

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	BYJU'S	Edtech	Bengaluru	12
2	OYO ROOMS	Travel	Gurugram	9
3	SWIGGY	Supply chain, logistics, & delivery	Bengaluru	8

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 India

Rank	Firm	Intensity, %
1	RELIANCE INDUSTRIES LTD	55.31
2	TATA CONSULTANCY SERVICES LTD	88.51
3	HDFC BANK LTD	64.10

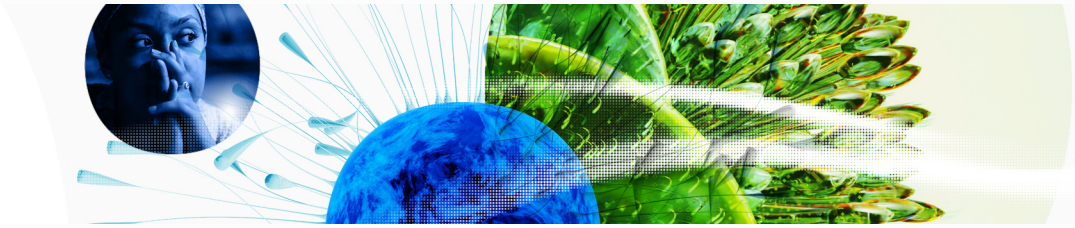
Source: Brand Finance (https://brandirectory.com/reports/gift-2022).
Note: Brand Finance only provides within economy ranks.

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

Rank	Brand	Industry	Brand Value, mn USD
1	TATA GROUP	Engineering & Construction	26,380.8
2	INFOSYS	IT Services	13,009.9
3	LIC	Insurance	9,755.6

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

Global Innovation Index 2023



India

GII 2023 rank **40**

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
35	46	Lower middle	CSA	1417.2	11,665.5	8,293.2

	Score / Value	Rank
Institutions	**53.9**	**56**
1.1 Institutional environment	**44.5**	**69**
1.1.1 Operational stability for businesses*	44.4	82
1.1.2 Government effectiveness*	44.5	53
1.2 Regulatory environment	**61.7**	**68**
1.2.1 Regulatory quality*	40.1	76
1.2.2 Rule of law*	37.3	66
1.2.3 Cost of redundancy dismissal	15.8	63
1.3 Business environment	**55.6**	**47**
1.3.1 Policies for doing business†	37.9	92
1.3.2 Entrepreneurship policies and culture†	73.3	13
Human capital and research	**35.5**	**48**
2.1 Education	**42.8**	**88**
2.1.1 Expenditure on education, % GDP	4.6	49
2.1.2 Government funding/pupil, secondary, % GDP/cap	18.0	61
2.1.3 School life expectancy, years	12.8	86 ○
2.1.4 PISA scales in reading, maths and science	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	20.8	101 ○
2.2 Tertiary education	**30.5**	**65**
2.2.1 Tertiary enrolment, % gross	32.1	85
2.2.2 Graduates in science and engineering, %	34.0	11 ●
2.2.3 Tertiary inbound mobility, %	0.1	110 ○
2.3 Research and development (R&D)	**33.2**	**32**
2.3.1 Researchers, FTE/mn pop.	262.3	81 ○
2.3.2 Gross expenditure on R&D, % GDP	0.6	54
2.3.3 Global corporate R&D investors, top 3, mn US$	70.6	13 ●
2.3.4 QS university ranking, top 3*	48.2	22
Infrastructure	**34.3**	**84**
3.1 Information and communication technologies (ICTs)	**60.2**	**82**
3.1.1 ICT access*	56.2	101 ○
3.1.2 ICT use*	49.2	103 ○
3.1.3 Government's online service*	77.2	42
3.1.4 E-participation*	58.1	61
3.2 General infrastructure	**33.1**	**46**
3.2.1 Electricity output, GWh/mn pop.	1,185.0	93
3.2.2 Logistics performance*	59.1	37
3.2.3 Gross capital formation, % GDP	32.8	16 ●
3.3 Ecological sustainability	**9.7**	**128** ◇
3.3.1 GDP/unit of energy use	9.8	71
3.3.2 Environmental performance*	0.0	131 ○ ◇
3.3.3 ISO 14001 environment/bn PPP$ GDP	0.9	67
Market sophistication	**52.9**	**20**
4.1 Credit	**34.0**	**56**
4.1.1 Finance for startups and scaleups†	78.6	9 ●
4.1.2 Domestic credit to private sector, % GDP	54.7	67
4.1.3 Loans from microfinance institutions, % GDP	0.3	42
4.2 Investment	**38.6**	**17**
4.2.1 Market capitalization, % GDP	87.5	19
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.1	39
4.2.3 VC recipients, deals/bn PPP$ GDP	0.1	24
4.2.4 VC received, value, % GDP	0.0	6 ●
4.3 Trade, diversification, and market scale	**85.9**	**9**
4.3.1 Applied tariff rate, weighted avg., %	6.2	97
4.3.2 Domestic industry diversification	97.9	10 ●
4.3.3 Domestic market scale, bn PPP$	11,665.5	1 ●

	Score / Value	Rank
Business sophistication	**29.6**	**57**
5.1 Knowledge workers	**24.4**	**81**
5.1.1 Knowledge-intensive employment, %	13.0	99 ○
5.1.2 Firms offering formal training, %	35.9	43
5.1.3 GERD performed by business, % GDP	0.2	50
5.1.4 GERD financed by business, %	40.6	41
5.1.5 Females employed w/advanced degrees, %	2.6	106 ○
5.2 Innovation linkages	**23.4**	**59**
5.2.1 University-industry R&D collaboration†	44.4	66
5.2.2 State of cluster development†	28.3	98
5.2.3 GERD financed by abroad, % GDP	n/a	n/a
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	28
5.2.5 Patent families/bn PPP$ GDP	0.2	46
5.3 Knowledge absorption	**40.9**	**41**
5.3.1 Intellectual property payments, % total trade	1.4	25
5.3.2 High-tech imports, % total trade	10.0	37
5.3.3 ICT services imports, % total trade	2.1	32
5.3.4 FDI net inflows, % GDP	1.9	77
5.3.5 Research talent, % in businesses	30.7	43
Knowledge and technology outputs	**39.7**	**22**
6.1 Knowledge creation	**23.6**	**44**
6.1.1 Patents by origin/bn PPP$ GDP	2.6	28
6.1.2 PCT patents by origin/bn PPP$ GDP	0.2	43
6.1.3 Utility models by origin/bn PPP$ GDP	n/a	n/a
6.1.4 Scientific and technical articles/bn PPP$ GDP	n/a	n/a
6.1.5 Citable documents H-index	42.8	20
6.2 Knowledge impact	**53.3**	**9**
6.2.1 Labor productivity growth, %	1.6	43
6.2.2 Unicorn valuation, % GDP	5.0	9 ●
6.2.3 Software spending, % GDP	0.2	56
6.2.4 High-tech manufacturing, %	34.2	35
6.3 Knowledge diffusion	**42.1**	**29**
6.3.1 Intellectual property receipts, % total trade	0.2	45
6.3.2 Production and export complexity	61.2	46
6.3.3 High-tech exports, % total trade	4.0	41
6.3.4 ICT services exports, % total trade	12.1	5 ●
6.3.5 ISO 9001 quality/bn PPP$ GDP	3.6	69
Creative outputs	**30.3**	**49**
7.1 Intangible assets	**42.2**	**38**
7.1.1 Intangible asset intensity, top 15, %	78.6	8 ●
7.1.2 Trademarks by origin/bn PPP$ GDP	42.7	54
7.1.3 Global brand value, top 5,000	5.5	31
7.1.4 Industrial designs by origin/bn PPP$ GDP	1.7	47
7.2 Creative goods and services	**16.9**	**56**
7.2.1 Cultural and creative services exports, % total trade	1.7	18
7.2.2 National feature films/mn pop. 15-69	1.8	49
7.2.3 Entertainment and media market/th pop. 15-69	0.7	55 ○
7.2.4 Creative goods exports, % total trade	1.8	27
7.3 Online creativity	**19.8**	**66**
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	1.0	99
7.3.2 Country-code TLDs/th pop. 15-69	0.8	96
7.3.3 GitHub commits/mn pop. 15-69	3.9	78
7.3.4 Mobile app creation/bn PPP$ GDP	73.6	36

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/gii-ranking. Square brackets [ ] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

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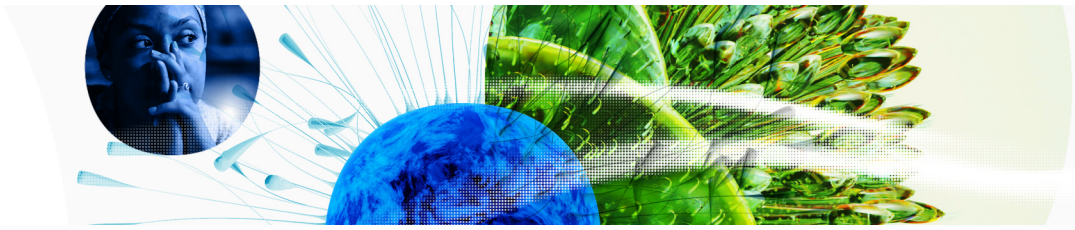

→ Data availability

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

> India has missing data for three indicators and outdated data for seven indicators.

> 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	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2021	World Intellectual Property Organization; International Monetary Fund

> Outdated data for India

Code	Indicator name	Economy Year	Model Year	Source
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	2019	2020	United Nations Industrial Development Organization
5.1.2	Firms offering formal training, %	2014	2019	World Bank Enterprise Surveys
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, %	2019	2020	United Nations Industrial Development Organization

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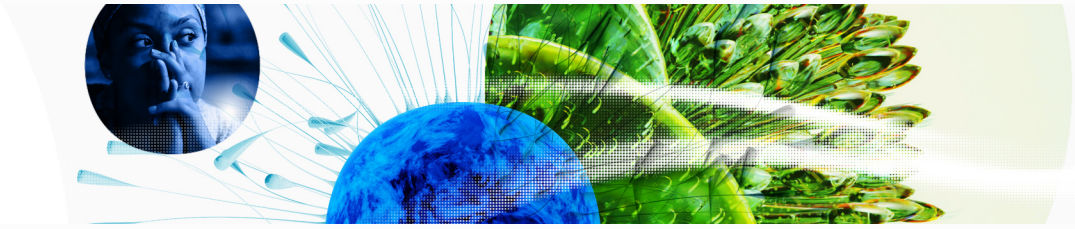

About the Global Innovation Index

- 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.

Source: Global Innovation Index Database, WIPO, 2023.

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.