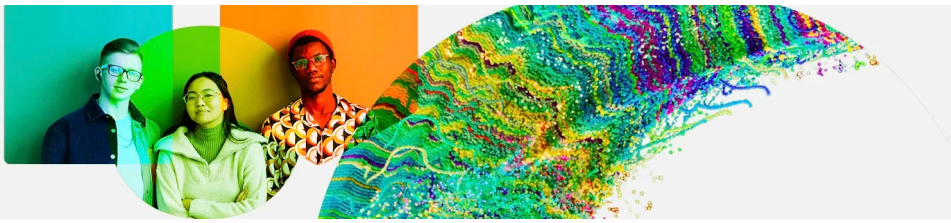
Global Innovation Index 2024



India ranking in the Global Innovation Index 2024

India ranks 39th among the 133 economies featured in the GII 2024.

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 ranks 1st among the 38 lower-middle-income group economies.

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

India GII Ranking (2020-2024)

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 2024 is between ranks 35 and 40.

Year	GII Position	Innovation Inputs	Innovation Outputs
2020	48th	57th	45th
2021	46th	57th	45th
2022	40th	42nd	39th
2023	40th	46th	35th
2024	39th	44th	33rd

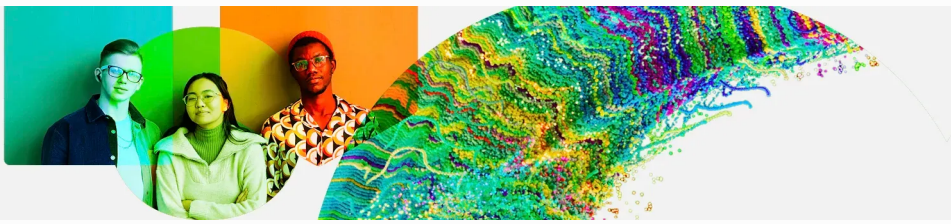
India performs better in innovation outputs than innovation inputs in 2024.

This year **India ranks 44th in innovation inputs.** This position is higher than last year.

India ranks 33rd in innovation outputs. This position is higher than last year.

India has 4 clusters in the top 100 S&T clusters of the Global Innovation Index.

Global Innovation Index 2024



> Global Innovation Tracker

The Global Innovation Tracker 2024 shows what is the current state of innovation in India, how rapidly is technology being embraced and what are the resulting societal impacts.

For India, 7 indicators have improved in the short-term and 5 indicators have worsened.

Science and innovation investment

Scientific publications	R&D investments	Venture capital		International patent filings
		Deal numbers	Deal values	
▼ -2.3% 2022 - 2023	▼ -7.7% 2019 - 2020	▼ -23.5% 2022 - 2023	▼ -63.2% 2022 - 2023	▲ 44.6% 2022 - 2023
▲ 7.3% 2013 - 2023	▲ 3.1% 2010 - 2020	▲ 15% 2013 - 2023	▲ 15.3% 2013 - 2023	▲ 11.1% 2013 - 2023

Technology adoption

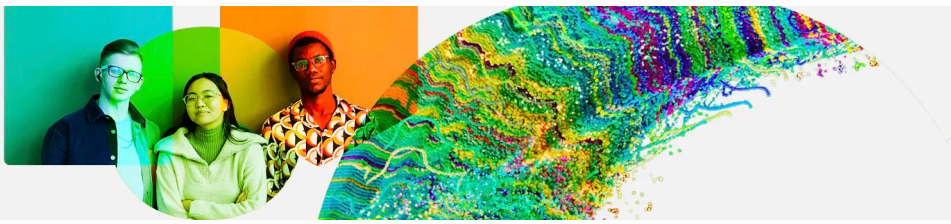
Safe sanitation	Connectivity		Robots	Electric vehicles
	Fixed broadband	5G		
▲ 4.2% 2021 - 2022	▲ 20.8% 2021 - 2022	n/a	▲ 13.7% 2021 - 2022	▲ 108.5% 2022 - 2023
▲ 5.6% 2012 - 2022	▲ 7.2% 2012 - 2022		▲ 17.1% 2012 - 2022	▲ 48.4% 2013 - 2023
52.1 per 100 inhabitants in 2022	2.4 per 100 inhabitants in 2022	n/a		0.3 per 100 inhabitants in 2023

Socioeconomic impact

Labor productivity	Life expectancy	Temperature change
▲ 3.9% 2022 - 2023	▲ 0.7% 2021 - 2022	▲ 0.9°C 2023
▲ 5% 2013 - 2023	0% 2012 - 2022	n/a
23,200 USD in 2023	67.7 years in 2022	

Notes: Not all indicators of the Global Innovation Tracker are used to calculate the Global Innovation Index. Long-term annual growth refers to the compound annual growth rate (CAGR) over the indicated period. For each variable, a one-year growth rate is set for the short run, and ten-year CAGR is set for the long run; time windows might differ when gaps exist in data availability. The end period corresponds to the most recent available observation, which may differ among countries. Temperature change is an exception: it indicates the change in degrees Celsius with respect to the average temperature in the country from 1951–1980. Figures are rounded.

Global Innovation Index 2024

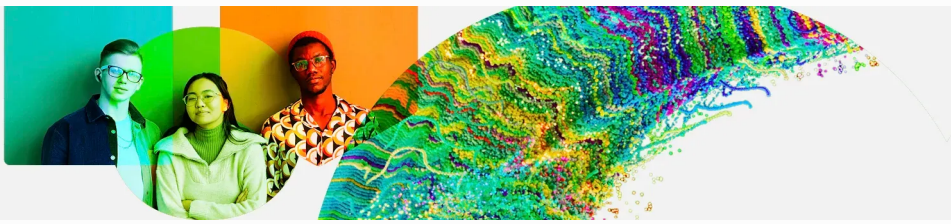


Expected vs. observed innovation performance

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



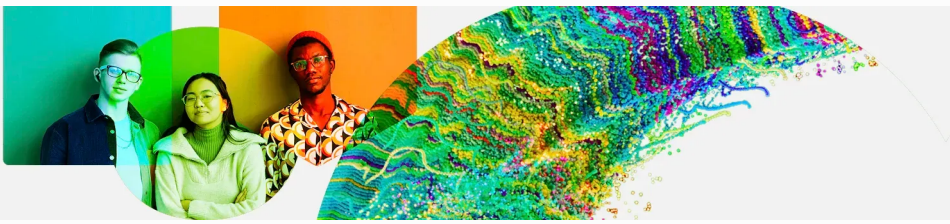
Effectively translating innovation investments into innovation outputs

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.

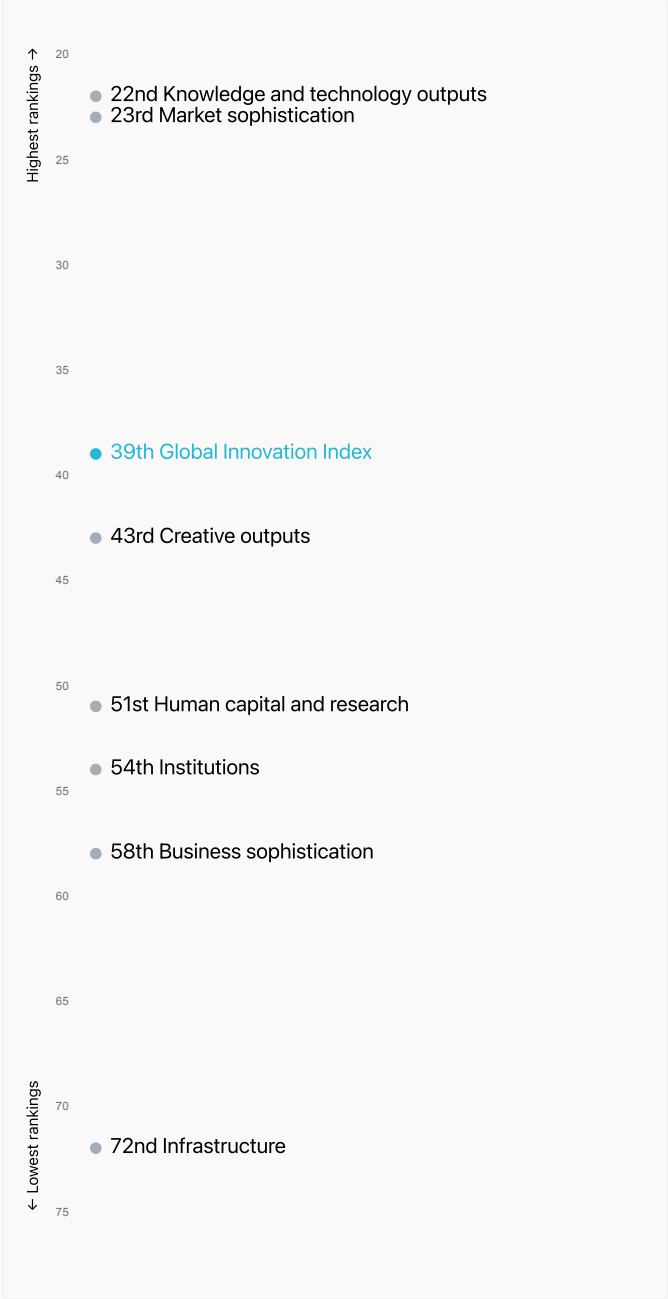
> Relationship between innovation inputs and outputs

Global Innovation Index 2024



Overview of India's rankings in the seven areas of the GII in 2024

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

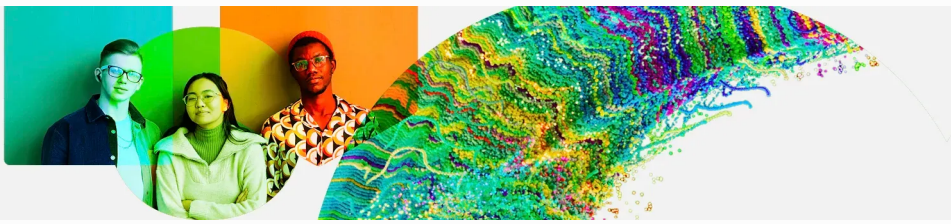
India ranks highest in Knowledge and technology outputs (22nd) and Market sophistication (23rd).

Lowest rankings

India ranks lowest in Infrastructure (72nd), Business sophistication (58th) and Institutions (54th).

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

Global Innovation Index 2024



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

The charts shows the relative position of India (blue bar) against other economy 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 pillars.

Central And Southern Asia

India performs above the regional average in all pillars.

Institutions

- Top 10 | Score: 80.81
- India | Score: 51.45
- Lower middle income | Score: 34.0
- Central and Southern Asia | Score:

Human capital and research

- Top 10 | Score: 61.30
- India | Score: 34.76
- Central and Southern Asia | Score:
- Lower middle income | Score: 22.1

Infrastructure

- Top 10 | Score: 58.57
- India | Score: 39.03
- Central and Southern Asia | Score:
- Lower middle income | Score: 29.8

Market sophistication

- Top 10 | Score: 62.12
- India | Score: 52.30
- Central and Southern Asia | Score:
- Lower middle income | Score: 25.9

Business sophistication

- Top 10 | Score: 63.64
- India | Score: 28.10
- Central and Southern Asia | Score:
- Lower middle income | Score: 20.8

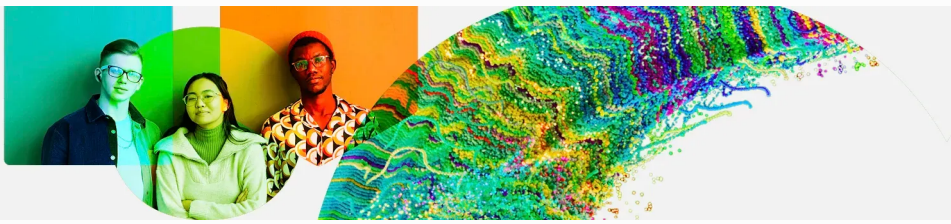
Knowledge and technology outputs

- Top 10 | Score: 57.29
- India | Score: 38.84
- Central and Southern Asia | Score:
- Lower middle income | Score: 15.6

Creative outputs

- Top 10 | Score: 56.54
- India | Score: 32.14
- Central and Southern Asia | Score:
- Lower middle income | Score: 15.7

Global Innovation Index 2024



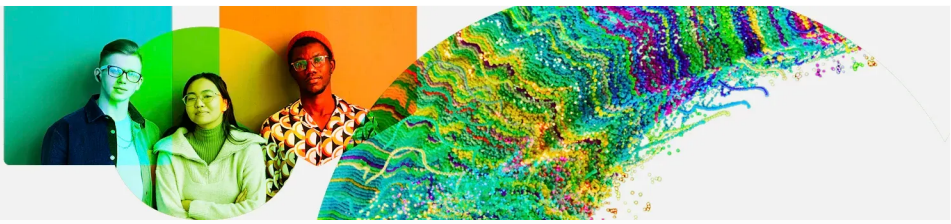
Innovation strengths and weaknesses in India

The table below gives an overview of the indicator strengths and weaknesses of India in the GII 2024.

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

Strengths			Weaknesses		
Rank	**Code**	**Indicator name**	**Rank**	**Code**	**Indicator name**
1	4.3.3	Domestic market scale, bn PPP$	110	3.1.1	ICT access*
1	6.3.4	ICT services exports, % total trade	110	2.2.3	Tertiary inbound mobility, %
6	4.2.4	VC received, value, % GDP	105	5.1.5	Females employed w/advanced degrees, %
7	7.1.1	Intangible asset intensity, top 15, %	103	5.1.1	Knowledge-intensive employment, %
8	4.1.1	Finance for startups and scaleups†	101	7.3.1	Top-level domains (TLDs)/th pop. 15–69
8	6.2.2	Unicorn valuation, % GDP	97	2.1.5	Pupil–teacher ratio, secondary
13	7.2.1	Cultural and creative services exports, % total trade	85	2.1.3	School life expectancy, years
16	4.3.2	Domestic industry diversification	83	2.3.1	Researchers, FTE/mn pop.
18	2.3.3	Global corporate R&D investors, top 3, mn USD	61	7.2.3	Entertainment and media market/th pop. 15–69
19	6.1.5	Citable documents H-index	46	4.1.3	Loans from microfinance institutions, % GDP

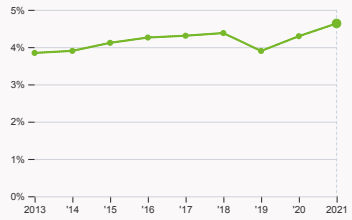
Global Innovation Index 2024



India's innovation system

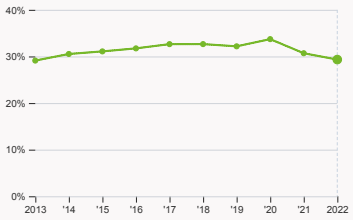
As far as practicable, the plots below present unscaled indicator data.

Innovation inputs in India



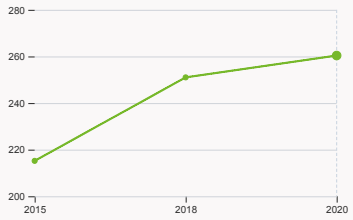
2.1.1 **Expenditure on education**

was equal to 4.63 % GDP in 2021, up by 0.34 percentage points from the year prior – and equivalent to an indicator rank of 50.



2.2.2 **Graduates in science and engineering**

was equal to 29.33 % of total graduates in 2022, down by 1.36 percentage points from the year prior – and equivalent to an indicator rank of 25.



2.3.1 **Researchers**

was equal to 260.38 FTE per million population in 2020, up by 3.73% from the year prior – and equivalent to an indicator rank of 83.

2.3.2 **Gross expenditure on R&D**

was equal to 0.65 % GDP in 2020, down by 0.01 percentage points from the year prior – and equivalent to an indicator rank of 54.

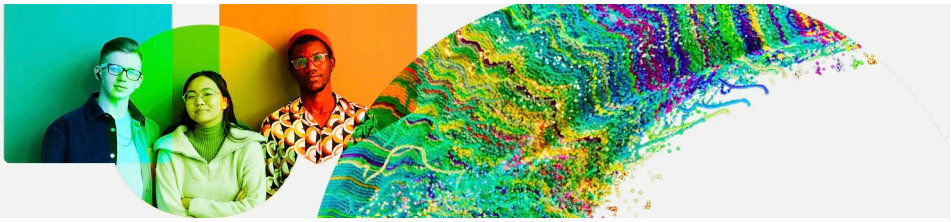
2.3.4 **QS university ranking**

was equal to an average score of 46.63 for the top three universities in 2023, down by 1.98% from the year prior – and equivalent to an indicator rank of 24.

4.2.4 **VC received, value**

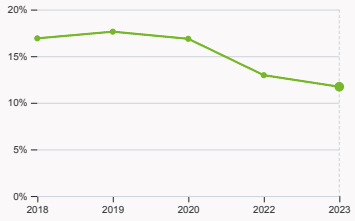
was equal to 8.03 million USD in 2023, down by 63.22% from the year prior – and equivalent to an indicator rank of 6.

Global Innovation Index 2024



4.3.2 Domestic industry diversification

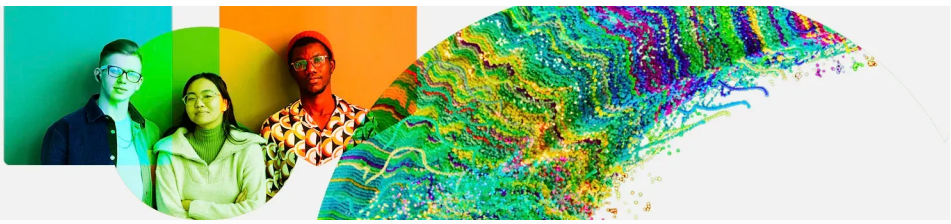
was equal to an index score of 0.09 in 2021, up by 1.67% from the year prior – and equivalent to an indicator rank of 16.



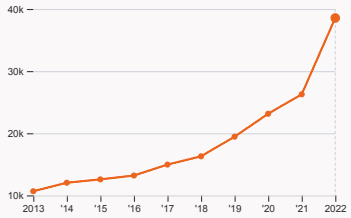
5.1.1 Knowledge-intensive employment

was equal to 11.72 % in 2023, down by 1.24 percentage points from the year prior – and equivalent to an indicator rank of 103.

Global Innovation Index 2024

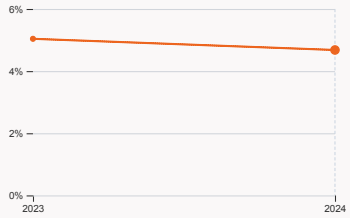


Innovation outputs in India



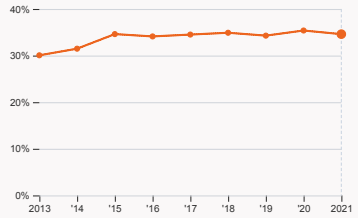
6.1.1 Patents by origin

was equal to 38.55 thousand patents in 2022, up by 46.75% from the year prior – and equivalent to an indicator rank of 23.



6.2.2 Unicorn valuation

was equal to 4.68 % GDP in 2024, down by 0.36 percentage points from the year prior – and equivalent to an indicator rank of 8.

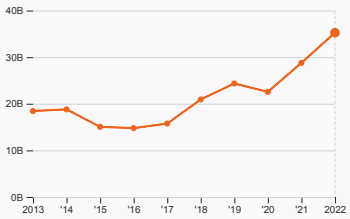


6.2.4 High-tech manufacturing

was equal to 34.6 % of total manufacturing output in 2021, down by 0.78 percentage points from the year prior – and equivalent to an indicator rank of 34.

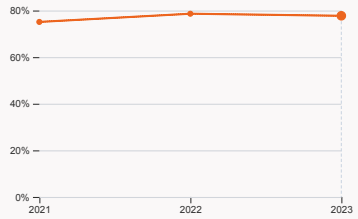
6.3.2 Production and export complexity

was equal to a score of 0.48 in 2021, up by 20% from the year prior – and equivalent to an indicator rank of 42.



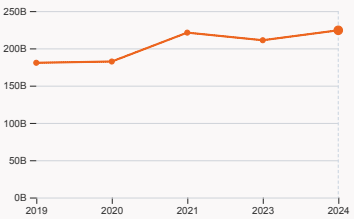
6.3.3 High-tech exports

was equal to 35.24 billion USD in 2022, up by 22.49% from the year prior – and equivalent to an indicator rank of 41.



7.1.1 Intangible asset intensity

was equal to 77.74 % for the top 15 companies in 2023, down by 0.89 percentage points from the year prior – and equivalent to an indicator rank of 7.

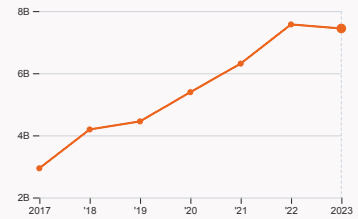


7.1.3 Global brand value

was equal to 224.23 billion USD for the brands in the top 5,000 in 2024, up by 6.32% from the year prior – and equivalent to an indicator rank of 31.

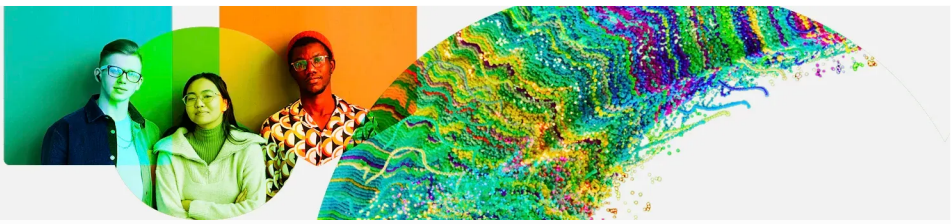
7.2.2 National feature films

was equal to 2.5 thousand films in 2022, up by 37.36% from the year prior – and equivalent to an indicator rank of 51.



7.3.3 Mobile app creation

was equal to 7.44 billion global downloads of mobile apps in 2023, down by 1.72% from the year prior – and equivalent to an indicator rank of 34.



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]	[%]	[%]
107	TATA MOTORS	Automobiles & Parts	2,087	26	5
707	SUN PHARMACEUTICAL INDUSTRIES	Pharmaceuticals & Biotechnology	261	8	5
849	DR REDDY'S LABORATORIES	Pharmaceuticals & Biotechnology	208	12	7
892	RELIANCE INDUSTRIES	Chemicals	196	54	0.2

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 India's top universities

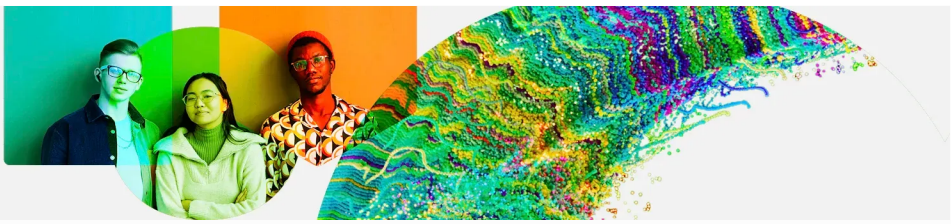
Rank	University	Score
149	INDIAN INSTITUTE OF TECHNOLOGY BOMBAY (IITB)	51.70
197	INDIAN INSTITUTE OF TECHNOLOGY DELHI (IITD)	46.10
225	INDIAN INSTITUTE OF SCIENCE	42.10

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	Consumer & Retail	Bengaluru	12
2	OYO ROOMS	Consumer & Retail	Gurugram	9
3	DREAM11	Media & Entertainment	Mumbai	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	HDFC BANK LIMITED	69.57
2	RELIANCE INDUSTRIES LIMITED	50.61
3	BHARTI AIRTEL LIMITED	78.78

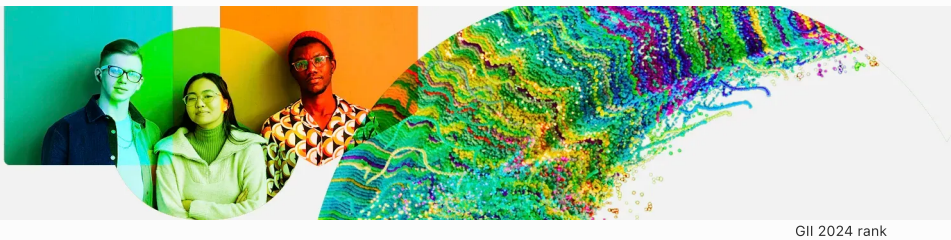
Source: Brand Finance (https://brandirectory.com/reports/gift-2022).
Note: Brand Finance only provides within economy ranks.

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

Rank	Brand	Industry	Brand Value, mn USD
1	TATA GROUP	Diversified	28,634.2
2	INFOSYS	IT Services	14,212.6
3	LIC	Insurance	9,759.6

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

Global Innovation Index 2024



India

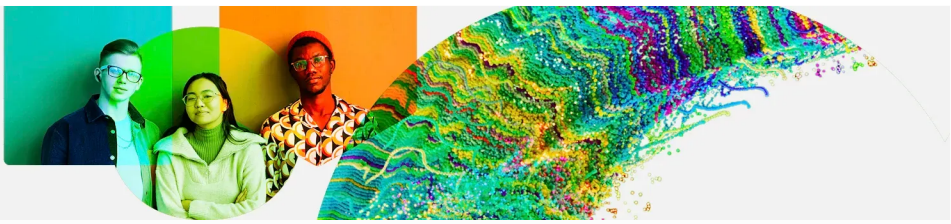
GII 2024 rank **39**

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
33	44	Lower middle	CSA	1439.2	13,119.6	9,183.4

	Score / Value	Rank	
Institutions	**51.5**	**54**	◆
1.1 Institutional environment	**56.2**	**58**	◆
1.1.1 Operational stability for businesses*	58.7	74	
1.1.2 Government effectiveness*	53.7	53	◆
1.2 Regulatory environment	**43.8**	**64**	◆
1.2.1 Regulatory quality*	40.5	75	◆
1.2.2 Rule of law*	47.1	59	◆
1.3 Business environment	**54.4**	**47**	
1.3.1 Policy stability for doing business†	38.5	91	
1.3.2 Entrepreneurship policies and culture†	70.2	13	◆
Human capital and research	**34.8**	**51**	◆
2.1 Education	**44.5**	**82**	
2.1.1 Expenditure on education, % GDP	4.6	50	
2.1.2 Government funding/pupil, secondary, % GDP/cap	18	58	
2.1.3 School life expectancy, years	12.9	85	○
2.1.4 PISA scales in reading, maths and science	n/a	n/a	
2.1.5 Pupil–teacher ratio, secondary	20	97	○
2.2 Tertiary education	**28.4**	**79**	
2.2.1 Tertiary enrolment, % gross	33.1	88	
2.2.2 Graduates in science and engineering, %	29.3	25	
2.2.3 Tertiary inbound mobility, %	0.1	110	○
2.3 Research and development (R&D)	**31.4**	**34**	◆
2.3.1 Researchers, FTE/mn pop.	260.4	83	○
2.3.2 Gross expenditure on R&D, % GDP	0.6	54	◆
2.3.3 Global corporate R&D investors, top 3, mn USD	65.4	18	●◆
2.3.4 QS university ranking, top 3*	47.2	24	◆
Infrastructure	**39**	**72**	◆
3.1 Information and communication technologies (ICTs)	**64**	**82**	
3.1.1 ICT access*	46.7	110	○
3.1.2 ICT use*	74.2	79	
3.1.3 Government's online service*	77.2	42	◆
3.1.4 E-participation*	58.1	61	◆
3.2 General infrastructure	**39.2**	**37**	
3.2.1 Electricity output, GWh/mn pop.	1,259.9	92	
3.2.2 Logistics performance*	59.1	37	◆
3.2.3 Gross capital formation, % GDP	31.3	20	
3.3 Ecological sustainability	**13.9**	**97**	
3.3.1 GDP/unit of energy use	10	71	
3.3.2 Low-carbon energy use, %	11.2	84	
3.3.3 ISO 14001 environment/bn PPP$ GDP	1.1	68	
Market sophistication	**52.3**	**23**	◆
4.1 Credit	**33.2**	**46**	
4.1.1 Finance for startups and scaleups†	79.2	8	●◆
4.1.2 Domestic credit to private sector, % GDP	50.4	68	
4.1.3 Loans from microfinance institutions, % GDP	0.4	46	○
4.2 Investment	**39.5**	**17**	◆
4.2.1 Market capitalization, % GDP	105.6	18	◆
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.1	42	◆
4.2.3 VC recipients, deals/bn PPP$ GDP	0.1	33	◆
4.2.4 VC received, value, % GDP	0.007	6	●◆
4.3 Trade, diversification and market scale	**84.3**	**10**	●◆
4.3.1 Applied tariff rate, weighted avg., %	5.4	98	
4.3.2 Domestic industry diversification	94.9	16	●◆
4.3.3 Domestic market scale, bn PPP$	13,119.6	1	●◆

	Score / Value	Rank	
Business sophistication	**28.1**	**58**	◆
5.1 Knowledge workers	**25.1**	**88**	
5.1.1 Knowledge-intensive employment, %	11.7	103	○
5.1.2 Firms offering formal training, %	35.9	48	
5.1.3 GERD performed by business, % GDP	0.2	51	◆
5.1.4 GERD financed by business, %	40.6	43	◆
5.1.5 Females employed w/advanced degrees, %	2.9	105	○
5.2 Innovation linkages	**24.6**	**61**	
5.2.1 Public Research-Industry co-publications, %	2.4	33	◆
5.2.2 University-industry R&D collaboration†	36.9	86	
5.2.3 State of cluster development†	37.9	87	
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.04	27	◆
5.2.5 Patent families/bn PPP$ GDP	0.2	45	◆
5.3 Knowledge absorption	**34.6**	**42**	◆
5.3.1 Intellectual property payments, % total trade	1.3	28	◆
5.3.2 High-tech imports, % total trade	9.5	45	
5.3.3 ICT services imports, % total trade	2.1	29	◆
5.3.4 FDI net inflows, % GDP	1.8	80	
5.3.5 Research talent, % in businesses	30.7	44	◆
Knowledge and technology outputs	**38.8**	**22**	◆
6.1 Knowledge creation	**24.9**	**39**	◆
6.1.1 Patents by origin/bn PPP$ GDP	3.2	23	◆
6.1.2 PCT patents by origin/bn PPP$ GDP	0.3	41	◆
6.1.3 Utility models by origin/bn PPP$ GDP	-	-	
6.1.4 Scientific and technical articles/bn PPP$ GDP	8	84	
6.1.5 Citable documents H-index	43.1	19	●◆
6.2 Knowledge impact	**53.4**	**9**	●◆
6.2.1 Labor productivity growth, %	1.1	50	
6.2.2 Unicorn valuation, % GDP	4.7	8	●◆
6.2.3 Software spending, % GDP	0.2	55	
6.2.4 High-tech manufacturing, %	34.6	34	◆
6.3 Knowledge diffusion	**38.3**	**28**	◆
6.3.1 Intellectual property receipts, % total trade	0.2	47	◆
6.3.2 Production and export complexity	55.1	42	◆
6.3.3 High-tech exports, % total trade	4.2	41	
6.3.4 ICT services exports, % total trade	11.9	1	●◆
6.3.5 ISO 9001 quality/bn PPP$ GDP	5.4	54	◆
Creative outputs	**32.1**	**43**	◆
7.1 Intangible assets	**39.6**	**37**	◆
7.1.1 Intangible asset intensity, top 15, %	77.7	7	●◆
7.1.2 Trademarks by origin/bn PPP$ GDP	37.7	54	
7.1.3 Global brand value, top 5,000, % GDP	5.5	31	◆
7.1.4 Industrial designs by origin/bn PPP$ GDP	1.6	43	
7.2 Creative goods and services	**23.3**	**50**	◆
7.2.1 Cultural and creative services exports, % total trade	1.9	13	●◆
7.2.2 National feature films/mn pop. 15–69	2.5	51	
7.2.3 Entertainment and media market/th pop. 15–69	1	61	○
7.2.4 Creative goods exports, % total trade	1.8	28	
7.3 Online creativity	**26**	**63**	
7.3.1 Top-level domains (TLDs)/th pop. 15–69	0.8	101	○
7.3.2 GitHub commits/mn pop. 15–69	4.7	77	
7.3.3 Mobile app creation/bn PPP$ GDP	72.6	34	◆

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question, 🕓 that the economy's data is outdated. Square brackets [ ] indicate the the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level; n/a represents missing values; a dash - indicates an indicator which is not relevant to this economy and thus not considered for DMC thresholds.



Data availability

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

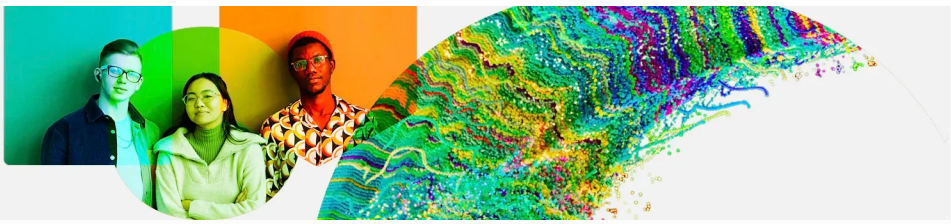
India has missing data for two indicators and outdated data for eight indicators.

Missing data for India

Code	Indicator name	Economy Year	Model Year	Source
2.1.4	PISA scales in reading, maths and science	n/a	2022	OECD, PISA
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2022	World Intellectual Property Organization; International Monetary Fund

Outdated data for India

Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	2021	2022	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2020	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
2.3.2	Gross expenditure on R&D, % GDP	2020	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
4.1.2	Domestic credit to private sector, % GDP	2021	2022	International Monetary Fund; World Bank and OECD GDP estimates.
5.1.2	Firms offering formal training, %	2014	2023	World Bank Enterprise Surveys
5.1.3	GERD performed by business, % GDP	2020	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.4	GERD financed by business, %	2020	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.3.5	Research talent, % in businesses	2020	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT

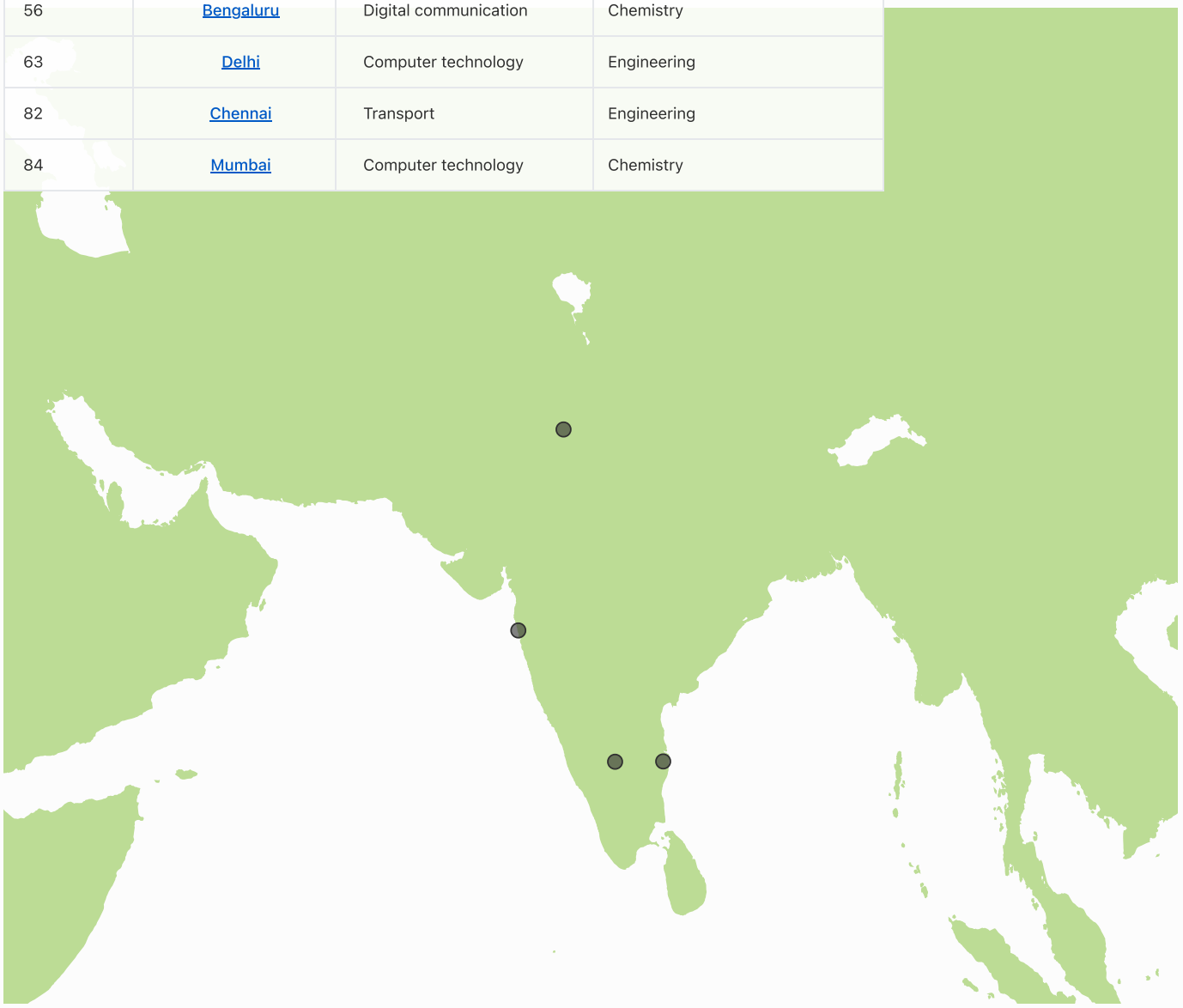


Top science and technology clusters in India

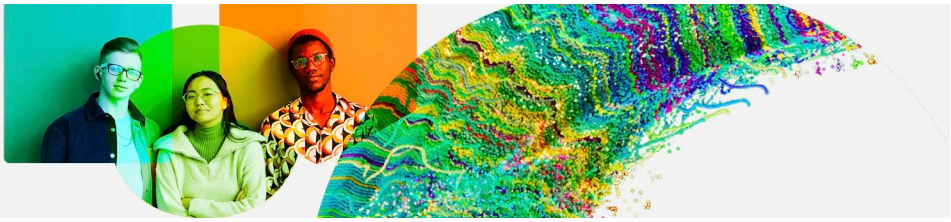
India has 4 clusters in the top 100 S&T clusters of the Global Innovation Index, the same number as in 2023.

The table and map below give an overview of the top science and technology clusters in India.

Rank	Cluster name	Top patent field	Top academic subject
56	Bengaluru	Digital communication	Chemistry
63	Delhi	Computer technology	Engineering
82	Chennai	Transport	Engineering
84	Mumbai	Computer technology	Chemistry

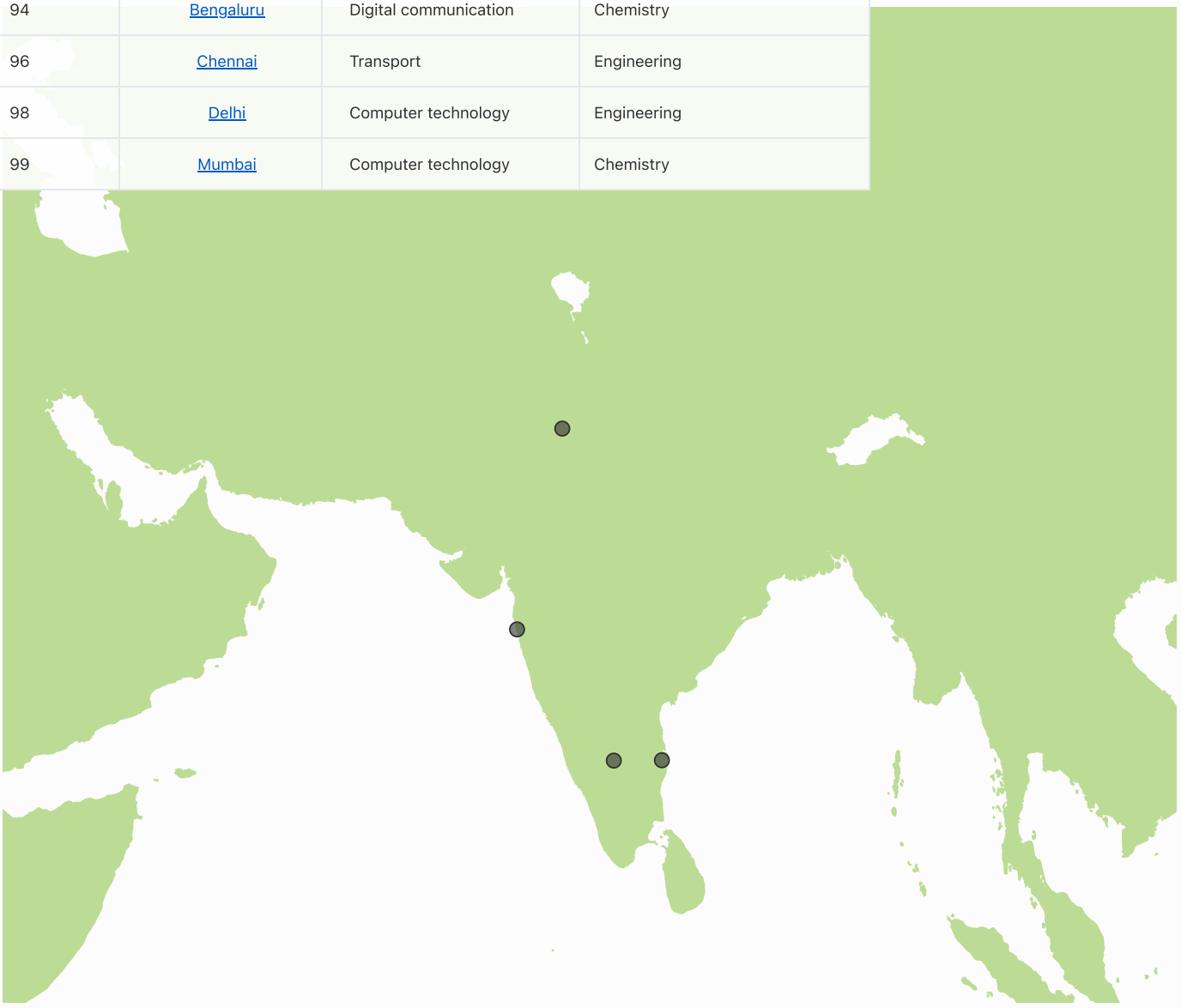


Global Innovation Index 2024

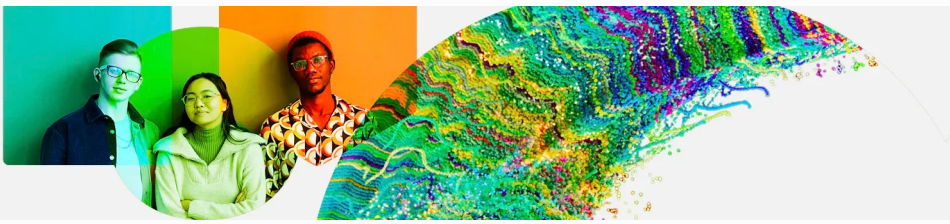


The table and map below give an overview of the top science and technology clusters by intensity in India.

Rank	Cluster name	Top patent field	Top academic subject
94	Bengaluru	Digital communication	Chemistry
96	Chennai	Transport	Engineering
98	Delhi	Computer technology	Engineering
99	Mumbai	Computer technology	Chemistry

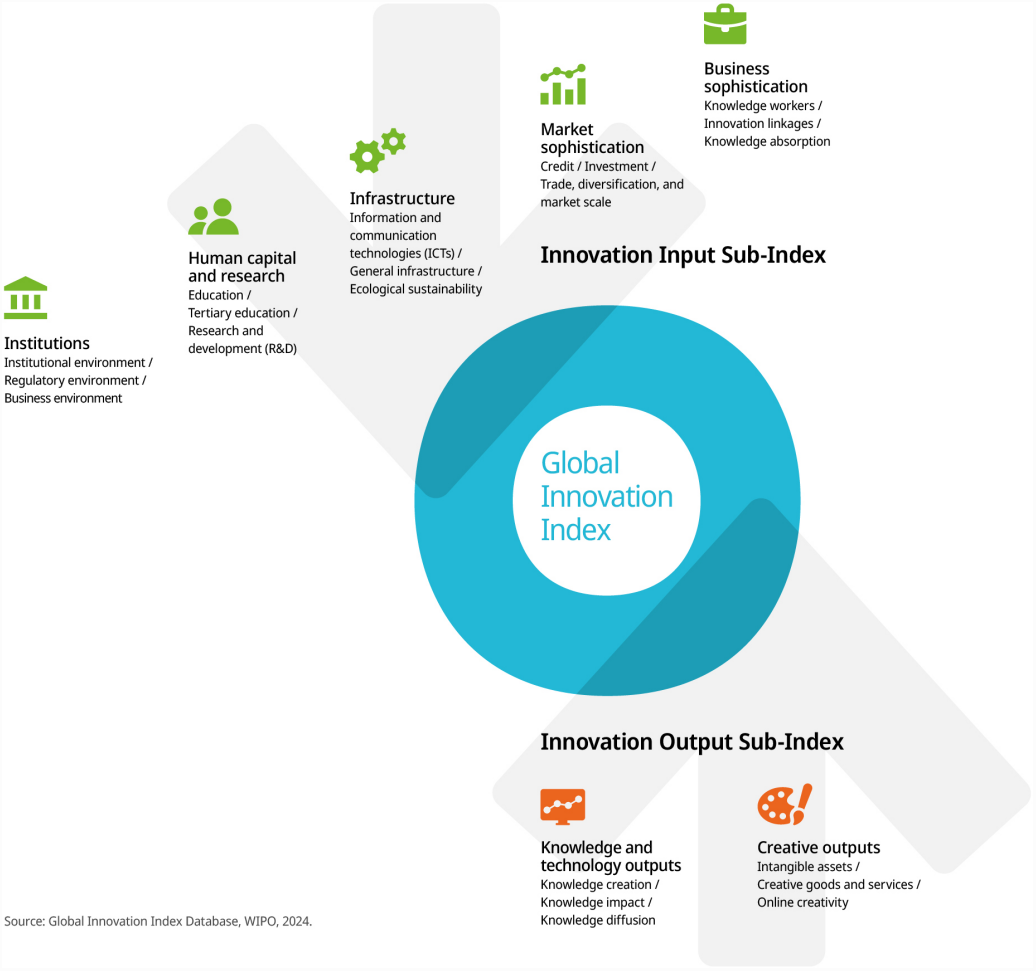


Global Innovation Index 2024



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, 2024.

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.