

## “India's Growing Influence On Innovation: A Comparison With China”

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### **Abstract**

Patents have seen significant development globally. Patent is a signal of innovation quality and reliability of any country. Despite having bright minds in India, yet there is not a significant rise in the filing of patents as compared to China, being a leading country in registration of patents. The 2024 WIPO reports India stands as a global player in the world IP landscape. It has stived in all the three i.e. Patent, trademarks and industrial design landscape. Today India has secured a 10<sup>th</sup> global position among many countries of the world. The 2024 report shows India as a global IP leader; it has recorded a +15.7% growth in patent application in 2023. The global patent filing has reached its zenith. Yet there is a need to increase the global patent filing. To be one amongst the top three one must have to overcome the challenges which are posed to India. This research explores the policy followed by other international countries with special reference to China and the methods adopted by them to be leaders in Patenting. Further the article gives a comparative analysis with the shortfalls faced by India in filing of patents as compared to China. The author has studied the promotion tactics and compared the IPR patterns adopted by China to promote filing of patents amongst its citizens. This research has enabled the researcher to suggest certain policy to India to become world leaders in patenting.

**Keywords:** - Patent, Schemes, International filing.

### **Introduction**

Today innovation coupled with invention is growing leaps and bounds. The innovation having novelty and industrially applicable is recognized by patent, being a right given to a registered patentee for the sale, use, license and exploitation of his patent. A patent is provided to patentees for their innovation. This could be in the field of engineering, artificial intelligence or in which there exists an invention performing something new, novel, not prior published and industrially applicable. In India Patent is governed by section 3<sup>1</sup> of the Act. This vividly describes those which are not patentable in India. The enlist is as follows: -

1. Inventions which are frivolous, contrary to the well-established laws
2. Any inventions which are against public policy, morality or the environment.
3. Any form of discovery of a scientific principle or the formulation of an abstract theory or a principle.
4. Any kind of substance or principle occurring in nature.
5. Any invention of a known process / apparatus unless it is totally new and not known.
6. If anything is obtained by admixture, re-arrangement, any medical or surgical process which is lifesaving.
7. Plants or animals in whole or part other than micro-organisms including seed varieties and species of biological process.
8. Any mathematical or computer program per se.
9. Any performance of mental art
10. Any presentation or topography of integrated circuits

Such will not result in inventions if they do not qualify the new, novel, not prior published or industrial applicable in India. India is looked to as a developing country and its resources are its potential for the growth of the nation. These resources may be in the form of human innovation. Despite existence of innovative minds yet there is lack of policies which are unable to extract the full potential of innovative minds in India.

The statistical data is an intriguing opportunity to explore the policies followed by China to exploiting and promoting their patenting. Patents are necessary for the well-being of individuals and human mankind. China, US, Japan, Germany and India are notable countries leading in IPR globally. Yet India lacks the number one position on the global map. Innovation in any country has an impact on the future.

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<sup>1</sup> The Patent Act, 1970

Genetics and Molecular Research 25 (7s): 2026

With this regards the paper aims to deliver a comparative study of the existing policies in India and China and other countries. This paper draws various suggestions and legislative advancements in the branch of IPR as well as access the dilution and limitations of the current patent systems in India.

At the conclusion this paper delivers valuable perspectives on the future of Indian patent. The article urges the development of a refined legal framework that fosters innovation while superseding other countries. This will aid various organizations to adopt the policy and promote IPR in their organizations and provide decision-makers and innovators with possible future directions for this quickly developing industry.

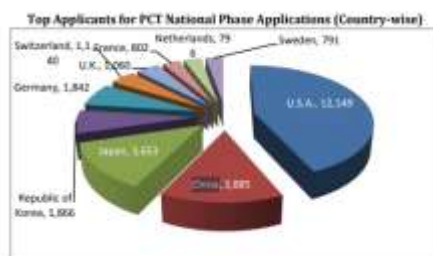
### Literature Review

1. In this article the authors have shown how technology affects the economic power of the nation. Countries seek their citizens in innovation in foreign markets. China has always resorted to cheap products but today they are on the global map due to their innovations and patents. They use the INPACT- S for international data filing of patents. There is a lot of similarity index between patents of China, Japan and United States of America.<sup>2</sup>

2. In this article there is an investigation on how international patent activity enables firms from emerging economies to thrive in the global marketplace. There is a match made with Chinese data to US patent records, in order to the causal effect of a US patent grant on the subsequent export performance of Chinese firms. The Chinese products have high quality products and has a lot of creditability.<sup>3</sup>

3. Intellectual property and its proponents include (a) Incentives which are the basis of Intellectual property (b) To ensure the sufficient growth of information, such kind of incentives are required (c) Unenriched source of information plays a role in the reduction of further development costs. (d) To promote progress.<sup>4</sup>

4. The IP Annual Report 2022-23 depict that China has surpassed Germany, Japan, Switzerland, France, Sweden and Netherlands in patent filing.<sup>5</sup>



5.

### Research Gap

It is observed by the researcher that there is drastic rise in filing of patents in China. It is one of the top three countries which is ruling the grant of patent globally. This creates a research gap for the researcher to find out the ways by which China promotes its citizens in filing of patents.

China has made substantial progress in establishing laws and mechanism for IPR protection. In early 1970 and 1980, was the year wherein China shaped its laws. China has joined major conventions and treaties like the Berne, Paris convention. Deng Xiaoping launched its “four modernizations” policy wherein legislative protection was provided. The government has taken initiatives to set up institutions for development and monitoring its IPR. The China’s patent law covers utility model and designs patents providing monopoly for over 10 years apart from 20 years for invention.

China has become the world’s largest holder of AI patents which is nearly 60 % of the global AI patents.<sup>6</sup> Chinese IPR policy is a more robust the reason being the constant updating of its IP laws.<sup>7</sup> The law on “Promoting the Transformation of Scientific and Technological Achievements” has overcome the barriers by aiding the transfer of technology from universities and public research institutes to industrial organizations. There is a permanent bridge between academics and the industry in China. The industrial sector is closely related to academic institutes.<sup>8</sup>The foresightedness

<sup>2</sup> François de Soyres , Ece Fisgin , Ana Maria Santacreu, ‘From Partner to Rival: Understanding China’s Technological Rise through Patent Data’, Federal Reserve bank, April,03, 2025. Available on: <https://www.stlouisfed.org/on-the-economy/2025/apr/understanding-china-technological-rise-patent-data>:~:text=China%20has%20increasingly%20sought%20patent,choices%2C%20consistently%20around%2090%25.

<sup>3</sup>Robin Kaiji Gong, Yao Amber Li, Kalina Manova, Stephen Teng Sun, ‘Tickets to the Global Market: First US Patent Awards and Chinese Firm Exports, Info Institute, Munich 2023, Available on: <https://www.ifo.de/en/cesifo/publications/2023/working-paper/tickets-global-market-first-us-patent-awards-and-chinese-firm>

<sup>4</sup>Landes WM & Posner RA, Aneconomic analysis of Copyright Law, Journal of Legal Studies, 18 (2) (1989) 325.

<sup>5</sup> Annual IP Report, available on,

[https://ipindia.gov.in/writereaddata/Portal/IPOAnnualReport/1\\_114\\_1\\_ANNUAL\\_REPORT\\_202223\\_English.pdf](https://ipindia.gov.in/writereaddata/Portal/IPOAnnualReport/1_114_1_ANNUAL_REPORT_202223_English.pdf)

<sup>6</sup><https://chinaipr.mofcom.gov.cn/article/industryreports/202504/1991496.html>

<sup>7</sup><https://www.emerald.com/insight/content/doi/10.1108/apjie-04-2023-0081/full/html>

<sup>8</sup>Stronger and more just? Recent reforms of China’s intellectual property rights system and their implications

Can Huang, Cong Cao, Wim Corynne Asia Pacific Journal of Innovation and Entrepreneurship ISSN: 2398-7812Open Access. Article publication date: 18 December 2023Issue publication date: 12 September 2024

Genetics and Molecular Research 25 (4s): gmr24124

### Statistical Report

In 2023 the Chinese filed 1.64 million patent application worldwide. The International Patent Application, i.e. the patent cooperation treaty received 69,610 applications, accounting for about 25% of the global filing.

In 2024 the CNIPA authorized about 1.045 million invention patents i.e. 13.5% annual increase.

The China's National Intellectual Property Administration (CNIPA) showed the following: -

Treaty	% Increase	Quantity
Patent Cooperation Treaty - Patent	13.5 %	1.045 million filled and 75000 accepted
Hague Agreement - Design	29.5%	Submitted 4868
Madrid Protocol - Trademark	9.1%	4.781 million trademark application

The CNIPA shows a total of 1.045 million inventions and an increase of 13.5% i.e. 67000 patent reexamination and invalidation cases were closed and 75000 PCT international patent applications were accepted.

### Design Patent

Chinese applicants submitted 4,868 international design applications through the Hague Agreement, a year-on-year increase of 29.5%, ranking first in the world. 4.781 million trademarks were registered throughout the year, with an increase of 9.1%. 383,000.<sup>9</sup>As of the end of 2024, the number of valid trademark registrations in China was 47.62 million.

### GI's

According to China State Council Information Office held a press conference with China's National Intellectual Property Administration (CNIPA) total of 36 geographical indication products were recognized throughout the year, 125 geographical indications were approved for registration as collective trademarks and certification trademarks, and 8,680 business entities were approved to use geographical indication special marks.

As of the end of 2024, a total of 7,402 registrations of geographical indications as collective trademarks and certification trademarks, the total number of operators of geographical indication special marks is nearly 33,000, and the direct output value of geographical indication products exceeds 960 billion yuan, with stable growth.

### Design

A total of 11,000 integrated circuit layout design registrations and certificates were issued throughout the year. A total of 83,000 integrated circuit layout design registration certificates were issued.

### Patent

There are now 1.978 million domestic high-value invention patents, up 18.8% from the previous year, and 1.349 million invention patents from important growing industries, up 15.7% from the previous year.<sup>10</sup>At the same time, 130,000 of China's high-value invention patents were approved abroad. These patents involved 16,000 innovative firms. The use of intellectual property rights to expand foreign markets and boost their competitiveness is something that more domestic inventive firms focus on.<sup>11</sup> The patent in force shows China had 5 million active invention patents, the highest number globally.<sup>12</sup>

The graph below shows the biggest countries that are the users of the Patent Cooperation Treaty. China is heading the list. Around 273,900 PCT international applications were filed in 2024, up 0.5% on 2023, marking a return to growth. Applicants from China filed the most PCT applications.

<sup>9</sup> The National Law Review, 'China Reports Record Patent and Trademark Growth in 2024', Vol XV, Number 88, March 29, 2025. Available on [https://natlawreview.com/article/cnipa-press-conference-over-1-million-invention-patents-granted-2024?utm\\_source=chatgpt.com](https://natlawreview.com/article/cnipa-press-conference-over-1-million-invention-patents-granted-2024?utm_source=chatgpt.com)

<sup>10</sup>Xinhua, 'China's Patent – Intensive Sectors contributed 13 % of GDP in 2023', Available on: [https://english.www.gov.cn/archive/statistics/202501/07/content\\_WS677d2bccc6d0868f4e8ee957.html](https://english.www.gov.cn/archive/statistics/202501/07/content_WS677d2bccc6d0868f4e8ee957.html)

<sup>11</sup> Aaron Wininger, 'China IP Law update', <https://www.chinaiplawupdate.com/2025/01/cnipa-press-conference-over-1-million-invention-patents-granted-in-2024/>

<sup>12</sup> WIPO, 'IP Facts and Figures 2024, - Global Intellectual Property application and Active IP rights. Available on [https://www.wipo.int/web-publications/ip-facts-and-figures-2024/en/global-intellectual-property-applications-and-active-ip-rights.html?utm\\_source=chatgpt.com](https://www.wipo.int/web-publications/ip-facts-and-figures-2024/en/global-intellectual-property-applications-and-active-ip-rights.html?utm_source=chatgpt.com)

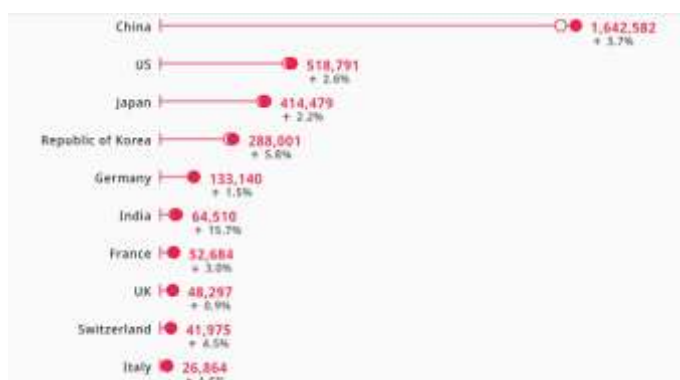


The following graph shows the tops most countries who have international filing of Patent. Leading them all are the Chinese companies.<sup>13</sup>



The Chinese Huawei technologies is the leading company in 2024 in filing patents followed by Samsung, Qualcomm, Mitsubishi and Telefonaktieb.

The following chart depicts the number of countries that have filed for Patent in the year 2022- 2023. Leading the list is China. India follows 6<sup>th</sup> in line.



Patent filings have significantly increased in China and India. Their growing creativity is reflected in this. China continues to lead the world, but India has made significant progress.

#### Patent Filing Overview (2023)

According to World Intellectual Property Organization (WIPO)'s report, China has a submission of 1.68 million in the year 2022. The global research depicted 47% Chinese patent applications in year 2023. There is a significant increase. Growth in 2023 was primarily driven by a significant increase in applications from candidates living in China (at least 57,830 more applications in 2023 compared to 2022), the Republic of Korea (+15,628), the United States of America (US) (+12,682), Japan (+9,040), and India (+8,734).<sup>14</sup>

#### Pandemic Period

Globally there was a 3% decline in the number of patent applications, due to COVID-19 pandemic.

#### India Scenario

<sup>13</sup><https://www.wipo.int/en/ipfactsandfigures/patents>

<sup>14</sup> WIPO, 'WIPO Indicators 2024: Highlights', Available on: [https://www.wipo.int/web-publications/world-intellectual-property-indicators-2024-highlights/en/patents-highlights.html?utm\\_source=chatgpt.com](https://www.wipo.int/web-publications/world-intellectual-property-indicators-2024-highlights/en/patents-highlights.html?utm_source=chatgpt.com)

For the first time, applicants residing in India submitted more than half of all patent applications i.e.55.2% which was received by India's IP office.

The National Intellectual Property Administration of the People's Republic of China (CNIPA) received 1.68 million patent applications in 2023, up 3.6% on 2022. The United States Patent and Trademark Office (USPTO) – with 598,085 applications – ranked second, followed by the Japan Patent Office (JPO) (300,133), the Korean Intellectual Property Office (KIPO) (243,310) and the European Patent Office (EPO) (199,429). Together, these top five offices accounted for 85% of the world total in 2023. This was 4% points higher than their combined share a decade earlier in 2013. China's share of the world total has risen from 32.2% in 2013 to 47.2% in 2023. Solar energy accounted for more than half (54.4%) of all energy-related applications published during 2020–2022.

The following chart depicts the percentage published patent as to energy technologies. This shows the contribution of China in technology patents.

Technologies	Increase
solar, fuel cells, wind, geothermal and hydro energy	29,400 in 2007 to around 44,700 in 2022

Over half (54.4%) of all energy-related applications during the 2020–2022 period came from solar energy, with wind (19.4%), fuel cell technology (13.2%), hydro energy (11.4%), and geothermal energy (1.5%) following closely behind. The number of solar and wind energy-related patent applications increased between 2007 and 2022. Solar and wind energy, for instance, had 2.1- and 3.2-times higher filings in 2022 compared to 2007. The above data shows the business trend which is tilting towards solar energy technology. China had the largest share of the world total in four of these five fields, ranging from 39.9% for hydro energy to 54.9% for solar energy, while Japan had the largest share for fuel cell technology (32.1%).

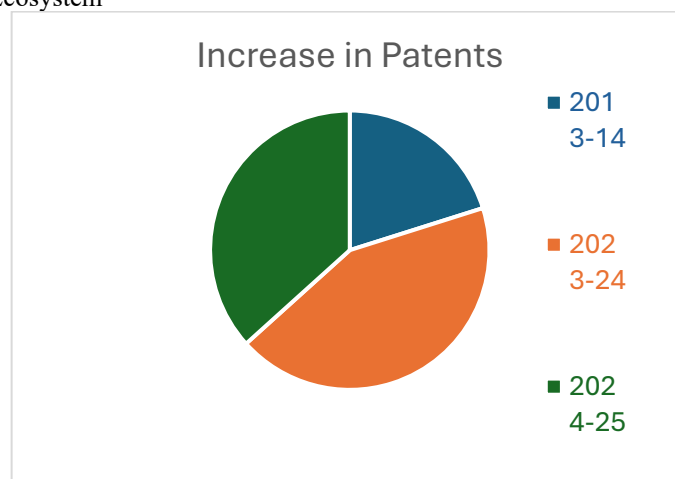
In 2023, an estimated 2 million patents were granted worldwide which represented China issued 122,450 additional patents in 2023 compared to 2022, the EPO 23,523 additional patents and India 45,563.<sup>15</sup>

### Key Trends in India's IPR System

There is considerable increase in the number of patents in India making India ranked 6<sup>th</sup> globally. This shows a 64,480-patent filing in 2023. A growth from 42,951 (2013 – 14) to 92,168 (2023-24). In the year 2013-14 there was an around 25% of patent application which increased to 56% in 2023 – 2024. The number of patent applications in 2024 -2025 is 78264 patent applications and 26083 grant.

Trademark sector, India, according to WIPO report, ranked India 4<sup>th</sup> of the global platform after the United Nations, China and Russia. Trademark applications in India have indeed grown significantly from around 2 lakhs in 2016-17 to approximately 4.8 lakh in 2023-24. This shows the number of Indian start-up schemes have been successful leading to more and more filing of trademark for India. This gives an economic boost to our nation. There is an increase of 36.4% in industrial design application mainly in textiles, tools & machines and health sectors.

### Key Trends in India's IPR Ecosystem



### India's Obvious Development: A Decade in Review

India has experienced a critical change in its development biological system over the past decade. The travel from 2013-14 to 2024-25 reflects a compelling account of progression, arrangement change, worldwide engagement, and vital aim. As appeared in the pie chart, three particular time outlines highlight this movement — with a sharp increment in obvious filings in 2023-24, taken after by a direct decrease in 2024-25, after a comparatively lower base in 2013-14.

<sup>15</sup> *ibid*

### 1. The Establishment Year – 2013-14

In 2013-14, the volume of obvious applications was moderately humble, bookkeeping for the littlest fragment of the pie chart. This period stamped the early stages of India's concerted endeavors to fortify its mental property (IP) administration. A few challenges won amid this time:

Need of mindfulness among analysts and trend-setters approximately the significance of obvious protection. Restricted framework and subsidizing for R&D exercises, particularly among scholastic educate and little businesses. A bureaucratic obvious recording prepare that disheartened opportune applications.

However, the seeds of advance were being sown. Activities like the National IPR Arrangement, presented afterward in 2016, were being conceptualized. The government too started recognizing the require to adjust IP systems with worldwide measures to empower residential development and pull in outside investment.

### 2. The Development Surge – 2023-24

The year 2023-24 speaks to the biggest share of the pie chart, showing a sensational rise in obvious filings. This period can be seen as a breakthrough stage for India's advancement scene, owing to a few key developments:

#### a. India's Rise in Worldwide Rankings

In 2023, India accomplished a memorable turning point by getting to be the 6th most elevated obvious filer all inclusive, outperforming a few progressed economies. This accomplishment was not inadvertent but the result of centered and supported endeavors by different stakeholders.

#### b. Approach and Regulation Reforms

Several government plans and arrangements energized advancement and obvious filings: Startup India and Make in India programs incentivized business and item development. Atal Development Mission (Point) and National Inquire about Establishment (NRF) given gifts and brooding back to tech new companies and inquire about institutions. Obvious recording expenses for MSMEs and scholastic teach were intensely subsidized. The online recording framework and fast-track examination for new businesses essentially decreased procedural delays.

#### c. Instructive and Mechanical Initiatives

Colleges were empowered to set up IPR cells and consolidate IP instruction into curricula. Corporate R&D investing expanded, especially in segments such as biotechnology, pharmaceuticals, gadgets, and AI. India got to be a favorable goal for outside R&D centers, contributing to obvious activity.

### 3. The Later Decay – 2024-25

Surprisingly, the pie chart appears a slight decrease in the share of licenses recorded in 2024-25 compared to 2023-24. Whereas still higher than in 2013-14, the drop raises a few vital questions and insights.

#### a. Decay in Remote Obvious Applications

One conceivable reason for the decrease is the decrease in licenses recorded by outside multinational enterprises (MNCs). Whereas India proceeds to draw in worldwide R&D ventures, geopolitical shifts, exchange approaches, and stricter IP standards may have affected outside firms to migrate or solidify their IP filings elsewhere.

#### b. Reliance on Outside Firms

Historically, a significant rate of India's obvious filings have come from remote substances working in India. This incorporates tech monsters from the US, Europe, Japan, and Korea. Hence, any disturbance in their India operations straightforwardly influences in general obvious volumes.

#### c. Residential Challenges

While India has made awesome strides, there are zones requiring attention:

Innate development still slacks behind worldwide benchmarks. Most household licenses are in early-stage or low-complexity technologies. Financing for deep-tech investigate remains limited. The interface between the scholarly world and industry is not vigorous sufficient to commercialize advancements rapidly. Obvious quality and enforceability of IP rights proceed to be a concern.

### 4. Key Way Forward

India's advance in the obvious environment is commendable, but the 2024-25 decay signals a require for reflection and recalibration. To keep up force, the taking after techniques are vital:

#### a. Boost Household Innovation

Energize innovation exchange and joint IP wanders between the scholarly world and industry. Grow money related back to Tier-II and Tier-III teach for research.

Incentivize grassroots development through state-level IP schemes.

#### b. Reinforce IP Infrastructure

Increment the number of prepared IPR experts and obvious examiners. Diminish pendency in obvious examination advance to construct trust. Reinforce IP authorization instruments through IP courts and fast-track tribunals.

#### c. Worldwide Collaboration

Lock in in more two-sided and multilateral IP agreements. Collaborate with worldwide teach for joint R&D in developing zones like quantum computing, semiconductors, and clean tech.

#### d. Mindfulness and Education

Proceed to drive IPR mindfulness campaigns at schools, colleges, and startups.

Celebrate National IP Day through neighborhood occasions to insert IP considering in society.

The pie chart is more than a visual—it is a reflection of India’s development travel over more than a decade. From a humble begin in 2013-14, India rose to universal conspicuousness in 2023-24, as it were to see a plunge in 2024-25, driven to a great extent by outside firm activity.

This presents both a challenge and an opportunity. India must presently center on building self-reliant, residential advancement capacities that do not depend exclusively on outside players. The move from being a collector of development to a maker of worldwide IP resources is critical.

By cultivating an environment where IP creation is democratized, colleges and businesses collaborate, and approach adjusts with worldwide best hones, India can yearn not fair to recuperate the misplaced force, but to ended up a worldwide pioneer in advancement and mental property in the coming decades.

### Comparative GDP Analysis of China’s R& D vis-à-vis India

Countries	% Investment
India	0.65%
China	2.4%
USA	3.6%
Singapore	2.2

#### Comparative GDP Examination of China’s R&D vis-à-vis India

##### 1. Introduction

Research and Advancement (R&D) is the spine of development, financial development, and mechanical progression. Nations that contribute intensely in R&D tend to rule in regions such as obvious filings, mechanical development, send out of high-tech merchandise, and worldwide competitiveness. In the modern knowledge-based economy, mental property (IP) era and administration play a significant part in financial supremacy.

The comparative investigation of India and China in terms of R&D venture, obvious filings, advancement capacity, and organization biological system uncovers a concerning crevice. As per the most recent accessible data:

India slacks essentially behind not as it were worldwide pioneers like the USA but too its vital neighbor and competitor—China. This underinvestment in R&D is reflected in India’s advancement yield, number of licenses recorded and allowed, innovation sends out, and self-reliance index.

##### 2. R&D Speculation: The Establishment of Innovation

###### India's R&D Scenario

India's speculation in R&D has remained stagnant at around 0.65% of its GDP for over a decade. Most of this consumption comes from the open division, especially government inquire about educate and defense foundations. Private segment commitment remains excessively moo, and academia-industry collaboration is weak.

###### China's Forceful R&D Strategy

In differentiate, China contributes 2.4% of its GDP in R&D, and this figure is reliably rising. China has built a vigorous environment that includes:

Government-funded advancement programs like “Made in China 2025”

World-class colleges and specialized institutions

Vital venture in AI, quantum computing, biotechnology, and clean energy

Forceful IP era and protection

##### 3. Obvious Recording and Advancement Output

India’s moo R&D venture deciphers specifically into a destitute record in obvious filings and advancement yield. Whereas India has seen an upward drift in household obvious filings since 2013, the generally figures are still overshadowed by China’s numbers.

###### Challenges in India

Tall reliance on outside obvious filings: The larger part of obvious applications recorded in India are by outside companies, not residential innovators. Moderate handling time: It takes about 58 months to prepare and allow a obvious in India, compared to 21 months in the USA. This debilitates creators and delays commercialization. Need of Mindfulness: Numerous new companies, MSMEs, and indeed scholarly analysts are uninformed of obvious frameworks and processes. Frail Foundation: India has a constrained number of qualified obvious inspectors and immature organization bolster frameworks for innovators.

#### 4. The China Show: What India Can Learn

China's R&D methodology is characterized by:

Government Motivations: Considerable assess motivations, gifts, and appropriations to tech companies and inquire about institutions. IP Requirement Component: Fast-tracked IP courts, well-trained obvious experts, and rigid enforcement. Startup Biological system: Gigantic bolster for new businesses through hatcheries, subsidizing, and worldwide exposure. Worldwide Integration: Dynamic support in worldwide obvious arrangements, WIPO conventions, and exchange agreements.

These endeavors have come about in China ruling the WIPO (World Mental Property Organization) rankings and getting to be a driving exporter of high-tech goods.

#### 5. Issues Tormenting India's Development and Obvious System

##### 5.1. Insufficient Financing for New businesses and Research

Most Indian new companies need get to to adequate wander capital or government financing for R&D. Without money related backing, their advancements stay on paper or come up short at the model stage.

##### 5.2. Substandard and Plagiarized Research

A noteworthy extent of obvious applications is rejected due to:

Need of novelty

Destitute specialized documentation

Copy-pasted or plagiarized content

This reflects a more profound discomfort in the investigate culture in India, where distribution weight now and then exceeds unique thinking.

##### 5.3. Long Obvious Allow Duration

The Indian Obvious Office is famously moderate. A excess of applications, inadequately staffing, and procedural wasteful aspects cause long delays. This delay:

Disheartens honest to goodness innovators

Diminishes commercial practicality of technologies

Empowers copycats and mental theft

##### 5.4. Frail IP Enforcement

India is progressively seeing obvious encroachment claims, but their determination is moderate due to:

Legal backlog

Restricted understanding of specialized IP matters

Need of committed IP courts in numerous states

Negligible punishments for infringers

#### 6. Need of IP Mindfulness and Education

Many Indian companies—especially SMEs—struggle to:

Distinguish what can be patented

Record universally through PCT (Obvious Participation Treaty)

Uphold rights over jurisdictions

#### 7. Reliance on Remote Innovation: A Vital Risk

India's reliance on imported innovation and IP has created:

Exchange Shortages: Expansive installments made as royalty/licensing expenses to remote obvious holders.

Decreased Self-Reliance: Indian businesses need get to to inborn innovation and depend on joint wanders or license-based manufacturing.

Defenselessness in Basic Segments: In segments like pharmaceuticals, defense, and gadgets, intemperate dependence on remote IP limits India's vital autonomy.

#### 8. Worldwide Best Hones: Guide for India

To near the R&D crevice with China and ended up a genuine development economy, India needs to attempt changes at different levels:

##### 8.1. Increment R&D Spending

Target at slightest 1.5–2% of GDP in R&D venture over another 5 years.

Energize public-private partnerships

Give assess benefits to private R&D expenditure

Set up more innovation parks and advancement labs

##### 8.2. Obvious Reforms

Fast-track obvious handling by selecting more examiners

Utilize AI-assisted screening for obvious applications

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## Digitize end-to-end IP administration systems

### 8.3. Advance Startup Innovation

Extend plans like Startup India and Atal Advancement Mission

Give advancement gifts, IP counseling administrations, and obvious subsidies

Coordinated IP instruction in specialized and administration courses

### 8.4. Reinforce IP Enforcement

Build up devoted IP courts

Prepare legal staff on taking care of IP cases

Uphold stricter punishments on encroachment and piracy

### 8.5. Worldwide Integration

Offer assistance Indian firms enroll licenses in worldwide purviews (PCT route)

Sign more respective IP treaties

Advance Indian brands and advances globally

India's current R&D speculation, at 0.65% of GDP, is deficiently to change it into a worldwide development pioneer. Comparatively, China's speculation of 2.4% has impelled it to the bleeding edge of worldwide obvious filings and innovative exports.

While India has plenteous human capital, building ability, and a developing startup environment, its potential is undermined by:

Moo funding

Powerless obvious culture

Moderate IP processes

Destitute requirement mechanisms

To bridge the R&D hole with China and secure its put in the worldwide information economy, India must redesign its approach to innovation—from policy-making and subsidizing to instruction and requirement. The change will require a whole-of-nation approach, coordination government, industry, the scholarly community, and gracious society toward one common objective: Building an Atmanirbhar Bharat through Innovation.

### Way Forward

- China has an effective AI driven patent filing system, which is a need of the hour. An AI driven infringement detection system can increase the patent filing process.
- Several tax benefits to be provided to corporate for their R&D spending. This will boost patent filing.
- Promote global partnership to simplify cross border filings thereby attracting foreign investment strengthening India's IP ecosystem.
- To inculcate schemes for higher education institutes and to provide education in the conduct of IP programs.
- To collaborate joint R&D projects with international institutions and government bodies.

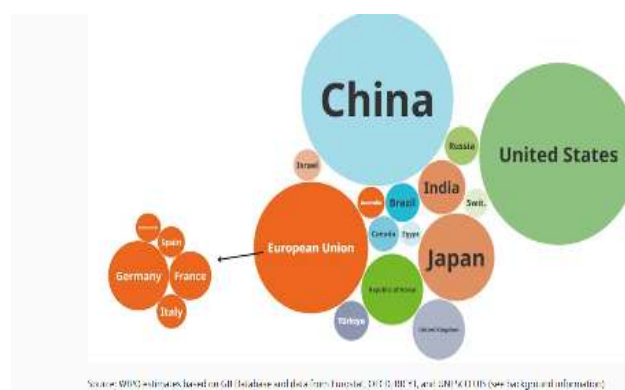


Table 1: The top 15 global R&amp;D spenders, 2023, in USD 2015 PPP

Rank	Economy	Total R&D, billion USD
1	United States of America	783.60
2	China	723.00
3	European Union	410.00
4	Japan	183.50
5	Republic of Korea	121.30
6	United Kingdom	88.20
7	India	71.30
8	Turkey	38.90
9	Brazil	37.10
10	Russian Federation	36.90

## Translation: Worldwide R&D Speculation Patterns (2023)

The over chart positions nations and locales based on their add up to venture in Investigate and Advancement (R&D) for the year 2023, measured in 2015 PPP-adjusted US dollars (obtaining control equality). The figures highlight the central part of R&D in driving development, financial development, and vital capability.

### 1. Worldwide Pioneers in R&D Spending

#### United States of America – Rank 1

With an venture of \$783.6 billion, the USA proceeds to lead universally in R&D consumption. The nation benefits from: A solid environment of investigate universities, Private segment administration in development (e.g., Google, Apple, Microsoft), Government-funded organizations like DARPA, NIH, and NASA, A dynamic wander capital showcase that underpins high-tech startups, This overwhelming speculation bolsters breakthroughs in AI, defense, biotech, clean vitality, and quantum computing.

#### China – Rank 2

China takes after closely with a considerable R&D venture of \$723 billion, displaying its assurance to ended up the world's driving advancement center. The country's procedure includes:

**Long-Term Vision and Arranging:** Government-led methodologies such as “Made in China 2025” and the 14th Five-Year Arrange back R&D-led mechanical growth.

**Domestic Bolster for Tech Monsters:** Companies like Huawei, Alibaba, Tencent, and ByteDance get government backing through endowments, assess benefits, and administrative assurance, permitting them to scale R&D rapidly.

**Emphasis on STEM:** China has gotten to be one of the biggest makers of STEM graduates universally. The state incentivizes foreign-educated Chinese experts to return and lead advancement in household firms.

**Strategic Center Areas:**

5G framework (Huawei, ZTE)

Electric portability (BYD, NIO, CATL)

Artificial insights and observation tech

**Green vitality arrangements** (sun-based PVs, wind turbines, battery storage) **Digital and Innovative Testbeds:** With a carefully proficient populace, China serves as a real-time test ground for rising advances like facial acknowledgment, ramble conveyance, and savvy cities.

### 2. The European Union – Rank 3

Collectively, the EU contributes \$410 billion in R&D. Countries like Germany, France, and Sweden drive this use through solid mechanical R&D, particularly in automotives, pharmaceuticals, and green tech. The EU is moreover profoundly committed to climate advancement, with huge reserves committed to feasible tech and carbon lack of bias goals.

### 3. Japan, Korea, and the Joined together Kingdom

**Japan (Rank 4):** Contributes \$183.5 billion, with solid corporate R&D from firms like Toyota, Sony, and Panasonic, centering on car development, mechanical autonomy, and electronics.

**Republic of Korea (Rank 5):** With \$121.3 billion, Korea brags a few of the world's most R&D-intensive firms like Samsung and Hyundai, particularly in semiconductors, hardware, and show technologies.

**United Kingdom (Rank 6):** With \$88.2 billion, the UK leads in pharmaceuticals, AI, and scholastic investigate, tied down by teach like Oxford and Cambridge.

### 3. India's Position in the Worldwide R&D Landscape

India positions 7th, with a add up to R&D consumption of \$71.3 billion. Whereas this places India in the beat 10 universally, a few concerns and openings are worth noting:

**Positives:**

India's numerical positioning is amazing, appearing consistent advance in the worldwide advancement race. Strong IT and program administrations contribute to tech-based R&D, particularly in SaaS, AI, and blockchain. Growth in startup environment and advanced economy, especially in fintech, edtech, and healthtech.

Recent changes such as Startup India, Computerized India, and the PLI (Production-Linked Motivation) plot are making more R&D opportunities.

Challenges:

Low R&D Escalated: In spite of a \$71.3 billion spend, R&D accounts for as it were 0.65% of India's GDP, distant underneath the levels of China (2.4%) and the USA (3.6%). This shows underutilization of India's financial capacity for innovation.

Heavy Open Division Reliance: A critical parcel of India's R&D subsidizing comes from government bodies (CSIR, DRDO, ISRO), whereas private segment cooperation remains modest.

Patent Recording & Advancement Yield: Obvious filings are developing, but India still depends intensely on remote obvious applications. Household obvious quality and universal IP assurance are regions of concern.

Fragmented Academia-Industry Linkages: Inquire about conducted in scholarly educate frequently needs mechanical pertinence due to destitute collaboration, obsolete educational modules, or subsidizing limitations.

Bureaucratic Bottlenecks: Long obvious handling times (normal of 58 months) and restricted IPR mindfulness debilitate advancement monetization.

#### 4. Other Essential Nations in the Best 10 Türkiye (Rank 8, \$38.9 billion)

Turkey has been contributing in defense tech, UAVs (Bayraktar rambles), and vitality framework. Government motivating forces and a youthful, tech-savvy workforce are contributing to its R&D rise.

Brazil (Rank 9, \$37.1 billion)

Though customarily centered on farming and extractives, Brazil is seeing development in bioeconomy, therapeutic investigate, and space tech.

Russian League (Rank 10, \$36.9 billion)

Russia's R&D is concentrated in defense, aviation, and atomic innovation. In any case, worldwide sanctions and diminished remote collaboration have affected development potential.

#### 5. Conclusion: India's Key Imperative

India's positioning in R&D investing is empowering but not adequate to make it a worldwide pioneer in advancement. In spite of its 7th put by add up to sum went through, the moo rate of GDP committed to R&D, along with systemic wasteful aspects, hampers its capacity to completely utilize its advancement potential.

India needs to:

Increase R&D to 1.5–2% of GDP over the following 5 years.

Promote private segment advancement through motivating forces and charge breaks.

Accelerate obvious handling and make strides IPR enforcement.

Foster industry-academia linkages through collaborative inquire about platforms.

Invest in future innovations such as AI, semiconductors, clean vitality, and quantum tech.

In a world progressively molded by information and development, R&D is not an option—it's a need. Nations like China have illustrated how key speculation can catalyze change. For India to accomplish self-reliance, worldwide competitiveness, and feasible advancement, a strong and coordinates approach to R&D is fundamental.

#### Suggestions

India needs a robust policy mechanism wherein corporates and education universities work together, taking care of one's shortfalls and looking at a broader perspective of bringing India on the global platform in IP. Though India is not lagging, yet it needs a push to be the leading in technology.

#### Conclusion

India's travel in obvious filings reflects a promising direction stamped by noteworthy development from 2013-14 to 2023-24, situating the nation as a worldwide advancement center. In any case, the decay watched in 2024-25 underscores the require to diminish reliance on outside substances and fortify residential development capabilities. To maintain advance, India must contribute in investigate, improve industry-academia collaboration, streamline IP forms, and make strong back frameworks for innate trend-setters. By cultivating a culture of development and mental property creation, India can set its position as a worldwide pioneer in mechanical progression and financial competitiveness in a long time to come.

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