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# IPR as a Catalyst for Achieving Innovation, Infrastructure and Industrialization

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## ABSTRACT

*Intellectual Property Rights (IPR) have emerged as a critical engine for promoting innovation, enhancing infrastructure development, and accelerating industrialisation as a result of fast technological improvement and globalization. The incorporation of intellectual property rights (IPR) into a country's legal system acts as a cornerstone for rewarding innovation. IPR encourages a culture of innovation and risk-taking by granting innovators and inventors exclusive rights to their intellectual property, so driving the creation of cutting-edge technology, goods, and services. This, in turn, sets off a cycle of innovation-fueled prosperity, converting economies into dynamic centres of knowledge-based businesses.*

*IPR serves as an effective accelerator for infrastructure development. Strong intellectual property protection promotes FDI by guaranteeing investors of the security and exclusivity of their intellectual assets. This infusion of cash stimulates the construction of infrastructure, such as R&D centers, manufacturing plants, and technology parks. The resulting infrastructure enhancement not only boosts a country's overall competitiveness, but also its ability to maintain and expand creative efforts.*

**Keywords:** Intellectual Property, Innovation, Green Technology.

## I. INTRODUCTION

In the era of global transformation, every nation desires to become self-dependent, empowered and economically stable and these missions can be possible through industrialization, innovation and encouraging the development of manufacturing sector. The industrial revolution was first evidenced in England, by which it had conquered the whole world. The concept of industrialization is the main cause for China to develop in rapid pace from late 80's. The idea of innovation and fostering industrialization is the cornerstone for every developed and developing economy. The concept of industrialization is very significant as the growth in the manufacturing sector signifies the advancement of the nation, self-reliance and economic prosperity.

However, with the passage of time the definition of development is not merely limited to the

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economic growth of the nation indiscriminately but holistic approach requires to be adhered and economic development, social stability and environmental concerns must be taken given due regard. In 2015, all the member states of the United Nations had vowed to make this earth a beautiful place for living and in pursuance of this, 17 Goals have been adopted which has the integrated development without compromising the social-economic and environmental needs.

In the report of 2023, the United Nations has identified that the growth of manufacturing sector globally has been slow down and in the low developed countries (LDCs), the target of doubling the share of manufacturing sector in GDP is far from sufficient to reach<sup>2</sup>. To achieve this goal of industrialization in a responsible and eco-friendly manner has become imperative. The Intellectual Property Rights (IPR) may play an imperative role in serving the need of industrialization in sustainable manner.

## **II. ACHIEVING SUSTAINABLE DEVELOPMENT GOALS UNDER AGENDA 30 THROUGH IPR**

The United Nations with the support of its member states had acknowledged and adopted certain goals to make this god's green earth an actual place to live for existing as well as for upcoming generations. These goals recognised the importance of environment with the need of economic growth, industrialization and innovation. Among all the 17 goals, we are hereby concerned with those which can be achievable through using the knowledge and expressions of IP like food and agriculture, technology transfer, innovation, climate change and biodiversity.<sup>3</sup> The IPR includes patent, copyright, trademark, geographical indications, industrial designs provide various protections to the inventors and creators and the World Intellectual Property Organisation (WIPO) at the global level encouraging the creation of idea from mind into manifesting through some concrete visible form for the welfare of the mankind. In this digital era, where the term impossible got extinct through the development of unbelievable technologies, the IPR has the potential to play lead role and pave the way for achieving these goals in faster manner.

In 2022, the carbon emission has been increased by 0.9% from energy combustion and industrial process<sup>4</sup> and to cater this the development of green technology is in process. Basically, green technology can be defined as the technology promoting sustainability without causing any harm

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<sup>2</sup>United Nations. (2023), *The Sustainable Development Goals report 2023: Special Edition* (Sept.08, 2023, 11.09 AM), <https://unstats.un.org/sdgs/report/2023/The-Sustainable-Development-Goals-Report-2023.pdf>

<sup>3</sup> Bannerman Sara, *The World Intellectual Property Organisation and the sustainable agenda* (Sept. 07, 2023, 10.15 PM) Retrieved from <https://thinkfide.com/wp-content/uploads/2021/02/Banermann-2020-IP-and-SDGs.pdf>

<sup>4</sup> International Energy Agency, *CO2 emissions in 2022: Analysis* (Sept. 08, 2023, 01.10 PM) <https://www.iea.org/reports/co2-emissions-in-2022>

to the environment and whose basic aim is to reduce the emission of green house gas.

### III. FACILITATING TECHNOLOGICAL INNOVATION

to the environment and whose basic aim is to reduce the emission of green house gas. Intellectual property rights act as the powerful catalyst for the technological innovation done by the inventors or creators by providing them legal protection and incentives for their creation, it led the robust competition among the creators to develop the innovative which foster the economic development and also serves the requirements of the sustainable development goals. Developing economies like India has celebrated the World IP day on 23rd April 2023 and put emphasis on the changing global ecosystem where there is a wide scope for the intellectual property rights (IPR) particularly focusing on the emerging technologies such as biotechnology, renewable energy, blockchain, artificial intelligence and metaverse etc.<sup>5</sup>

The legal framework of Intellectual Property rights (IPR) boosts the venture capitalists (VCs) and private equities (PEs) to invest in research and development (R&D) and facilitates the dissemination of knowledge, ultimately driving progress and fostering a culture of innovation. IPR, particularly patents, grant inventors exclusive rights to their inventions for a specified period. This exclusivity guarantees that the inventor has the sole authority to use, license, or sell their innovation. This assurance of protection encourages companies and individuals to invest significant resources in R&D. Knowing that their intellectual property is safeguarded, innovators are more likely to take risks, pushing the boundaries of what is technologically possible.

Globally, the drastic increment has been observed in the patent filings as in 2022, more than 2.5 lakh applications, which is the highest ever in a single year.<sup>6</sup> As per the economic survey 2021-22, the Patent filing in India has been risen by 30% in last 5 years and the number of patents granted were almost tripled.<sup>7</sup> Most of these patent grantees are Indian residents not the MNCs it clearly shows acknowledgement of significance of IPR.

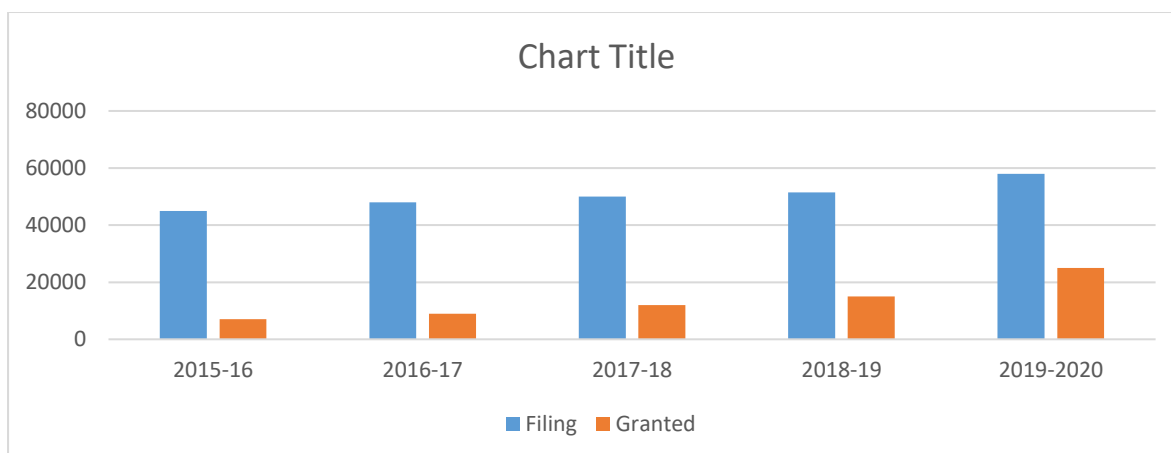
The trend which has been following in India qua patent filing as follows:

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<sup>5</sup> Prof. (Dr.) Pandit, Unnat P., *Intellectual Property is the fuel that drives innovation and creativity, protect it fiercely*(Sept.08,2023,01.01PM)[https://ipindia.gov.in/writereaddata/Portal/Images/pdf/Final\\_CG\\_News\\_Letter\\_.pdf](https://ipindia.gov.in/writereaddata/Portal/Images/pdf/Final_CG_News_Letter_.pdf)

<sup>6</sup> UN News: Global Perspective Human Stories, *Patent filing hit a record high in 2022* (Sept. 10, 2023, 01.18 PM) <https://news.un.org/en/story/2023/02/1133992#:~:text=Record%20applications,inflation%20and%20supply%20chain%20woes.>

<sup>7</sup>Singh,M. & Dr. Kumaria, N, *Patent Application Filing trend in India* (Sept. 15, 2023, 6.07 PM) <https://www.asialaw.com/NewsAndAnalysis/patent-application-filing-trend-in-india/Index/1262#:~:text=As%20per%20the%20Economic%20Survey%202021%2D22%2C%20the%20number%20of,28%2C391%20during%20the%20same%20time.>



Intellectual Property Rights (IPR) promotes culture that has the essence of innovation and creativity. Knowing that their intellectual property will be protected, inventors and creators are more likely to invest time and effort in generating new ideas and solutions. This culture of innovation permeates throughout society, leading to a broader impact on technological advancement and economic development. Having robust IPR protections can confer a significant competitive advantage. It allows companies to differentiate themselves in the market based on their unique technological capabilities. This encourages healthy competition, as companies strive to out-innovate their rivals. The fear of potential infringement lawsuits also encourages businesses to invest in original R&D efforts rather than copying existing technologies. IPR ensures that inventors can monetize their innovations. This creates a financial incentive for companies and individuals to engage in R&D. When innovators are confident that they can recoup their investment and generate profits from their creations, they are more likely to allocate resources towards technological advancements.

IPR can facilitate the exchange of knowledge and technologies between different entities. Through licensing agreements, innovators can grant others the right to use their intellectual property in exchange for royalties or fees. This technology transfer accelerates the adoption of new and innovative technologies across various industries. It enables smaller companies or startups with limited resources to access and utilize cutting-edge innovations developed by larger corporations or research institutions.

#### **IV. ENHANCE THE ECONOMIC GROWTH**

IPR grants to the inventors and innovators exclusive rights over their creations for a specified period. This exclusivity ensures that inventors can profit from their innovations, which encourages companies to invest in Research and Development (R&D) activities. This

investment in turn leads to the development of new technologies, products, and processes that drive industrialization. Nation having strong IPR protections are likely to attract more Foreign Direct Investment (FDI). The Intellectual Property and the rights pertaining to the intellectual property are becoming the valuable assets which has the potential to earn huge amount of forex reserves. The nations like Japan and Unites States of America (USA) had witnessed the remarkable economic growth with the implementation of Intellectual Property Laws.

Multinational corporations and foreign investors are very much inclined to invest in the economies of the countries where there are strict implementation of intellectual property laws. The infusion of the investments from large MNCs not merely bring the capital but also the advanced technologies, managerial expertise, and financial resources, which contribute to the growth and modernization of domestic industries.

IP rights enables technology to be transferred from developed to emerging economies. Through licensing and technology transfer agreements, knowledge and innovation can be transferred to emerging economies that may not be able to develop them on their own. The transfer of technology results in the adoption of advanced industrial practices that drive economic growth in beneficiary countries. Countries with strong intellectual property protection frameworks tend to have a competitive edge in the global market. The protection and monetization of intellectual property assets give companies a competitive advantage. This competitive edge leads to export opportunities, growing markets and a positive effect on balance of trade. It can be used to encourage responsible innovation that aligns with sustainable development goals. Companies that develop eco-friendly technologies can protect their intellectual property, ensuring they have the incentive to continue investing in sustainable practices. This leads to the growth of industries focused on green technologies and sustainable solutions.

Trademarks, a form of IPR, plays crucial role for building and protecting brand value. A strong & valuable brand can command premium prices, leading to higher profit margins for companies. Additionally, it fosters customer loyalty and trust, which can result in ongoing income sources and long-term economic success. Value-added industries can develop as a result of robust IPR protections. Biotechnology, information technology, and green manufacturing are examples of industries that concentrate on technology-intensive goods or processes and produce higher economic returns. These sectors frequently boost economic activity by generating demand for supplementary services and boosting labor productivity.

By providing legal safeguards, promoting innovation, and allowing technology transfer, IPR promotes economic development. A strong IPR framework increases the chances of sustainable

economic growth in a country by allowing it to fully harness the economic potential of its intellectual capital.

## V. FOSTERING ENTREPRENEURSHIP

Entrepreneurship is a key factor in economic growth since it encourages innovation and jobs creation. Intellectual property rights (IPR) stand out as a pillar in supporting and protecting entrepreneurial initiatives in this dynamic environment. This article explores the many ways that intellectual property rights (IPR) support entrepreneurship, including through offering rewards for invention, safeguarding artistic pursuits, and facilitating market access.

Intellectual property rights (IPR), in particular patents, copyrights, and trademarks, give creators, innovators, and inventors legal protection for their creations. This exclusivity encourages investment in R&D and the quest for innovative concepts. Entrepreneurs are more willing to take chances and invest in innovation because they know their intellectual property will be protected. This promotes the creation of innovative technologies and inventive solutions that can upend markets and inspire business endeavors. The following IP rights for promoting the entrepreneurship are as follows:

- a. **Patents:** Offer inventors exclusive rights to their inventions for a specified period, typically 20 years. This protection allows entrepreneurs to recoup their R&D investments and generate profits, creating a strong incentive for technological innovation.
- b. **Copyrights:** Protect original literary, artistic, and musical works. For entrepreneurs in creative industries like publishing, music, and software development, copyright protection ensures that their original content remains their property, providing an economic incentive for creative pursuits.
- c. **Trademarks:** Guard brand identity and reputation. Establishing a recognizable brand is crucial for entrepreneurial success. Trademarks protect the goodwill associated with a brand, instilling consumer trust and loyalty.

An effective IPR framework aids in the growth of entrepreneurial ecosystems. It fosters a culture where innovators, creators, and inventors are more willing to devote their time, money, and skills to new businesses. As a result, a dynamic ecosystem with a network of investors, mentors, accelerators, and incubators emerges to support and foster entrepreneurship.

IPR can act as a bridge for cooperation and technology transfer between various entrepreneurs and ecosystem members. The diffusion of information and the acceleration of innovation are

made possible by entrepreneurs' ability to license their intellectual property to other businesses or research organizations. By allowing ideas and technology to traverse corporate borders, this promotes an environment conducive to open innovation.

IPR goes beyond actual goods or technological advancements. Additionally, it can safeguard distinctive business concepts, procedures, and tactics that give firm owners a competitive edge. This is especially important in sectors like IT and software where business procedures are directly correlated with innovation.

By offering rewards for invention, defending creative works, and easing market entrance, intellectual property rights act as a cornerstone in promoting entrepreneurship. The importance of IPR in fostering entrepreneurial ventures cannot be emphasized in a time of fast technical advancement and dynamic marketplaces. The entrepreneurial landscape is poised to become even more lively, innovative, and supportive of economic growth and development as policymakers, corporations, and entrepreneurs continue to acknowledge the critical role of IPR. We give entrepreneurs the tools they need to advance their businesses, create jobs, and influence the direction of economies and industries around the world by embracing and protecting intellectual property.

IPR becomes increasingly important for safeguarding entrepreneurs' inventions and brands as they grow their companies into worldwide marketplaces. International treaties and agreements, like the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), offer a framework for enforcing IPR across borders, giving business owners assurance that they may compete on a global scale.

## **VI. GREEN TECHNOLOGY THROUGH GREEN IP**

The increasing focus of the world towards the environmental concerns led the development of technology with innovations and having sustainable approach. Some of the green technology innovations are solar power generations, bio-fuel, wind and hydroelectric power, biofuels, water conservation technologies, e-waste recycling, eco-friendly materials, green construction, and electric vehicles to vertical farming, promise to revolutionize various sectors, reduce our carbon footprint, and create a more sustainable future.<sup>8</sup>

Globally, green technology is growing quickly, and it is essential for reducing the effects of

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<sup>8</sup> Chomsky, Raf. (2023). *Top 10 green innovations* (Sept. 17, 2023, 09.18 PM) <https://sustainablereview.com/top-10-green-technology-innovations2/#:~:text=The%20top%2010%20green%20technology%20innovations%20include%20solar%20desalination%2C%20green,nuclear%20energy%20and%20fuel%20cells>



climate change and building a more sustainable future. IP rights are essential for protecting against infringement and spurring additional investment in the industry.

Every second patent granted in India is for green technology, demonstrating the country's commitment to sustainability and the development of renewable energy sources. However, it still has a long way to go before catching up to other developed nations in terms of steps to encourage the patenting of green technologies, such as offering incentives to inventors, accelerating examination, reducing renewal costs for preserving green technology intellectual property, etc. Therefore, policies that encourage green patenting and address the urgent problem of climate change must be introduced by India's policymakers, intellectuals, and business entities.

Innovations performed with the goal of sustainable development plays an imperative role in economic growth with mitigating environmental hazards. In these innovations, the Intellectual property plays a vital role in developing and spreading the green technologies to the whole world.<sup>9</sup>

The Governments of various nations are encouraging the Intellectual property pertaining to the green technology. The Variable Wind Turbine, often known as 039 patent, is the example of sustainable innovation.<sup>10</sup>

The Green technology is the technology which promotes the development by reducing carbon emission and promoting sustainability and it is the need of the hour since the increment of 0.9% of carbon emission has been identified by the United Nations in its report of 2023 post-pandemic.

The development and implementation of environmentally friendly technology and practices are referred to as "green innovation," and intellectual property rights (IPR) play a critical role in fostering and sustaining this innovation. Patents in particular give inventors and businesses the sole right to use their ideas. This exclusivity offers a financial incentive to spend money on green technology research, development, and commercialization. Innovators are more willing to direct resources toward environmentally friendly solutions if they know they can protect and benefit from their intellectual property. IPR can be used to encourage collaboration among various players in the ecosystem of green innovation. Eco-friendly technologies can be

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<sup>9</sup>Shehnai, Nandini. (2022, June 10). *Green IP and Green technology: A much needed interplay between Intellectual Property and Sustainability* (Sept. 12, 2023, 11.14 AM) <https://ijpiel.com/index.php/2022/06/10/green-ip-for-green-technology-a-much-needed-interplay-between-intellectual-property-and-sustainability/>

<sup>10</sup>Behr, P. (2010, August 4). *Tilting with wind turbines- A Legal War slows industry growth*. (Sept. 13, 2023, 10.11 PM) <https://archive.nytimes.com/www.nytimes.com/cwire/2010/08/04/04climawire-tilting-with-wind-turbines---a-legal-war-sl-96612.html>

developed and commercialized through partnerships between businesses, research institutions, governments, and NGOs. In these collaborations, precise intellectual property agreements are essential to defining ownership and rights pertaining to the jointly generated intellectual property. IPR safeguards give entrepreneurs the assurance that their investments in green innovations will be protected. This supports an ongoing cycle of innovation and development as businesses look to provide more effective, affordable, and sustainable solutions.

## **VII. CONCLUSION**

The Sustainable Development Goals(SDGs) are nothing more than just way of living which the entire humankind must have to adopt and adhere in sacred manner. However, it is a bitter truth that in the race of capitalisation, we have left behind importance of environment and nature. The development is the nature of mankind but such development must not be at the cost of such loss that would have a devastating effect over the entire human race. In order to cater this and to make the our SDGs achievable, Intellectual Property Rights are the assets that can pave the way for the development while maintaing the sustainability and keeping the socio-economic and environmental concerns in consideration. The concept of green technology is booming, recently, India becomes the first nation to develop a vehicle which can run on ethanol, such innovations would reduce our dependency on the carbon emitting substances and fuels and aid in making this earth a beautiful place for living.

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