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The Interconnection Between Intellectual Property and the Growth of Green Technologies

Madhumitha K

Student, 5th year Bcom Llb(Hons) in SASTRA Deemed to be University

ABSTRACT

The growing concern for curbing global warming and environmental hazards requires environmentally sustainable resources and such a need has led to the use of green technology and green products. The Intellectual property law aims at promoting innovation through incentivizing and commercializing such innovation. This paper focuses on how the Intellectual Property Law impacts the use of green technology and the innovation of the same by discussing the ambit of intellectual property law which provides protection to green technologies under Indian law, various international laws, rules, regulations, agreements and treaties and at the same time how it prevents abuse of such power. This paper therefore discusses the importance of providing intellectual property rights to innovator of green technology and how such protection can be effectively enforced by ensuring the wide access of such technologies to all. Therefore, it discusses the inter-relation between intellectual property law and green technologies by providing checks and balances in the enforcement of such laws with regard to public accessibility. [1]Doctrinal Research Methodology is used in this paper.

BACKGROUND

Green technology is a process to produce environment friendly products that do not cause harm to the environment. The growth of green technology though has seen a tremendous growth in the recent years, the development of green technology emerged in the 19th century whereby the manufacturers which uses coal for energy started using processes that are causes a less negative impact in the environment by opting to processes that produces less waste. It developed particularly after the second world war especially in the United States where there was loss and to resolve such consumption and waste management. Following this the scientist started to warn about the rapid climate change and the need for alternatives which are sustainable and which do not harm the environment.

This period is a notable one in the ecological movement which emphasized the growth of using sustainable technologies to produce green technologies and green products. Eventually government started recognizing the importance of protecting the natural and renewable resources by implementing sustainable ways and process to opt for a more sustainable and green life. It enacted various regulatory frameworks, rules, regulations etc., to protect the ecosystem.

One such legal framework that promotes the ecological balance and modernization is the Intellectual Property Law which provides protection to the innovation of creator of such process or technology. It is

[1] https://www.investopedia.com/terms/g/green_tech.asp#toc-history-of-green-tech
https://www.ibm.com/think/topics/green-technology

important to note that not only national laws but also international regulatory framework focusses on the growth of sustainable development.

LITERATURE REVIEW

In a research paper "Green IP-A Much Needed Interplay Between the Intellectual Property and Stability" it highlights the need of a harmonization between innovation of technology, an expression of creativity and preservation of the ecological system. It analyses how the intellectual property rights have been a driving force for new innovations and how it impacts the growth of sustainable development. It discussed about the various initiatives taken to improve the patenting system of green technology, the growth of green IP in India and the setbacks of Indian Green IP system and the position of green IP in India compared to other countries.

The research paper "Role of Patent Law in Incentivizing Green Technology" discusses about the high cost of green IP and that government incentives and subsidies play a vital role in the process of green IP and the need for such incentives. It further states that besides all these funding programs the government should provide measures for public access of such innovation which makes it available to all and reduces the high of it. It discusses about the role of United States Patent Office in the development and growth of Green IP and the importance of non-governmental incentives in the green IP system.

The author of "Intellectual Property Rights Regime in Green Technology: Way Forward to Sustainability" briefly provides insights of the importance of green IP in the growth of sustainable development and how intellectual property protection encourages innovation in this area. It states how the incentive perspective of patenting is a driving factor for companies and businesses to use their innovation to invent green technology and products as it directly causes an effect of the profitmaking of the company. It also briefs about how patenting brings monopoly and the therefore the need of compulsory licensing.

In the research paper "Innovation and Diffusion of Green Technologies: The Role of Intellectual Property and Other Enabling Factors" the various aspects of the growth of Green IP are discussed. It deals with the challenges in innovation of green technology in both developed and developing countries. It highlights the factors of diffusion and financing of such innovations which contributes to the growth of green IP. It delves into how the cooperation between different entities such as government, companies, non-governmental organizations and academic institutions through partnerships and joint ventures creates a positive impact in the sustainable development and green IP. It also elaborates about the importance of how the non-profitable institutions plays a major role in the funding, training and imparting knowledge and skills, technical support and facilities to small & medium enterprises that lack such resources.

In "The Impact of IP Laws on Sustainable Development Goals", the research deals about the need for new innovations, technologies and processes that are environmentally friendly and sustainable minimizes the negative impact in the ecological system. It discusses the various challenges in the patenting of green technology and the importance of creating a balance between innovation and the wide accessibility of such innovations. It further discusses about the challenges faced in patenting green technology particularly in India and how developed economies can support developing economies in the growth of green technology.

In the research paper "The dynamic relationship between intellectual property rights and the growth of the green economy" examines the relationship between the intellectual property and green economy. The study's goal is to comprehend how IPRs influence the growth of the green economy and how IPRs influence the growth of the green economy. Information was gathered from the Organisation for Economic Co-operation and Development, the United Nations Conference on Trade and Development, and the World

Intellectual Property Organisation, among other sources. We looked into the connection between IPRs and the growth of the green economy using regression analysis. Our findings indicate that greater levels of green economy development are linked to stronger IPRs. We also discovered that the growth of the green economy benefits IPRs. According to our research, IPRs are a crucial instrument for encouraging the growth of the green economy.

RESEARCH PROBLEM

The rigid Intellectual Property hinders the growth of green technology and accessibility to such technologies, and more importantly affects innovations.

OBJECTIVE

This research paper aims to study the interrelation between intellectual property law and the innovations using sustainable technologies which creates a positive impact in the innovation of such products.
This paper also focuses on effective regulations to be made to the current legislations that enables the green technology to be widely accessible without affecting further innovations.

RESEARCH QUESTIONS

1. How the existing Intellectual Property laws create a positive impact on the growth green technologies?
2. How the intellectual property laws can be enforced without affecting the public accessibility of these green technologies?
3. What are the international agreements and frameworks that provide for the laws and regulations for the protection and enforcement of the laws?

WHAT IS GREEN TECHNOLOGY

Green Technology is the process where science and technology are used to produce that are eco friendly products and services which safeguards the environment. In simple terms it is any technology that is used to prevent or reduce the negative impact of human beings in the environment. It is also known as the environmental technology or sustainable technology. The object behind this is not merely to curb the ongoing the effect but also to resolve or repair the impact created in the past. It involves all measures taken to restore the environment back to its original form. It includes renewable energy, recycling, sustainable transportation and waste management. Some examples of green technology include electrics automotives, solar energy, wind energy, biogas, LED, geo thermal energy, energy from waste, biomass, bio fuels etc.,

INTELLECTUAL PROPERTY AND GREEN TECHNOLOGY

Intellectual Property refers to intangible assets owned by an individual or a company. The Intellectual Property Laws grant protection to such assets called the intellectual property rights. Such rights are granted to the creators of such intangible assets for their innovation, creation and skill. These laws allow the creator an exclusive right to benefit from their work by granting them control over their creation and monetize their work. The creator can prevent anybody from copying or reproducing their work without their permission and can receive incentives by licensing it to third parties for royalties, sell their rights or commercialize their creation by sale through products, services or experiences.

The different form of IP protection given to creator for their innovation in green technology

1. **Patents –** are protection given to inventors for their invention which enables to them prevent any unauthorised use and the authority to commercialize or licence it. Through this the inventors are encouraged to create more sustainable products. This is mainly helpful in promoting inventions in finding alternatives for renewable resources. For instance, generating electricity from degradable wastes to replace the electricity generated from renewable resources.
2. **Trademarks –** are identification or recognition of a particular brand or business entity through words, phrase, symbols, designs etc., which helps the buyer to identify the product. Therefore, trademarks help in distinguishing green product from other products with the help of eco-marks or green symbols etc.,
3. **Copyrights –** are protection given to creative or artistic works. This protects the product design, artwork, graphic work or packaging of the green products.
4. **Trade Secrets –** protect the confidential business information such as the process of manufacture, formula used for creation etc., This protection enables the businesses to create green products and use green technologies more effectively and efficiently and innovate new ways and strategies. For instance, the formula to create an alternative for plastic bag can be protected through trade secrets.

These intellectual property rights are not only a mere protection of present creation but also a stimulant for future innovations and inventions. This guarantees the creators to enjoy full creation over their inventions and to monetize their innovation and skills. It is not only a recognition of knowledge or skill of the individual but also incentivize innovation. Through this the individuals are encouraged to create or invent new green technologies or green products and increases the research and development in this area.

INTERNATIONAL FRAMEWORKS IN THE PROMOTION OF GREEN TECHNOLOGY THROUGH INTELLECTUAL PROPERTY

The international organisations have established various frameworks to encourage access to green technology and to promote environmentally friendly and sustainable growth.

1. WTO AND TRIPS AGREEMENT

The Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement by the World Trade Organisation (WTO) plays an important role in the intellectual property system internationally and promotes for technological developments, advancements and innovations globally.The TRIPS allows certain flexibilities to developing countries which enables the promotion of green technology. On the other hand Article 66.2 states that developed countries should provide incentives to businesses, enterprises and institutions for the transfer of technologies to developing countries and through this initiative there is global dissemination of green technology.

2. WORLD INTELLECTUAL PROPERTY ORGANISATION

The World Intellectual Property Organisation (WIPO) is a specialised agency of the United Nations established for protecting and promoting intellectual property by bringing cooperation among the countries.

The WIPO GREEN is a initiative by WIPO launched in 2013 to address the global needs that is climate change. It is a free online platform which is a free marketplace for technology exchange. This allows the innovators, investors, businesses, companies, stakeholders etc to take part in the exchange of ideas and joint creation of green technologies for a sustainable future. It brings together the key players of innovation to a common platform and through its database and network accelerates the growth of green technology.

The IPO GREEN is an initiative which allows Intellectual Property Offices to enact the green policies and programs more effectively and efficiently. It was launched in 2022 with the funding of the Japan Patent Office which brings together all IP offices to share their own insights and experiences regarding green technology. It also enables the IP offices to engage with other agencies to promote sustainable development and growth of green technology.

3. UNFCC AND PARIS AGREEMENT

This focuses on addressing the rapidly growing climate change and to bring cooperation among the countries for a sustainable use of resources. The Article 10 of the Paris Agreement encourages low carbon and more resilient technologies. Though it does not explicitly provide for intellectual property protection of green technology it provides for the promotion of sustainable use.

4. CONVENTION ON BILOLOGICAL DIVERSITY

The CBD adopted in year 1992 aims to preserve biodiversity and promote the sustainable use of biological resources. The Nayoga Protocol which is a supplement agreement to the CBD focuses in access and benefit sharing in the use generic resources and traditional knowledge and ensures that benefits of use of such resources and knowledge are given to countries who share such resources

GLOBAL INITIATIVES BY COUNTIRES

1. CLEAN ENERGY RESEARCH CENTRE

It was established in 2009 as an effect of the US-China cooperation which is a specialised team consisting researchers, scientists, engineers etc., from the respective nations to conduct a study for the development of clean energy technology. A Renewable Energy Forum has also been created by the countries for the collaborating intellectual property matters with regard to renewable resources.

2. JOINT CLEAN ENERGY RESEARCH AND DEVELOPMENT CENTRE

It was founded in 2009 as a joint project by United States and India whereby it aims to resolve the sustainable and energy advancements issues at the global level.

3. GREEN TECHNOLOGY PILOT PROGRAMME

The United States Patent and Trademark Office (USPTO) initiated a pilot program in relation to green technology in the year 2009 to expeditiously review the patents relating to conservation of energy, environmental protection, reduction of carbon emission and green technology.

4. THE ECO-PATENT COMMONS

A community established in the year 2008 by the World Business Council for Sustainable Development (WBCSD) and corporations such as Nokia and Sony. This community was started with an object of exchanging patents and knowledge regarding environmental issues, conserving energy and water, preventing pollution, recycling etc., It aims to promote creativity, cooperation and exchange of information which will help in safeguarding and developing the intellectual property granted to green technology at a global level.

GROWTH OF PATENTING OF GREEN TECHNOLOGY

The innovation of green technology has seen an enormous growth due to intellectual property laws. The global patent applications for green technology and efficient energy resources have been roughly increased to around 120% during the years 2006-2020.

According to an article published by the Times of India, it was found that every second patent granted in related to green technology.

The data released by the Ministry of Commerce and Industry reveal that more than 91,500 applications were granted patents during the year of 2016-2017 and 2021-2022 out of which around 61,186 applications were patents for green technologies of various aspects such as waste management and alternative energy resources.

In 2009 the United States introduced an initiative called 'Green Channel' to expeditiously review green patents.

In the same year, different countries including Australia, Japan, United States, Israel, South Korea launched fast track schemes for green technology patents followed by China, Brazil, Taiwan etc in the later years.

Therefore, it is clear that the green technology is growing rapidly through the years to achieve sustainable development goals. It is also clear that Intellectual Property plays a vital role in promoting the growth of green technology.

CHALLENGES IN GREEN IP

1. **Balancing Protection and Access** – This is one of the most common and significant challenges in this regard. The high cost of the patented technology makes it very expensive especially for developing countries to access it. This therefore makes it almost impossible for adoption by such countries.
   In certain instances, even though the licensing facilitates global access, the high licensing fee becomes another barrier. In cases of commercialisation also the high prices of the patented products prevent the access of such products to all. There the balance of protecting innovation and the affordable access of such innovation is a major problem.
2. **Patent Thickets** – The accumulation overlapping of patents in the various sectors in relation to green technology is challenging the innovators to navigate and reduces the chances of future innovations.
3. **Fragmentation** -The patents create a barrier entry for small and developing enterprises or startups to license such patents in the competitive space.

MITIGATING MEASURES TO OVERCOME SUCH BARRIER

Compulsory Licensing: It is the process by which government can authorise the use of a patented technology without the consent of the patent-holder in public interest. It is generally invoked in the case of public health concerns but this shall play an eminent role in the area of green technology. It helps to reduce the cost of green technologies which makes the technology and products affordable and accessible to all.

Licensing and Technology Transfer: Licensing allows patent holders to permit others to use their innovation in exchange for a fee or royalty enabling access to green technologies. This facilitates the adoption of green solutions across regions.

Patents Pool and Open Access: The patent pooling allows easy access of green technology to companies and governments and therefore plays an important part in the publics access of products. On the other hand, open access increases the innovation and adoption of technology and products.

Providing Incentives, Tax Subsidies and Tax Incentives: Government can provide incentives and tax subsidies and funding programs encourages innovators to create products. It reduces the cost of developing green technologies and helps to overcome the financial burdens which therefore benefits both the innovators and end-users.

Global Cooperation and Technology Transfer Agreements: The international collaboration between countries in innovation provides global access to the product to people in different regions in the world. It helps in more effective and efficient creation and distribution of such technology. Multilateral agreements and public-private partnerships enable the developing countries to benefit from the technologies shared by the developed countries with the help of affordable licensing policies and subsidies.

Collaborative IP Models: This model allows holder of intellectual property to share their innovation free of cost without any fee or royalty in exchange. This approach allows for the sharing of knowledge and innovation with others freely which provides a wide access to all.

These measures help in providing solutions to not only the present technology but also encourages the future generation for use of such green and sustainable resources.

RESEARCH METHODOLOGY

The main object of our research paper is regarding the green technology and green products. The qualitative information collected in this research analyses how the green technology works, how the intellectual property laws increase the growth of green technology. The Doctrinal Research Method is used in this paper. The data used in the research were collected through news, statistics, journals and other previous research. The information regarding intellectual property of green technology were gathered, the various regulatory frameworks were interpreted and conclusions were drawn based on the analysis.

FINDINGS

Through this research, it is found that the protection of intellectual property granted to green technology has led to the growth of innovations in green technology. Such protection encourages the innovators to create more green technology and products and helps in the sustainable development.

RECOMMENDATIONS

There must be more flexibilities with relation to green intellectual property. The fast-track schemes should be implemented for expeditious review of green IP and for the speedy disposal of the green IP applications. The government should also provide various subsidies and tax deductions to encourage innovations.

CONCLUSION

It is clear from the research paper that intellectual property promotes the innovations of green technology. This helps in the development of waste management, alternate energy resource, electric automotives etc., Therefore a more flexible framework is required foe providing intellectual property in relation to green technology.

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