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The Intersection of Intellectual Property Rights (IPR) and Sustainable Development Goals (SDGs): Examining how the Former can either Hinder or Facilitate Progress towards achieving the Latter

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ABSTRACT

The protection of intellectual property rights is essential to sustainable development. The success of the Sustainable Development Goals (SDGs) of the United Nations is largely dependent on innovation and creativity, which are greatly aided by intellectual property (IP). However, IP also hinders innovation by granting exclusive rights to the proprietors of certain inventions, particularly those related to agriculture and pharmaceuticals. This study examines the complex link that exists between intellectual property rights (IPR) and the Sustainable Development Goals (SDGs), with the goal of determining the degree to which IPR helps or hinders the achievement of SDGs. The international world has come to understand the critical role that IPR and SDGs play in promoting social progress, economic prosperity, food security, health, education and innovation in recent decades. But there are conflicts when you look at how the wider goals of sustainable development interact with the preservation and enforcement of intellectual property rights. The dissertation explores the conflict between fostering innovation and providing fair access to information and technology, as well as how various intellectual property regime approaches affect the advancement of sustainable development objectives. It also looks at how national policies, institutional frameworks, and international agreements can help resolve conflicts between the protection of intellectual property rights and the achievement of the Sustainable Development Goals (SDGs). A variety of stakeholders' viewpoints are taken into account, including those of governments, businesses, civil society organisations, and indigenous people.

Keywords: SDGs, Intellectual Property Rights, Sustainability, Patents, Trademarks, TRIPs.

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I. INTRODUCTION

Intangible property that is the result of original ideas is commonly referred to as intellectual property. It is common for intellectual property rights to pertain to the ownership of tangible representations or expressions of ideas rather than the abstract, non-physical entity. By designating and upholding the legal rights to create and manage tangible manifestations of an idea, intellectual property law safeguards the interest of content creators in their creations.³ Any creative endeavour that benefits humanity and is the result of brilliant ideas ought to be acknowledged and safeguarded. Due to this, the IPR system is required as a reward for the labour. In addition, the IPR system encourages the development of a robust documentation framework for all types of human creativity in order to minimise the likelihood of duplicating ideas or creating new works. It is anticipated that the community would be able to fully utilise it for their requirements or expand upon it to offer greater additional value with the help of strong documentation.

II. SUSTAINABLE DEVELOPMENT GOALS AND THEIR IMPORTANCE

“The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including those related to poverty, inequality, climate change, environmental degradation, peace and justice.”⁴

⁵The United Nations (UN) and its 193 member nations decided to adopt the 2030 Agenda for Sustainable Development in 2015. To be accomplished by 2030, the historic agenda puts forth 17 Sustainable Development Goals (SDGs) and aims for the planet's and humanity's prosperity, dignity, and peace. The agenda intends to address a number of issues, including poverty and sanitation, and it also aims to strengthen local economies and meet the social requirements of the populace. The eight Millennium Development Goals (MDGs), which were established in 2000 and concluded in 2015, are essentially continued by the Sustainable Development Goals (SDGs). The MDGs aided in the fight against hunger, the almost one billionth person to escape extreme poverty, and the increased enrollment of girls in education. In contrast to the MDGs, which only accepted donations from public and nonprofit institutions, the SDGs also count on the corporate sector to help alter unsustainable and impractical patterns of production and

³ Obie Persada Sitanggang, CLASSIFICATION, PRINCIPLES AND LEGAL BASIS OF INTELLECTUAL PROPERTY IN INDONESIA.

⁴ Take action for the sustainable development goals - united nations sustainable development, UNITED NATIONS, <https://www.un.org/sustainabledevelopment/sustainable-development-goals/> (last visited Apr 14, 2024).

⁵ Sustainable development goals, EDUCATION, <https://education.nationalgeographic.org/resource/sustainable-development-goals/> (last visited Apr 14, 2024).

consumption.

The 17 Sustainable Development Goals represent a major international commitment -

1. End poverty by expanding resource availability and helping areas most impacted by armed conflicts or natural catastrophes.
2. To achieve zero hunger, make sure to allocate funds for the technologies and infrastructure required to raise agricultural productivity.
3. Reducing inequality and guaranteeing everyone's health are two aspects of health and well-being.
4. Promote inclusive, high-quality education to ensure that every kid completes their primary and secondary education.
5. Gender equality: guarantee equal rights and access to reproductive health care for all.
6. sanitary and clean water: To maintain good hygiene, make sure that everyone has access to sufficient sanitary facilities as well as safe drinking water.
7. Investing in renewable energy sources can increase energy productivity while keeping costs down.
8. Good work and economic growth: boost long-term growth through raising productivity and diversifying your sources of innovation.
9. Infrastructure, innovation, and industry: by boosting spending on R&I, we can close the digital divide and advance sustainable industries.
10. Improving market regulation and encouraging migration and human mobility are two ways to reduce inequality.⁶
11. Ensuring access to secure housing, funding public transportation, and practicing urban management are all components of sustainable cities and communities.
12. Ethical production and consumption: satisfy demand for products by optimising supply chains and cutting down on food wastage.
13. Take action to stop the average global temperature from rising and to lessen the likelihood of natural disasters.
14. Underwater life: shield coastal and marine habitats from pollutants coming from land.

⁶ What is sustainable development and what are the 17 sdgs?, REPSOL (2023), <https://www.repsol.com/en/energy-and-the-future/future-of-the-world/sustainable-development/index.cshtml> (last visited Apr 14, 2024).

15. Terrestrial ecosystem life: protect biodiversity and natural environments.
16. Peace, justice, and robust institutions: share knowledge to resolve disputes amicably and advance human rights.
17. Partnership to accomplish the objectives: foster international trade and collaboration in order to create a global system that is advantageous to all.

(A) How does IPR impact sustainable development goals ?

⁷The 2030 Agenda for Sustainable Development, endorsed by the UN in 2015, outlines 17 Sustainable Development Goals (SDGs) to guide global efforts towards sustainability. Despite its comprehensive nature, Intellectual Property (IP) receives limited attention within the agenda. This is not incidental; integrating sustainable development into IP frameworks has proven challenging at national and international levels due to conflicting views on how IP interacts with societal norms and policy objectives. Nonetheless, IP can both facilitate innovation and hinder progress towards SDGs. The World Intellectual Property Organisation (WIPO), a UN agency, assists member states in leveraging the IP system to foster innovation and competitiveness aligned with SDGs. ⁸IPR is touted by researchers in this field as a tool to support technology transfer for sustainable development. While IP has historically aimed to promote social welfare through innovation, its role in economic growth, especially in industrialised nations, is increasingly recognised. However, some argue that IP impedes sustainable development by creating barriers to technology transfer and increasing licensing costs, particularly in green technology sectors. Alternative approaches such as patent commons and open-source models are proposed to foster innovation while addressing environmental and social sustainability concerns.

III. IMPACT OF IPR ON FOOD SECURITY

(In light of SDGS 1 and 2)

(A) Role of IPR in Agricultural Innovation

Intellectual property is becoming more and more important in the agricultural industry today.

⁹Innovation and product differentiation will likely be critical in the future for the agriculture

⁷ World Intellectual Property Organization (WIPO) | Department of Economic and Social Affairs, UNITED NATIONS, <https://sdgs.un.org/node/24505> (last visited Apr 14, 2024).

⁸ Author links open overlay panel Pratheeba Vimalnath a et al., RESPONSIBLE INTELLECTUAL PROPERTY STRATEGY FOR SUSTAINABILITY TRANSITION - AN EXPLORATORY STUDY WORLD PATENT INFORMATION (2023), <https://www.sciencedirect.com/science/article/pii/S017221902300025X> (last visited Apr 14, 2024).

⁹ Rahul Yadav, (PDF) THE ROLE OF INTELLECTUAL PROPERTY RIGHTS IN AGRICULTURE RESEARCH GATE (2020), https://www.researchgate.net/publication/341494421_THE_ROLE_OF_INTELLECTUAL_PROPERTY_RIGH

sectors. Global economies are highly competitive, with the benefits accruing to producers who maximise the value of intellectual property. It will be crucial to see how the global trade system treats intellectual property in this regard. A variety of intellectual property rights, such as patents, geographical indications, plant breeder's rights, trademarks, and trade secrets, are relevant in the agricultural industry.¹⁰ Particularly important in guaranteeing and safeguarding patentable plants, animals, and biotechnological processes are patents. Crops and plant varieties are protected in India by the Protection of Plant Varieties and Farmers' Rights Act of 2001. This law seeks to promote the creation of novel plant kinds and gives the owner the ability to restrict or forbid third parties from using their licenced innovation. It is crucial to remember, nevertheless, that you may only use these rights once the patent document has been made publicly available. The release of these documents makes it easier for other people or organisations to conduct more research and development, which advances the agriculture industry.

¹¹ Agricultural advances can be commercialised more easily thanks to IPRs because they provide exclusive market access and legal protection. This promotes greater distribution of these developments in the agricultural industry by enabling businesses and inventors to profit from their creations. IPRs have the potential to improve the efficiency and production of agriculture. IPRs facilitate the adoption of innovative technology and techniques that can enhance agricultural processes, boost yields, and optimise resource utilisation by promoting and safeguarding innovation. In the long run, these developments can help the world's agricultural economy by producing more sustainable practices and increased productivity.

The capacity to safeguard intellectual property encourages cooperation amongst various stakeholders, which raises agricultural productivity and competitiveness internationally. A favourable climate for agricultural trade is facilitated by the protection of intellectual property. By guaranteeing that goods adhere to strict guidelines and standards, it simplifies market access, encourages investment in quality control systems, and builds brand awareness. In the end, this boosts trade partner trust and expands the global flow of agricultural products, which supports economic expansion.

TS_IN_AGRICULTURE (last visited Apr 14, 2024).

¹⁰ Manohar Lal Meghwal, (PDF) INTELLECTUAL PROPERTY RIGHTS AND AGRICULTURAL DEVELOPMENT: EVIDENCE FROM A WORLDWIDE INDEX OF IPRS IN AGRICULTURE (1961-2018) RESEARCH GATE (2023), https://www.researchgate.net/publication/340166494_Intellectual_property_rights_and_agricultural_development_Evidence_from_a_worldwide_index_of_IPRs_in_agriculture_1961-2018 (last visited Apr 14, 2024).

¹¹ Manohar Lal Meghwal, A COMPREHENSIVE REVIEW ON THE IMPACTS OF INTELLECTUAL PROPERTY RIGHTS ON THE GLOBAL AGRICULTURAL ECONOMY (2023).

IV. NEGATIVE IMPACTS OF IPRS ON THE GLOBAL AGRICULTURAL ECONOMY

¹²The implementation of Intellectual Property Rights (IPRs) in agriculture raises concerns regarding farmers' control over resources and expertise. Small farmers are disadvantaged as IPRs benefit agri-businesses, limiting farmers' ability to save, replant, and sell protected seeds. Maintaining farmer control over plant varieties is crucial for adaptation and innovation, especially in developing countries where IPR restrictions may not be as strict as in the US. Additionally, the over-patentability of biotechnology could hinder innovation, as wide patent claims may inhibit scientific progress while also incentivizing business innovation. Balancing access to research resources and expertise for scientific advancement is essential for policy-making, especially regarding plant breeders' rights versus patents. Ensuring research focuses on the needs of impoverished communities, rather than solely on marketable products, is crucial when introducing IPRs into agriculture. Public-sector research institutions will play a key role in this regard. Furthermore, the importance of agro-biodiversity in human nutrition highlights the need to consider the displacement of local varieties by IPR-protected ones, which can lead to agricultural homogenization and loss of diversity. Concerns also arise regarding the negative effects of transgenic plant varieties on biodiversity and pest resistance, necessitating careful evaluation

(A) Biotechnology and Genetic Engineering: Balancing Innovation and Access

Natural products have been used for ages. In every scientific period, processing natural goods to obtain meaningful benefits has been the top priority. ¹³Biotechnology is a sophisticated yet evolving technique that uses living creatures and/or materials derived from them to create or alter a product for a specific use. It can be applied to all groups of organisms, including more complex genera like plants and animals as well as simpler genera like viruses and bacteria. Thus, biotechnology is now a key component of contemporary industry, agriculture, and health care. Scientists can identify and manipulate a species' genetic makeup using a variety of techniques made possible by modern biotechnology, which they can use to the development or processing of agricultural products. The branch of biotechnology that deals with applications to agriculture is known as agricultural biotechnology. Agricultural biotechnology has been around for a while, since selection and breeding have been used to improve agriculturally significant species. The creation of disease-resistant wheat varieties through cross-breeding various wheat

¹² Philippe Cullet, *INTELLECTUAL PROPERTY RIGHTS AND FOOD SECURITY IN THE SOUTH* (2004).

¹³ Muhammad Modassar Ali Nawaz Ranjha et al., *APPLICATIONS OF BIOTECHNOLOGY IN FOOD AND AGRICULTURE: A MINI-REVIEW PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, INDIA. SECTION B* (2022), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8751662/> (last visited Apr 14, 2024).

types until the required disease resistance was present in a resultant new variety is an example of classical agricultural biotechnology.

¹⁴Biotechnology and Genetic engineering in the sphere of agriculture has its own benefits and risks. Some of the benefits are-

- Biotechnology has contributed to increasing crop productivity by introducing traits such as disease resistance and drought tolerance.
- Crop-protection technologies are used by farmers because they give cost-effective solutions to pest issues that, if not controlled, would significantly reduce output. In some circumstances, an effective transgenic crop-protection technology can manage pests more effectively and affordably than traditional methods.
- Biotechnology has made it possible to modify food to minimise allergy levels. Biotechnology has already been utilised to significantly reduce levels of the main rice allergen.
- When genetic engineering reduces pesticide dependence, we have fewer pesticide residues on food, less pesticide leakage into groundwater, and less farm worker exposure to hazardous goods.

Risks associated to Agricultural Biotechnology and Genetic engineering are-

- Some people are concerned that genetic engineering could increase a plant's potential to "escape" into the wild, resulting in ecological imbalances or calamities.
- Many environmentalists, including farmers, are deeply concerned about the decline of biodiversity in our natural environment. Increased adoption of conventionally produced crops created similar worries over the last century, prompting considerable efforts to collect and store seeds from as many main crop varieties as feasible.
- Some economists are afraid that transgenic crop overproduction may lead to market instability, lower export income, fewer product variations, and perhaps unemployment, while others are enthusiastic.
- ¹⁵Biotechnology is associated with significant economies of scale in research, testing, licensing, and marketing. It is also possible that farmer cooperatives organisations in which farmers maintain some control may face a competitive disadvantage when

¹⁴ Ania Wiczorek, *USE OF BIOTECHNOLOGY IN AGRICULTURE— BENEFITS AND RISKS* (2003).

¹⁵ Gareth Malcolm Content Partner Manager at Turnitin et al., *AGGREGATING THE WORLD'S OPEN ACCESS RESEARCH PAPERS CORE*, <https://core.ac.uk/> (last visited Apr 14, 2024).

compared to other enterprises.

- biotechnologies' technological constraints make them inherently reductionist and too one-dimensional to deal satisfactorily with what are primarily whole-system challenges.

(B) Legal and Policy Frameworks for Balancing IPR and Food Security

¹⁶Agriculture was recognised as a rule-bound enterprise of investment and profit making when it was first included in the intergovernmental negotiations for the General Agreement on Tariffs and Trade (GATT) during the Uruguay Round (1986-1994). This round resulted in the foundation of the World Trade Organisation (WTO) in January 1995. The WTO now has at least a half-dozen international agreements that directly influence agriculture. These include Agreements on Agriculture (AoA), Sanitary and Phytosanitary Measures (SPS), Technical Barriers to Trade (TBT), Anti-dumping, Subsidies and Countervailing Measures, Safeguards, and Trade Related Aspects of Intellectual Property Rights (TRIPs).

¹⁷Among many fundamental issues for the future of human society, the appropriate use of intellectual property mechanisms in agriculture has been widely debated in terms of food security, economic development, biodiversity, and the rights of traditional and indigenous communities, among other topics.

The Protection of Plant Varieties and Farmers' Rights Act, 2001

The Protection of Plant Variety and Farmers Rights Act of 2001 includes a provision authorising the safety of plant variations as well as the rights of farmers and plant breeders. Under the PPVFRA, an innovator is entitled two types of intellectual property rights. The first set of rights may exist for different plant species. The breeder's designation is the final aspect covered by the PPVFV Act. In addition, the Act establishes civil and criminal penalties for breeders who fail to make a specific variety reasonably available to the public. Furthermore, a continual stream of financial incentives from agricultural-related patents would ensure that biotechnology research and development continued. This research and development is critical for developing practical answers to the food security issues that nations are currently facing.

TRIPS Agreement

IPRs have been steadily integrated into agriculture at two levels. First and foremost, several developed countries have gradually enacted plant breeders' rights, a sort of intellectual property protection for plant varieties based on the patent concept. Second, as genetic engineering has

¹⁶ Intellectual Property Rights in Agriculture, (2003).

¹⁷ David J Jefferson, Alex B Camacho and Cecilia L Chi-Ham, TOWARDS A BALANCED REGIME OF INTELLECTUAL PROPERTY RIGHTS FOR AGRICULTURAL INNOVATIONS (2014).

improved, the progressive adoption of life-form patents has played a vital impetus for the overall spread of agricultural biotechnology. Currently, all WTO member states are obligated to follow a set of specified minimum levels of protection under the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement). The TRIPS Agreement's Article 27, which defines patentable subject matter and compels WTO Members to protect plant varieties, has the largest impact on food security. Article 27.1 states that inventions in all technological domains, including agricultural products, shall be safeguarded. Farmers' prices may grow as a result of IPR systems that require them to purchase new seeds each year, such as the requirement that nations protect unique plant varieties as per Article 27.3(b) of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). Prior to the implementation of TRIPS, the majority of developing countries had far looser patent regulations in the domains of food and drugs, "since they are so vital to any society's needs." The industrialised nations did not allow substantive patents to be acquired on food, drugs, plants, or animals until the 1960s, presumably for similar reasons.

PepsiCo India Holdings Pvt. Ltd v. Potato Growers : A Case Study

Facts of the case:

¹⁸PepsiCo (previously Pepsi Foods Ltd.) began its agribusiness in India in the Hoshiarpur District of Punjab in 1989, with the establishment of a world-class tomato processing factory. In this type of contract farming arrangement, PepsiCo provides farmers with seeds or seedlings as well as agricultural applications in exchange for the farmer harvesting the company's crop on their land.

¹⁹On April 5, 2019, PepsiCo India sued nine farmers in three different courts in the Gujarati districts of Sabarkantha, Aravalli, Deesa, and Banaskantha for cultivating and marketing the FC5 potato variety, over which it claimed exclusive rights under Section 28 of the Protection of Plant Varieties and Farmers Rights Act 2001 (PPVFR).

PepsiCo filed a lawsuit against the farmers, saying that they had breached its intellectual property rights and were entitled to compensation ranging from Rs. 2 million to Rs. 10 million. Following PepsiCo India's lawsuit filing, pro-farmer rights protests and critical social media comments asking for a statewide boycott of PepsiCo India products were organised. Faced with

¹⁸Prime Legal, CASE STUDY: PEPSICO INDIA VS. GUJARAT POTATO FARMERS PRIME LEGAL (2023), <https://primelegal.in/2023/07/15/case-study-pepsico-india-vs-gujarat-potato-farmers/> (last visited Apr 14, 2024).

¹⁹ PepsiCo's potato variety loses protection following Delhi High Court ruling, IAM, <https://www.iam-media.com/article/pepsicos-potato-variety-loses-protection-following-delhi-high-court-ruling> (last visited Apr 14, 2024).

widespread protests, PepsiCo dropped the claims against the farmers.

PepsiCo used the FC5 potato kind to create their Lay's brand potato chips. When compared to other potato types, the FC5 variety had a moisture level of 80%, while the others had 85%. FC5 was easy to store and process because of its low moisture content, which was ideal for chip fabrication. PepsiCo India developed the FC5 cultivar in 2009, and the company distributed the seeds to farmers along with a repurchase agreement requiring them to sell the entire crop to the corporation. The situation began when some farmers in Gujarat planted the FC5 variety of potatoes without PepsiCo India's approval and sold them on the open market. PepsiCo, which faced boycott calls after suing Gujarati potato growers, has offered to settle the issue if the farmers quit cultivating the registered potato variety.

PepsiCo's Claims: Section 28 of the Act grants PepsiCo the sole right to produce the variety, and it has used Section 64 of the PPV&FR Act to assert infringement of its rights.

The clause bans anybody other than the seed breeder or a registered licensee of that variety from selling, exporting, importing, or producing the variety.

Farmers' Claim: Farmers cited Section 39 of the PPV&FR Act, which safeguards farmers' rights to store, use, sow, resow, exchange, share, and sell farm produce, including seed of a variety protected by this Act, with the exception of selling branded seed of a protected variety. Farmers said that their agreement with the corporation only required PepsiCo to harvest potatoes with a diameter more than 45 mm. However, there was little clarity regarding the potatoes that did not match the contract's requirements.

Farmers cited the agreement's vagueness, claiming that they purchased the registered seeds from known groups and that farmer communities had been spreading them for the past four years.

Analysis

This case study of PepsiCo's Frito Lay contract farming for potatoes is an excellent example of how small farmers in India may reach international quality requirements. PepsiCo Co.'s incredibly comprehensive extension network helps to check and maintain quality at all levels. There are obviously numerous benefits for farmers who work as contract growers: farmers receive extensive training and education on the proper timing and method of sowing, harvesting, and other field operations; farmers' overall management capabilities are enhanced by meetings and visits from agricultural experts on occasion. Contract farmers earn higher gross margins. It must serve as a wake-up call to the government and policymakers, who must do far more to ensure sustainable rural societies, maintain soil health, and promote seed sovereignty for the economic prosperity of Indian farmers and the country as a whole. India must invest more in

public research to limit corporate domination in agriculture, as private businesses are hesitant to introduce new technologies due to intellectual property rights violation, arm-twisting, and the incumbent government's concession to farmer-friendly optics.

V. IMPACT OF IPR ON ACCESS TO HEALTHCARE AND EDUCATION

(In light of SDGs 3 and 4).

(A) Impact of IPR on access to medicines

In the pharmaceutical sector, intellectual property rights play a particularly important role in research and development, which is essential to producing life-saving medications. Comprehending the workings of intellectual property rights (IPR) in the pharmaceutical industry within the Indian context is crucial to appreciating its impact on innovation, accessibility, and competitiveness.²⁰ Patents are crucial in the pharmaceutical sector, enabling companies to recoup R&D costs. However, strict patent protection can stifle innovation by monopolizing markets. Conflicting IP rules affect public health, limiting access to essential medications. Least developed countries suffer most, lacking means to provide patented drugs. This jeopardizes universal health coverage goals. Innovators face rising R&D costs and shorter patent protection periods. Expensive patented drugs raise concerns about equitable access, impacting vulnerable populations. This becomes a significant consideration for governments in allocating healthcare resources.²¹ The conflicting IP rules that encourage pharmaceutical industry innovators and grant them a monopoly are the means by which intellectual property laws and the public health domain are linked. Additionally, this puts the UN Sustainable Development Goal's primary objective of achieving universal health coverage at jeopardy. On one end of the scale, innovators continue to struggle as the expenses of research and development climb. Patented pharmaceutical items are generally expensive, and problems about equitable access have made it a major political and economic issue for all nations. This influence is felt most strongly by society's most vulnerable and disadvantaged segments, who cannot purchase such things.

(B) Legal Framework Governing IPR and access to health

1. TRIPS agreement

²⁰ Aditya Pratap Singh, IMPACT OF IPR ON PHARMACEUTICAL INDUSTRY - LIFE SCIENCES, BIOTECHNOLOGY & NANOTECHNOLOGY - INDIA IMPACT OF IPR ON PHARMACEUTICAL INDUSTRY - LIFE SCIENCES, BIOTECHNOLOGY & NANOTECHNOLOGY - INDIA (2024), <https://www.mondaq.com/india/life-sciences-biotechnology--nanotechnology/1410328/impact-of-ipr-on-pharmaceutical-industry> (last visited Apr 15, 2024).

²¹ ISSUES RELATED TO EQUITABLE ACCESS TO MEDICINES: A PATENT ..., <https://www.alliance.edu.in/research/AJIPL/ajipl-2023/assets/pdf/issues-related-to-equitable-access-to-medicines.pdf> (last visited Apr 14, 2024).

Articles 7 and 8 focus on people's health and well-being. Article 7 states that intellectual property rights shall not, in general, impede the social and economic well-being of the people in a given country. This specifically states that Intellectual Property Rights, as extended protection under this international agreement, shall be capable of assisting and acting as a catalyst for the betterment of people's social and economic conditions. This article prioritises the advancement and enhancement of public health, nutrition, and other critical areas of relevance to the specific country. Patent protection needs to last at least twenty years from the day the application for a patent was submitted.

Flexibilities-

- Disagreements emerged concerning a clause of Article 31(f) of the TRIPS agreement that established the standards for compulsory licensing. This rule indicated that compulsory licensing should be practised predominantly for domestic / national purposes.²² Compulsory licensing is when a government grants authorization to a party or company (the licensee) to manufacture a patented product or method without the approval of the patent owner. Although TRIPS does not specify what requirements must be completed for a party to receive a compulsory licence, Article 31 specifies that a compulsory licence may be granted in an unusual scenario (for example, an emergency) without requiring a party to meet ordinarily applicable requirements.
- Parallel/gray imports. Parallel importation (also known as grey market participation) is the practice of purchasing goods in a foreign country at a lower price than they are sold in the domestic country and reselling those goods in the domestic country at a price less than or equal to the market price in that country.

2. Doha Declaration on Public Health

The Ministerial Conference in Doha was an attempt to resolve issues and make improvements and suggestions to the procedures currently in place under the TRIPS agreement to improve public health. They declared that TRIPS should not impede WTO member nations from implementing public health initiatives, and they affirmed WTO members' right to use TRIPS exemptions that give flexibility for this purpose. They highlighted several of the agreement's fundamental flexibilities, such as parallel imports and obligatory licences. Nonetheless, it was acknowledged that compulsory licences remained subject to certain criteria in Article 31 of TRIPS, posing challenges for developing nations and LDCs that relied on low-cost imported medications. TRIPS, for example, stipulated that the majority of medications manufactured

²²Tara Leevy, INTELLECTUAL PROPERTY AND ACCESS TO MEDICINE FOR THE POOR (2006).

under a compulsory licence be marketed solely in the domestic market. Paragraph 6 of the Doha Declaration was adopted in order to give legal recognition for generic manufacturers to sell and distribute licenced pharmaceutical products through exports to other countries, rather than simply restricting the sale of pharmaceuticals within the domestic territory for domestic use. So, in reality, paragraph 6 should include assistance for an uncomplicated and hassle-free procedure for exporting pharmaceuticals to less developed countries experiencing public health emergencies. In contrast, while clearly authorising exports, the generic producers have proposed burdensome procedural restrictions that must be met in order to export patented medications. These time-consuming procedures have a significant negative impact on licensees' ability to export medications to developing nations with limited production capability.

3. *Indian law regarding Pharmaceutical patents*

²³In 2002, India changed its patent laws to comply with the TRIPS agreement. After the transition period ends, all inventions, including patents for pharmaceutical items, will have a 20-year patent term. The introduction of product patents has restricted the availability of medications. Currently, the bulk of generic drugs, including vaccines, are patented in India, making it difficult for the pharmaceutical industry to manufacture critical, life-saving medications. Because prescription medications are so expensive, ordinary people cannot afford to purchase them, contradicting the state's presumption that it will protect its citizens' health. Particularly in India, where a substantial portion of the population still lives in poverty and health-care prices are exceedingly high, there is an acute need for medication due to the scarcity, high cost, and limited availability of such supplies.

²⁴In 2002, the government proposed a National Pharmaceutical Policy that was challenged in the High Court. However, the Supreme Court directed the government to develop a drug pricing policy that ensures affordable prices for essential medicines and meets industry requirements for cost-effective production and invention. The National Pharmaceutical Pricing Authority (NPPA) was established under Section 3 of the Essential Commodities Act to set and enforce prices for bulk pharmaceuticals and formulations, ensuring universal access to medications.

²³ Global patent, IMPACT OF PHARMACEUTICAL PATENT ON HEALTHCARE SECTOR, <https://www.globalpatentfiling.com/blog/Impact-of-Pharmaceutical-Patent-on-Healthcare-Sector-in-India#:~:text=The%20advent%20of%20product%20patents,necessary%2C%20life%2Dsaving%20drugs.> (last visited Apr 15, 2024).

²⁴ Vijaypriya Lalgudi Ramachandran, A CRITICAL STUDY OF ACCESS TO MEDICINES IN LIGHT OF INDIAN PATENT (AMENDMENT) ACT, 2005 SSRN (2020), <https://deliverypdf.ssrn.com/delivery.php?ID=37112300812109401200411211909011010800807805203400502712612002112312607102408506709812301602704311410004612208306609710210601701109401208705010106407910211107709100402608904109011309612406908511810306707500509608502407300308009800310001011087085122006&EXT=pdf&INDEX=TRUE> (last visited Apr 15, 2024).

4. Novartis Judgement and Evergreening in India

²⁵The 2005 amendment to the Indian Patents Act introduced Section 3(d) to curb "evergreening" practices by pharmaceutical companies. This tactic artificially extends patent rights on drugs nearing or in the public domain. Section 3(d) mandates that inventions must demonstrate significant efficacy improvement to be patentable. The Novartis Judgement resulted from this regulation, rejecting their patent application for Gleevec in 2006. Novartis appealed, arguing against Section 3(d)'s application. ²⁶The application was denied because the Indian Patent Office saw the action as an attempt at "evergreening". Evergreening is the process used by creators of patented products to extend the monopoly benefits granted by a patent. The case highlighted the balance between promoting research and development and ensuring affordable access to medication. The court prioritised public health interests, recognizing the potential harm of granting patents on minor improvements. The decision strengthened access to medicine over private interests, emphasising the importance of affordable healthcare for all. This landmark ruling underscored the significance of intellectual property regulations in safeguarding public welfare and ensuring equitable access to essential medications.

5. Bayer corporation vs Natco pharma Ltd and Compulsory licensing

A compulsory licence is a governmental permission allowing a third party to produce a patented product without the patent owner's consent, preventing abuse of patent rights, especially in public health crises or anti-competitive scenarios. Enshrined in the TRIPS Agreement, it aims to balance exclusive rights with public welfare. The Indian Patent Act allows compulsory licences if public needs are unmet, the product is unreasonably priced or inaccessible, or it's underutilised domestically. In the case of ²⁷Natco v. Bayer, Natco sought a licence for Bayer's cancer drug after Bayer refused a voluntary licence. The Controller approved Natco's request, upheld by the Intellectual Property Appellate Board and Bombay High Court. Bayer argued Natco didn't diligently seek a voluntary licence, but the Court disagreed, considering data on patient needs. It found Bayer's pricing unreasonable, denying its appeal. The case highlights the importance of balancing patent rights with public access to essential medications under patent law. The authorities had to take into account the number of patients who needed the patented

²⁵Novartis v. Union of India: A landmark judgment in Indian patent law - patent, trademark & Design Registration Service in India: Brainiac IP, PATENT, TRADEMARK & DESIGN REGISTRATION SERVICE IN INDIA | BRAINIAC IP - PATENT, TRADEMARK & DESIGN REGISTRATION SERVICE IN INDIA | BRAINIAC IP (2023), <https://brainiac.co.in/novartis-v-union-of-india/> (last visited Apr 15, 2024).

²⁶M.Z.M. Nomani Mohammad Rauf Alaa K.K.Alhalboosi, LEGAL & INTELLECTUAL PROPERTY DIMENSION OF HEALTH & ACCESS TO MEDICINES IN INDIA.

²⁷Achyut Kulkarni, BAYER CORPORATION V. UNION OF INDIA IP MATTERS (2023), <https://www.theipmatters.com/post/bayer-corporation-v-union-of-india> (last visited Apr 15, 2024).

drug in addition to the legitimate requirement of the general population. Bayer argued that the government had made a mistake in determining the true number of people who would benefit from this medication, even after taking into account the reasonable needs of the general population

²⁸The Indian Patent Act of 1970 states that anyone may apply for a compulsory licence on the following grounds three years after the date of patent grant:

- The public's reasonable requirements regarding the patented innovation have not been met, and
- The invention is not reasonably priced or readily available to the public.
- Finally, the invention that is patented is not utilised within the borders of India.

The Indian Patent Act of 1970 confers authority upon the central government to grant an obligatory licence subsequent to the patent's issuance in the following scenarios:

- national emergency
- extreme urgency
- public non-commercial use.

VI. IMPACT OF IPR ON ACCESS TO EDUCATION

The legal rights that safeguard creative works of art, including innovations, creative compositions, designs, symbols, and names, are referred to as intellectual property. It is essential to education because it encourages creativity, innovation, and information exchange. From an educational standpoint, intellectual property protects educators' original ideas and materials, which motivates them to devote time and energy to creating excellent teaching materials. Additionally, it gives teachers authority over how and where their work is used, guaranteeing that they are acknowledged for their contributions and may even get paid. IPR is essential to preserving cutting-edge teaching tools, course materials, and institutional identities. But there are significant issues to take into account when striking the right balance between promoting innovation and guaranteeing knowledge accessibility. Trademarks, copyrights, and patents are all covered under IPR. Copyrights, patents, and trademarks are utilised in the education sector to protect creative teaching strategies and original educational materials. ²⁹A

²⁸ Compulsory licensing in India and changes brought to it by the TRIPS Agreement, IP HELPDESK (2021), https://intellectual-property-helpdesk.ec.europa.eu/news-events/news/compulsory-licensing-india-and-changes-brought-it-trips-agreement-2021-10-12_en (last visited Apr 15, 2024).

²⁹ Jasmine Renner, INTELLECTUAL PROPERTY RIGHTS IN ELEARNING ELEARNING INDUSTRY (2021), https://elearningindustry.com/intellectual-property-rights-in-elearning#google_vignette (last visited Apr 15,

crucial component of the design, development, and deployment of eLearning courses is the efficient use of intellectual property rights.

(A) Copyright and educational material

³⁰Copyright is a crucial component of education because it can be found in research databases, library collections, online lectures, textbooks, academic publications, and presentations. A collection of moral and financial rights known as copyright give the creator the ability to grant or deny permission for the use of their creations. As a result, payment may be made to the author for permission to utilise their work. In India, the regulatory foundation for copyright and other forms of intellectual property rights is provided by the Copyright Act of 1957.³¹ Under this framework, the idea of fair use—also known as fair dealing under the Act—allows the use of content protected by copyright under certain guidelines without the requirement for express consent or a licence from the owner of the property. The Act provides a precise definition of fair dealing uses for research, criticism, reviews, news reporting, and instruction. Fair use seeks to encourage the dissemination of information while acknowledging the importance of education in society. Certain exceptions to copyright law permit the use of protected content for educational purposes. These exclusions are essential in allowing teachers and students to use different works without violating the rights of the producers. A notable exception concerns the use of copyrighted works in instruction solely for illustrative purposes. Teachers and students can use copyrighted resources to promote teaching and learning without breaking copyright rules thanks to this fair dealing exception. Key requirements for this exception to be applicable are as follows:

- Non-commercial use: There should be no profit involved in the use of protected content.
- Appropriate acknowledgment: The original author of the work should always be given credit.
- Fair use: The content should be used in a reasonable and fair manner.

It can be difficult to determine whether using copyrighted content is fair or not; courts frequently base their decisions on things like the volume of material utilised and how it can affect the market for the copyright owner. For example, during art history courses, teachers can project photos of works by well-known artists onto an interactive whiteboard. Direct photocopying of

2024).

³⁰ Copyright in educational material: Lessons from covid-19, ORFONLINE.ORG, <https://www.orfonline.org/expert-speak/copyright-in-educational-material> (last visited Apr 15, 2024).

³¹ COPYRIGHT EXCEPTIONS FOR EDUCATIONAL PURPOSES // BYTESCARE, <https://bytescare.com/blog/copyright-exceptions-for-educational-purposes> (last visited Apr 14, 2024).

texts for student distribution, however, is subject to a different educational exception that is discussed separately.

The Chancellor, Masters & Scholars of the University of Oxford & Ors. v. Rameshwari Photocopy Services & Ors , 2016 SCC Online Del 6229

³²In the case involving publishers like Taylor & Francis, Cambridge Press, and Oxford University Press versus the University of Delhi and Rameshwari Photocopy service, the plaintiffs accused the defendants of copyright infringement for allowing photocopying of copyrighted books for course materials. The single-judge bench of the Delhi High Court ruled in favour of the defendants, citing fair use for educational purposes under section 52 of the Copyright Act. The plaintiffs appealed, arguing that the copies were not creatively altered and violated their rights. However, the defendants argued that their actions fell under the copyright act's exceptions and had minimal financial impact. The Delhi High Court, in a landmark 2016 decision, upheld fair use for educational materials, benefiting students unable to afford books while respecting copyright holders' interests. This ruling balanced access to education with copyright protection, crucial for India's educational development. It fosters knowledge dissemination and promotes educational equality, contributing to societal progress and prosperity through enhanced knowledge accessibility. India is a developing country, thus it undoubtedly has to make consistent contributions and coordinated efforts to increase educational standards in order to support students' aspirations for greater success. Citizens of a country tend to be wealthier when there is greater parity in knowledge accessibility. This ruling has, in a sense, balanced both extremes: information seekers become more insatiably hungry for more, so those who share knowledge will be successful in their efforts to spread it even farther.

VII. IMPACT OF IPR ON THE ENVIRONMENT AND NATURAL RESOURCES

(In light of SDG 6,7,11,12,13,14 and 15)

(A) Impact of IPR on the Environment and Natural Resources

³³IPR policies play a crucial role in tackling numerous global environmental challenges, when paired with environmental legislation. Information and technology are controlled by individuals thanks to intellectual property rights, which are transient advantages over the products of intellectual labour. Intellectual property laws are essential to attaining sustainable development,

³² 2016 SCC Online Del 6229

³³ DR. ARCHANA SHARMA And SUSHREE DEVASHRITA NANDA, THE SIGNIFICANCE OF INTELLECTUAL PROPERTY RIGHTS IN ENVIRONMENT POLLUTION (2023).

preserving human health, and preserving the environment since they directly affect the calibre and accessibility of novel concepts and products. Innovation flows between developed and developing nations are influenced by the extent and quality of intellectual property protection. In the past three decades, intellectual property rights (IPRs) have gained significance as a result of governments and corporations giving innovation top priority in their plans and strategies. IP Patents and trade secrets are examples of rights that are meant to help create safe channels for the transfer of knowledge, so mitigating the externality issue that leads to the imperfect accessibility of knowledge. By temporarily granting exclusive rights, patents and trade secrets allow businesses to realise the full value of their discoveries and the investments made in their development and expansion.

³⁴International intellectual property (IP) laws are essential for managing and containing climate change. Meanwhile, lowering greenhouse gas emissions and mitigating the harmful effects of global warming is a major shared responsibility of both industrialised and developing nations. While intellectual property (IP) promotes environmentally friendly breakthroughs and serves as a useful precondition for technological development and transfer, its monopolistic owners pose a significant barrier to the adoption of green technologies in poor nations.

(B) Green Technologies and Innovation

"Green inventions," also known as "clean technology," encompass a variety of ideas and technologies aimed at sustainability and environmental preservation. These innovations focus on reducing pollution and conserving natural resources. "Green intellectual property" (green IP) involves using patents, trademarks, and other IP rights to protect advancements in green technology, encouraging innovation in addressing environmental challenges. ³⁵IP authorities worldwide support climate-related ideas, with initiatives like WIPO's IPC Green Inventory and WIPO GREEN platform facilitating collaboration and information exchange. Nations have also implemented fast-track programs to expedite evaluation of green technology patents. Intellectual property protection is essential for green technology businesses to safeguard their inventions and promote development and commercialization, contributing to a more environmentally conscious and sustainable future. The shift towards sustainability relies on robust IP protection, facilitating the development and global adoption of resource-efficient

³⁴Zahra Moradi, Bahareh Heydari & Mohammadyar Arshadi, ROLE OF INTELLECTUAL PROPERTY RIGHTS ON REDUCTION OF CLIMATE CHANGE INTERNATIONAL STUDIES JOURNAL (ISJ) (2022), https://www.isjq.ir/article_150128.html?lang=en (last visited Apr 15, 2024).

³⁵ Ramya R Rao, ACCELERATING THE FUTURE: THE RISE OF GREEN TECHNOLOGY AND INTELLECTUAL PROPERTY RIGHTS- AN OVERVIEW OF GLOBAL AND INDIAN IP UNDERTAKINGS TO ENCOURAGE GREENER TECH PATENTS LEXOLOGY (2023), <https://www.lexology.com/library/detail.aspx?g=3c268d28-aed7-475a-b3d8-85341bf78787> (last visited Apr 15, 2024).

technologies.³⁶ Technological innovation is encouraged when intellectual property rights, or IPRs, are protected. Trade secrets create a secure environment that facilitates the spread of private knowledge, which is essential for maintaining the routes for know-how exchanges. For example, the US government has intervened in response to Chinese corporations stealing confidential trade secrets from solar energy firms such as SolarWorld and American Superconductor Corporation. In the end, by promoting the development and commercialization of green technology, this protection contributes to the creation of a future that is more environmentally conscious and sustainable. The depletion of non-renewable resources emphasises the necessity of switching to a more sustainable lifestyle.

(C) Biopiracy and Biodiversity Conservation

Biopiracy is the term used to describe the acquisition of exclusive monopoly rights over a nation's biological material by people, organisations, or businesses from other nations; this eventually results in the national origin nation's rights being denied.³⁷ Moreover, knowledge stolen from traditional and indigenous communities or individuals is referred to as biopiracy. The phrase can also refer to the violation of a contract about the provider's access to and use of traditional knowledge at their disadvantage as well as bioprospecting without the communities' permission. As a result, it is possible to claim that biopiracy is a dual problem that encompasses both genetic resource biopiracy and conventional knowledge biopiracy. As a result, the term "bio piracy" has evolved to refer to the practice of developed-world businesses attempting to usurp, free ride on, or otherwise exploit poor countries' genetic material, traditional knowledge, and technologies.

Numerous detrimental repercussions of biopiracy on biodiversity include the extinction of endemic species, the reduction of biodiversity, and the privatisation of the nation's natural resources. Additionally, this practice has an impact on the nation's economy. The biopiracy industry is quite profitable. Owing to the process's profitability, most swindlers prefer to take advantage of poor nations' biological resources and secure patents for them.

Public health, farmers' livelihoods, and the formation of monopolies over seeds and medications through patents are all being seriously threatened. Biopiracy threatens not just the financial

³⁶ Anand Barnabas, GREEN INNOVATION AND IP: LEGAL FRAMEWORKS FOR SUSTAINABLE TECHNOLOGIES IN INDIA - PATENT - INDIA GREEN INNOVATION AND IP: LEGAL FRAMEWORKS FOR SUSTAINABLE TECHNOLOGIES IN INDIA - PATENT - INDIA (2024), <https://www.mondaq.com/india/patent/1419990/green-innovation-and-ip-legal-frameworks-for-sustainable-technologies-in-india-> (last visited Apr 15, 2024).

³⁷ BIO PIRACY AND ITS IMPACT ON BIO DIVERSITY, <https://www.ijbel.com/wp-content/uploads/2014/07/Bio-Piracy-And-Its-Impact-On-Bio-Diversity-%E2%80%93-A-Critical-Analysis-With-Special-Reference-To-Sri-Lanka-C.L.Akurugoda.pdf> (last visited Apr 14, 2024).

drawbacks but also the social and cultural facets of human existence. The advantage that Sri Lanka has over other nations in terms of biodiversity is directly targeted by biopiracy. Moreover, it impacts the traditional knowledge and cultural identity of the nation's indigenous population. The patenting process's privatisation of traditional knowledge has had a negative impact on people's way of life. Therefore, biopiracy destroys biodiversity irreversibly, which eventually results in the devastation of the entire ecosystem.

The original owners of biological resources and traditional knowledge, or traditional communities, do not receive any portion of the profits from the commercialization of products derived from their resources or knowledge when biological resources are commercially exploited by corporations through the acquisition of IPRs (or other related rights). They also do not receive any credit for initially creating and growing the resources/knowledge because of their poor awareness and literacy skills.

Biopiracy has the potential to cause overuse of natural resources, habitat damage, and biodiversity loss. The effects of this could be catastrophic for ecosystems and the animals who depend on them. Genetic diversity may be lost as a result of biopiracy since businesses may only choose genetic resources that are advantageous for their bottom line. As a result, ecosystems may become less resilient and more susceptible to diseases, pests, and climate change.

³⁸Overuse of natural resources without regard for long-term sustainability can be the outcome of biopiracy. This may lead to resource depletion and ecological collapse, which could have detrimental effects on biodiversity and human well-being.

1. *Basmati Rice Case:*

³⁹A US corporation claimed to have invented a strain of Basmati rice and was granted a patent on it in the late 1990s. As a result, Indian farmers' traditional knowledge—which had grown strained over many generations—was stolen. In the end, the patent was withdrawn, and the experience prompted India to create a legal framework to safeguard traditional knowledge.

2. *Turmeric Case:*

In 1995, a researcher obtained a US patent for using turmeric to treat wounds.. Even though turmeric has been a crucial component of traditional Indian medicine for generations, the patent claimed that the discovery was new. After a judicial challenge, the patent was finally withdrawn,

³⁸ Shahnaz Kaushar, *BIO-PIRACY IN INDIA: A PRACTICE OF PATENTING TRADITIONAL KNOWLEDGE FOR PROFIT* (2023).

³⁹ *BIOPIRACY IN INDIA: EXPLORING THE LAWS AND REGULATIONS TO PROTECT TRADITIONAL KNOWLEDGE AND BIODIVERSITY LEGALLY FLAWLESS* (2024), https://legallyflawless.in/biopiracy-in-india-exploring-the-laws-and-regulations-to-protect-traditional-knowledge-and-biodiversity/#google_vignette (last visited Apr 15, 2024).

but the incident raised questions about the unpaid use of traditional knowledge.

(D) Patenting Life

One of the most significant laws governing patent law worldwide is that the invention, concept, or creativity covered by the patent must be a brand-new, unexplored idea that has never been seen or experienced before. Because living, breathing organisms are products of nature, not of humans, and were not novel to society, they could not be patented for the same reason. It is impossible for any individual to claim ownership over another self-governing entity, as doing so would take something that nature has created and meant for everyone to use equally out of the public domain.⁴⁰ Microorganism patenting has grown increasingly difficult and contentious over time. The inability to grant patents for specific species led to unchecked innovation theft. Due to the low returns on their substantial investments in the research that led to the invention in the first place, the initial creators experienced financial losses. This necessitated altering the patent system. According to the TRIPS agreement, patents for inventions that violate morality or the ordre public (public order) cannot be granted. One of the countries included by the TRIPS agreement is India. Microorganisms are expressly declared to be patentable under both TRIPS and Indian Patent Law. In the past, the Indian Patents Act's section 3(j) declared that seeds, varieties, and basically any biological process used to produce plants or animals, whether in whole or in part, were not eligible for patent protection. Microorganisms could now be copyrighted provided they met the other criteria, thanks to the 2002 Amendment Act. Indian law prohibits the patenting of microorganisms that are already found in nature and views them as discoveries

The most significant case in the history of such dealings, *Diamond v. Chakraborty*, which is still routinely acknowledged as a definitive precedent, involved the question of patenting a live organism. A patent application was filed for Chakraborty's invention, a bacterium that could aid with oil spills by breaking down crude oil, which is not a characteristic of naturally occurring bacteria. It was decided that Anand Chakraborty should receive a patent as he was the one who invented this bacterium.

VIII. LEGAL FRAMEWORKS AND ENVIRONMENTAL PROTECTION

1. The Convention on Biological Diversity, 1992

A number of treaties and agreements pertaining to biodiversity are part of the international legal framework that aims to preserve biological diversity and encourage its sustainable use. The

⁴⁰Ishani Chakrabarty, THE SUPERBUG CASE: AN ANALYSIS THE LEGAL VIDYA (2022), <https://www.thelegalvidya.in/the-superbug-case-an-analysis> (last visited Apr 15, 2024).

most well-known is the Convention on Biological Diversity (CBD), which was approved by 196 nations after being signed in 1992. In addition to promoting biodiversity protection, sustainable use, and fair benefit sharing, it acknowledges the intrinsic value of biodiversity. The conservation of biodiversity, the equal distribution of benefits resulting from the use of biological resources, and the sustainable use of biological resources are the primary objectives of the CBD. This pact is *sui generis* because it emphasises biodiversity overall. The CBD's Article 8(j) acknowledges the importance of local and indigenous populations' traditional knowledge in biodiversity conservation. The goal of each and every one of these clauses is to stop biopiracy.⁴¹ In order for the countries with rich biodiversity and those that have signed "benefit sharing agreements" to learn whether any of the contracting parties have engaged in biopiracy or whether they are receiving an equitable share of the benefits that the corporation is deriving from using biological resources and/or related traditional knowledge, it was intended that this would be accomplished by facilitating the transfer of technologies and information.

2. *The Nagoya Protocol*

A framework for access to genetic resources and the just and equitable distribution of benefits resulting from their use was adopted in 2010 and serves as a supplement to the CBD.

Regarding the use and interchange of genetic resources, a number of commercial and non-commercial sectors are affected by the Nagoya Protocol, a historic agreement in the global regulation of biodiversity. The fair and equitable distribution of benefits resulting from the exploitation of genetic resources is one of the three purposes of the Convention on Biological Diversity (CBD), which is expanded upon and upheld by this new international convention.

3. *The Biological Diversity Act, 2002*

The Biological Diversity Act protects traditional knowledge about biological resources. Establishing national, state, and local decision-making organisations is the goal of the BDA. Foreigners wishing to access biological resources and related traditional knowledge, as well as those wishing to apply for patents or other intellectual property rights (IPRs) on innovations based on biological resources and traditional knowledge acquired in the country, will be able to do so with the approval of the National Biodiversity Authority (NBA), which will be established at the national level. Further traditional knowledge cannot be provided without the informed consent of the State Biodiversity Board and the local population. Distribution of profits from the application of traditional knowledge is also permitted by the

⁴¹ Subham S. Chatterjee, BIOPIRACY AND ITS GROWING THREAT TO BIODIVERSITY IN INDIA: A BIRD'S EYE VIEW.

Act.

4. *The Patents Act, 1970*

The Patents Act allows the patent office to refuse the issuance of a patent if the innovation is based on traditional knowledge or if it was obtained from a community or group of individuals who represent themselves as the custodians of traditional knowledge. An innovation that "is an aggregation or duplication of known properties of traditionally known component or components, or which is, in effect, traditional knowledge," is defined as "an invention" under Section 3(p) of the Indian Patents Act. The novelty of the subject matter asserted in a patent application is mandated by the Patents Act. Another essential element of patentability is the inventive step.

⁴²The Patents Act's Section 10(4)(a) and (b) provide for a critical examination of applications pertaining to Traditional Knowledge and/or Biological Material. These applications must meet strict requirements for full and particular disclosure of the invention, its operation or use, and the method by which it is to be performed, as well as the best way to carry out the invention using working examples that the applicant is aware of in the complete specification.

5. *The Traditional Knowledge Digital Library*

The Traditional Knowledge Digital Library (TKDL), a digital archive for traditional knowledge from a range of industries, including handicrafts, agriculture, and medicine, was established by the Council of Scientific and Industrial Research (CSIR). The TKDL aims to stop the inappropriate use of traditional knowledge by providing it in a digital format. In order to prevent biopiracy, India developed the searchable Traditional Knowledge Digital Library (TKDL), which contains evidence of treatments already used in indigenous medical systems. This case is well-known, as the US Patent and Trademark Office granted a patent on turmeric. The goal of defensive protection is to stop IP from being used as new inventions and to stop piracy. TKDL is an excellent illustration of a defensive strategy.

6. *The Geographical Indications of goods*

According to the Act, geographical indications (GI) are protected and permitted in India. Products that have geographic indications (GIs) applied to them have a unique quality, reputation, or other attributes because

A Geographical Indication (GI) may be registered by an individual or organisation with the

⁴² Bency Baby T & Timmakkondu Narasimman Kuppusami Suriyaprakash, INTELLECTUAL PROPERTY RIGHTS: BIOPROSPECTING, BIOPIRACY AND PROTECTION OF TRADITIONAL KNOWLEDGE - AN INDIAN PERSPECTIVE INTECHOPEN (2021), <https://www.intechopen.com/chapters/78249> (last visited Apr 15, 2024).

Geographical Indications Registry thanks to this act.

A product's registered geographical indicator (GI) protects it from being violated by "unauthorised users."

⁴³The Indian judiciary's dedication to safeguarding local people's rights and traditional knowledge holders while combating biopiracy. They have contributed to the creation of a legislative framework in India for the preservation of biological variety and have established significant precedents for cases pertaining to local communities' and traditional knowledge holders' rights in the future.- The Supreme Court ruled in *T.N. Godavarman Thirumulpad v. Union of India* that unless a national policy on biodiversity and traditional knowledge was developed, the gathering of forest resources and the issuing of patents on traditional knowledge would not be permitted.

The National Regulator for the Protection of Plant Varieties and Farmers' Rights was ordered to be established by the government in the *Wildlife Trust of India v. Ministry of Environment and Forests* case. The regulator was in charge of making sure that farmers' rights, plant varieties, and biopiracy were all safeguarded. This ruling was viewed as a major step in the right direction towards defending local communities' rights and traditional knowledge.

IX. IMPACT OF IPR ON INDUSTRY INNOVATION AND GLOBAL PARTNERSHIP

(In light of SDGs 9 and 17)

(A) Incentivizing Innovation through IPR

The cornerstone that supports innovation is intellectual property rights (IPR), which provide incentives for funding R&D. Intellectual property includes works of literature, art, inventions, designs, names, symbols, and images used in trade, according to the World Intellectual Property Organisation (WIPO). Intellectual Property Rights (IPRs) are the legal rights that an inventor or manufacturer has to safeguard their creations. The most common type of intellectual property rights (IPR) are patents. In order to be eligible for patent protection, an inventive idea must be fresh and unique, meaning it cannot be found in the body of knowledge already in existence in the relevant technical sector. India became a WIPO member in 1975. But the Indian government hasn't really strengthened its intellectual property laws until the last few years. With the launch of the National Intellectual Property Rights Policy in 2016, a clear IP vision was established with the goals of streamlining procedures, raising awareness, encouraging commercialization,

⁴³ (PDF) INTELLECTUAL PROPERTY RIGHTS, TRADITIONAL KNOWLEDGE AND BIODIVERSITY OF INDIA, https://www.researchgate.net/publication/242293922_Intellectual_Property_Rights_Traditional_Knowledge_and_Biodiversity_of_India (last visited Apr 14, 2024).

and improving enforcement.

⁴⁴The Parliamentary Standing Committee on Commerce published a Review of India's Intellectual Property Rights Regime in July 2021, which was more current. The report, which is the first comprehensive assessment of the nation's intellectual property policy in five years, highlights that the IPR regime should be compliant with international agreements, rules, and norms and be compatible with those of other countries and foreign entities.

Patents - ⁴⁵A patent gives the owner of the invention the only authority to make, use, and sell their creation without the owner's consent. It functions as a legal instrument that honours and grants credit for creative thinking. Securing a patent offers entrepreneurs a number of benefits. They are free to use their idea for profit without worrying about other parties stealing or replicating it. They have a competitive advantage in the market thanks to their exclusivity, which also motivates more funding for R&D. Furthermore, because they force inventors to publicly reveal their innovations, patents encourage the exchange of knowledge. Since others can expand on these concepts or create new ones using the technology already in place, this transparency encourages creativity. Apart from protecting private property rights, patents advance society by promoting economic expansion and competitiveness. Because they are certain that their ideas will be protected, they encourage businesses to engage in R&D.

Copyright - Scientists and researchers can prevent unauthorised use or copying of their novel concepts and findings by using copyright protection. This guarantees individuals the ability to decide how their labour is used and allows them to benefit monetarily from it. Copyright protects different ways of expressing research findings in relation to scientific advances. Written reports, academic publications, technical papers, and even software codes created along the procedure fall under this category. Researchers can stop unauthorised use or replication of these resources by obtaining copyright protection for them. Furthermore, copyright incentivizes scientists and innovators to share their knowledge while maintaining ownership rights, which promotes further innovation. This harmony encourages cooperation and allows scientific and technological developments to flow freely within set legal bounds.

Trademark - Another significant component of intellectual property rights (IPR) that is essential

⁴⁴ A robust intellectual property regime to encourage innovation, APCO, <https://apcoworldwide.com/blog/a-robust-intellectual-property-regime-to-encourage-innovation/#:~:text=Patents%20also%20play%20a%20key,economic%20advantage%20to%20the%20inventor>. (last visited Apr 15, 2024).

⁴⁵ THE LAW ADVICE - ARTICLES - HOW IPR IS ABLE TO PROTECT SCIENTIFIC INNOVATIONS?, <https://www.thelawadvice.com/articles/how-ipr-is-able-to-protect-scientific-innovations> (last visited Apr 15, 2024).

to safeguarding scientific advancements is trademark protection. A trademark is a special word, symbol, logo, or design that sets one company's goods and services apart from another. Businesses can use it as a potent tool to build their reputation and brand identity in the marketplace. Additionally, trademarks assist customers in making decisions by indicating the origin and calibre of goods and services. Customers are reassured by them about consistency and dependability, which is especially important for scientific advancements where legitimacy and correctness are critical. Strong intellectual property protection via trademarks gives innovators a competitive advantage in the quick-paced world of technology breakthroughs and innovation-driven industries. They can protect their R&D expenditures while encouraging innovation by providing incentives for new discoveries.

(B) Intellectual Property and Anti Competitive practices: Addressing patent thickets and patent trolls

Every type of intellectual property has the potential to cause issues with competition law. These days, economic ideas regarding how different company practices—generally speaking, those classified as "anti-competitive"—interfere with and disrupt the free market are used to interpret competition laws. In certain situations, intellectual property might be able to provide market power, while in others, it might not. Because of public policies such as encouraging inventions, power can have an unjustifiably negative effect in a few really successful cases. However, if resources used to generate ideas or transmit information are not safeguarded, competitors may exploit this and profit from not having to pay for what they produce.

⁴⁶In *Vallal Peruman and Others v. Godfrey Phillips (India) Limited*, the Monopolies and Restrictive Trade Practices Commission (MRTPC) in India heard a case involving the conflict between intellectual property rights and the Competition Law (MRTP Commission, 1994). The following were noted by the Commission:

Applying the aforementioned principles to the current dispute, it appears that a certificate of registration held by a person or an organisation grants him/her the unquestionable right to use a name, trademark, or other intellectual property as long as the registration is active and, more importantly, as long as the trademark is used strictly in accordance with the terms and conditions under which it was granted. However, the holder of the certificate runs the risk of being accused of engaging in unfair trade practices if, when offering the goods and merchandise for sale in the market or for promotion, he manipulates, distorts, uses devices and embellishments, etc. to

⁴⁶ Manupatra, MANUPATRA ARTICLES, <https://articles.manupatra.com/article-details/Intellectual-Property-Right-And-Anti-competitive-Practices> (last visited Apr 15, 2024).

mislead or confuse the consumers. Thus, it will be evident that the Monopolies and Restrictive Trade Practices Act's provisions would only come into play in the event that a protected right is abused in its exercise. The following is stated in Article 8.2 of the TRIPS Agreement, titled "Principles": Appropriate measures, as long as they are consistent with the provisions of this Agreement, may be required to stop right holders from abusing their intellectual property rights or from engaging in practices that unreasonably impede trade or negatively impact international technology transfer. In addition to this general clause, anti-competitive behaviour is covered by Article 40 of Section 8 of Part II of the Agreement.

Patent trolls, who frequently operate as individuals or businesses, obtain patents in order to take advantage of legal loopholes in order to make money rather than in order to produce or use the ideas or innovations they are protecting. This technique entails suing other organisations that are said to be infringing on these patents, resulting in a legal environment that seriously hinders legitimate innovators and interferes with regular company operations.⁴⁷ There are several ways in which patent trolls hinder innovation. These organisations make the process of inventing and improving ideas more difficult and expensive for both individuals and businesses by using patents as weapons in court cases. When used as instruments for litigation instead of encouraging true creativity, patents lose their fundamental purpose, which is to promote innovation by offering exclusivity and legal protection. Due to their aggressive litigation tactics, patent trolls obscure this essential procedure. Inventors and corporations may be discouraged from developing new concepts, introducing products, or venturing into untapped markets just by the prospect of patent litigation. The atmosphere of fear that results stifles innovation and prevents industries from naturally evolving. The effects on the economy are evident. Instead of going on patent troll defence, those funds could have gone towards actual research and development as well as market expansion. Rather, these resources are consumed by legal disputes, which impedes economic expansion and reduces the possibility of creating jobs. Due to the annual billions of dollars spent on litigation and settlements which would otherwise spur innovation, the cumulative effect is a drain on the economy.

⁴⁸The invention of patent thickets dates back to the late 1800s, when a number of sewing machine manufacturers produced one. The term "sewing machine war" also refers to the popular construction of this patent thicket. Sewing companies were mainly prevented from acquiring

⁴⁷ Rakesh Yadav, PATENT TROLLS AND THEIR IMPACT ON INNOVATION AND ECONOMIC GROWTH - PATENT - INDIA PATENT TROLLS AND THEIR IMPACT ON INNOVATION AND ECONOMIC GROWTH - PATENT - INDIA (2024), <https://www.mondaq.com/india/patent/1424568/patent-trolls-and-their-impact-on-innovation-and-economic-growth>. (last visited Apr 15, 2024).

⁴⁸ Global patent, WHAT IS PATENT THICKETS - AN ANALYSIS, <https://www.globalpatentfiling.com/blog/examining-various-dimensions-patent-thickets> (last visited Apr 15, 2024).

patents for their improvements due to the awarding of patents for several sewing machine components. Thus, several of the most well-known sewing enterprises (such as Grover and Baker, I.M. Singer & Co., Wheeler, and Wilson) established a patent pool in 1856. Up to 1877, this patent pool was in operation. However, the *SCM Corp v. Xerox Corp* case is related to the recent surge in popularity of patent thickets. The plaintiff in *SCM Corp* argued that Xerox had obstructed competition by safeguarding common components connected to their ideas, thus creating a patent thicket. Patent thickets are common in sectors like biotechnology, semiconductors, computer software, telecommunications, and pharmaceuticals.

Patent thickets may deter organisations or people from entering a certain market, especially small enterprises. Inventors have been repeatedly blocked from submitting patent applications in a variety of industries by aggressive patent filings and the ensuing establishment of patent thickets. Patent thickets may force businesses and individuals to pay high transaction costs. To obtain patents for inventions in a specific domain (particularly one that contains a high-density patent thicket), the applicant might have to pay filing fees, legal fees, and other expenses to gather data on related inventions that make up the patent thicket. Additionally, "patent trolling" and "patent hoarding" may be made easier by patent thickets.

(C) Cross-border collaboration in innovation and technology transfer

Technology transfer (TT) facilitates access to scientific discoveries and intellectual property for both public and private sectors, aiming to create beneficial goods and services. Article 7 of the TRIPS Agreement emphasises the role of intellectual property rights (IPRs) in supporting innovation and transfer while promoting social and economic welfare. Least-developed countries advocate for more effective implementation of these provisions, with Article 66.2 requiring developed countries to provide incentives for technology transfer. The impact of a robust patent system in developing nations on technology transfer is complex, influenced by channels of transfer and international production. Stronger IPRs may limit technology flow from industrialized to underdeveloped nations if imitation is the primary transfer channel, leading to decreased innovation in the North. Conversely, if multinationalization facilitates production transfer, stronger IPR protection can accelerate technology transfer. Greater IPR protection in the South incentivizes northern technology flows, fostering innovation and increasing foreign direct investment (FDI) from the North. Stronger IPRs also encourage licensing of innovations, fueling research and development and furthering technological transfer from North to South. Thus, the relationship between innovation, IPR protection, and technology transfer is intertwined, with stronger IPRs in the South potentially enhancing

innovation and transfer globally.⁴⁹The impact of a more robust patent system in developing nations on technology transfer is complex and largely dependent on the channels via which technology can be transferred from the North to the South and on the international production transfer channel that connects the two regions, according to North-South theoretical literature.

(D) International harmonisation of IPR laws and standards.

Harmonization in intellectual property aims to unify national IP regimes, creating a framework that connects various laws globally. The TRIPS Agreement of 1994 established a baseline for international IP standards. While Western nations argue for robust IP rights to stimulate innovation, critics claim this hinders development in poorer countries. However, strong IP alone doesn't guarantee profit; infrastructure and learning policies are vital. Legal harmonisation facilitates global trade and economic well-being, but monitoring infringement is costly. Critics argue TRIPS primarily benefits transnational companies, with calls for flexibility in IP laws. Poorer nations may suffer from stringent IP regulations, impacting trade deficits. Countries must consider their capacities and economic demands when designing IP systems, while businesses must navigate the implications of global IP regimes on their operations.⁵⁰ Developing nations should implement particular policies to support the development of suitable infrastructure and human resources in order to foster their ability to absorb information and catch up. Despite the push for harmonisation, concerns remain about the balance between promoting innovation and ensuring equitable access to knowledge and resources worldwide. Developing nations should focus on active learning policies in order to absorb the knowledge of the most developed countries. Western countries would be better served by fostering innovation and new knowledge than by preventing newcomers from gaining access to the knowledge they have already produced.⁵¹The primary goal of legal harmonisation is to maximise trade and commerce ease. Harmonisation makes IP protection easily accessible globally while lowering transaction costs.⁵²TRIPS has faced significant and well-founded criticism for primarily serving the interests of transnational companies and for imposing rich

⁴⁹ THE EFFECTS OF INTELLECTUAL PROPERTY RIGHTS PROTECTION IN THE TECHNOLOGY TRANSFER CONTEXT ON ECONOMIC GROWTH: THE CASE OF DEVELOPING COUNTRIES | CAIRN.INFO, <https://www.cairn.info/revue-journal-of-innovation-economics-2017-2-page-33.htm?ref=doi> (last visited Apr 14, 2024).

⁵⁰ Globalized harmonization of intellectual property right (IPR) laws in IPR regime world becomes more interconnected versus differentiation - GIPC, GLOBALIZED HARMONIZATION OF INTELLECTUAL PROPERTY RIGHT (IPR) LAWS IN IPR REGIME WORLD BECOMES MORE INTERCONNECTED VERSUS DIFFERENTIATION - GIPC, <https://www.globalipconvention.com/blog/globalized-harmonization-of-intellectual-property-right-ipr-laws-in-ipr-regime-world-becomes-more-interconnected-versus-differentiation> (last visited Apr 15, 2024).

⁵¹ Adv. LAVANYA ANAND, HARMONIZATION OF IP LAWS.

⁵² Graham Dutfield & Uma Suthersanen, HARMONISATION OR DIFFERENTIATION IN INTELLECTUAL PROPERTY PROTECTION? THE LESSONS OF HISTORY SCIENCEOPEN (2005), <https://www.scienceopen.com/hosted-document?doi=10.1080%2F08109020500085528> (last visited Apr 15, 2024).

world levels of intellectual property protection on less developed nations. However, the forces pushing for change are starting to view the WTO and TRIPS as at least as much of a brake as an accelerator.

X. CONCLUSION AND SUGGESTIONS

The analysis of the relationship between the Sustainable Development Goals (SDGs) and Intellectual Property Rights (IPR) indicates a complicated environment in which advancing sustainable development goals and the quest of innovation frequently overlap and occasionally clash. This Paper has provided insight into the several ways that intellectual property rights (IPR) might help or impede efforts to achieve the Sustainable Development Goals (SDGs). A primary discovery of this research is the intrinsic conflict between fostering creativity via strong intellectual property rights safeguards and guaranteeing fair access to necessities like medications, technology, and information. Robust intellectual property laws have the potential to stimulate innovation and investment, but they can also act as obstacles to entry, especially for developing nations and underprivileged groups. Furthermore, the unequal distribution of intellectual property rights worsens already-existing inequities and raises questions about social justice. The study also emphasises how critical it is to achieve a balance between the protection of intellectual property rights and the more general goals of sustainable development, such as eradicating poverty and preserving the environment and cultural traditions. This necessitates an awareness of the interdependencies between the many aspects of sustainable development as well as a nuanced comprehension of the varied interests and objectives of the parties involved. In light of these findings, several recommendations can be made to address the challenges and maximise the opportunities at the intersection of IPR and SDGs:

1. **Encouraging Flexibilities in Intellectual Property Regimes:** To make sure that intellectual property regulations do not unnecessarily restrict access to necessities, policymakers should think about introducing flexibilities within these laws. Mechanisms like mandatory licensing, patent pools, and exemptions for environmental and public health reasons might be examples of this. Especially while talking about TRIPS flexibilities.
2. **Improving Technology Transfer and Capacity Building:** It is important to work towards enabling the transfer of technology from developed to developing nations, especially in fields like renewable energy, agriculture, and healthcare that are pertinent to sustainable development. Initiatives aimed at increasing capacity can lessen reliance on outside technology while bolstering regional innovation ecosystems. Create policy incentives to

encourage research, development, and implementation of sustainable technology.

3. Encouraging methods of open innovation, such as collaborative research networks, open-source software, and creative commons licensing, can facilitate information sharing and hasten the achievement of the Sustainable Development Goals (SDGs) while maintaining incentives for innovation.
4. For policy directions on IPR to fully support both national and regional sustainable development objectives, it will be necessary to adopt a strategy that considers the unique opportunities and constraints that each country presents. IPR policies should be tailored to each country's stage of development, socioeconomic conditions, and environmental factors. Adopting localised IPR laws within a policy framework for sustainable development is a more refined approach than imposing strict standards without considering local circumstances.
5. Integrating Sustainable Development Aspects into Intellectual Property Law: Coherence and congruence with more general development goals can be ensured by including sustainable development considerations into the processes involved in developing intellectual property policies.
6. Invest in Capacity Building and Public Awareness: Encourage IPR stakeholders, including inventors, government officials, and judges, to gain the knowledge and skills needed to engage with IPR for sustainable development. Causes the public to debate the importance of intellectual property rights in society, emphasising their ability to help sustainable development.

In summary, there are potential and challenges for promoting inclusive, egalitarian, and ecologically sustainable development pathways at the junction of intellectual property rights and sustainable development goals. The transformative potential of intellectual property in advancing sustainable development agendas can be realised by policymakers, practitioners, and scholars through the adoption of a holistic approach that strikes a balance between the imperatives of innovation and the principles of sustainability and social justice.
