AI REGULATION IN THE GLOBAL SCALE: A COMPARATIVE LEGAL ANALYSIS

Saunak Ash*

ABSTRACT

The contemporary landscape of the Intellectual Property Rights (IPR) combines opportunities and challenges to achieve the Sustainable Development Goals (SDGs). While IPRs traditionally encourage innovation and innovation-driven economic growth, their exclusivity can hinder efforts related to technology transfer and sustainability. The TRIPS Agreement and other international treaties are pivotal in shaping global IP policies. However, rigid structure makes these policies less accessible in terms of sustainable technologies, especially in developing nations. This paper observes the intersection between IPR and SDGs, examines the frictions and policy gaps, and provides recommendations for a more balanced regime that will stimulate innovation while addressing challenges related to sustainability. It seeks to understand how IPR structures may obstruct the SDGs, with particular attention to technology transfer, green innovations, and access to essential resources. Studies illustrating good practices in which more flexible IPR policies helped diffuse sustainable technologies and strengthen collaborative innovation are cited.

This paper proposes various but possible reforms, including green patent pools, compulsory licensing, and improving public-private cooperation. This point seeks to inform policy discussions on the alignment of IPR with sustainability goals. Perhaps the most lasting legacy for global sustainability will depend on the extent to which IP systems are engineered to support rather than impede long-term environmental, social and economic benefits. The paper concludes with a recommendation for revising critical policy elements that should temper the payment of perks toward innovation with larger social interests and allow for the realization of an inclusive, integrative, and sustainable future.

*BBA LLB, FIFTH YEAR, NMIMS SCHOOL OF LAW, BENGALURU.

Keywords: Intellectual property rights, Sustainable development goals, Innovation, Policy reform, Green technology.

INTRODUCTION

Historically, Intellectual Property Rights (IPR) have provided incentives for innovation by bestowing exclusive rights on the creators. In return, IPR ushers in financial rewards to the innovators for their commitment to research and development, thereby contributing to economic growth and technological progress. IPR, however, although intended to create necessary incentives, tends to negatively affect the equitable dissemination of knowledge and technology with the challenge of addressing global issues such as sustainability.

It has also been pointed out that strict IPR policies undermine the accessibility of essential innovations in key areas for the attainment of Sustainable Development Goals (SDG). Examples include patenting green technologies in climate action (SDG 13) that hinder the widespread deployment of such innovations, thereby delaying urgent global efforts to halt environmental degradation. Similarly, monopolistic IPR frameworks may stifle competition in industry and innovation (SDG 9), hence slowing the speed of adaptation of innovative solutions within emerging economies. In terms of life on land (SDG 15), the role of IP in biodiversity conservation remains the subject of intense debate, as patents on genetic resources may run contrary to the principles of equitable access and benefit-sharing.

The gap between IPR and sustainability objectives is bridged in this paper by looking at how the current IPR frameworks impact global sustainability efforts and exploring possible mechanisms for policy alignment. Mechanisms such as compulsory licensing, patent pools, and open access initiatives represent possible solutions for strengthening the trade-off between innovation protection and equitable access to knowledge and technology. In the end, there is a compelling argument for a more flexible and inclusive approach to IPR policy that would allow sustainable, innovation-inclined futures.

RELATIONSHIP BETWEEN IPR ON SDGS

Intellectual Property Rights (IPR) considerably help in achieving Sustainable Development Goals (SDGs) by enabling innovation and safeguarding creators. However, they pose issues in realizing equitable access to technology.

SDG-9 (Industries, Innovation, and Infrastructure): IPR provides an incentive for research and development and fosters technological advancement by providing incentives for said development. Patents protect new inventions to provide added attractive leverage for the investment of resources into infrastructure and industrial development. However, an overreaching lien on IP may also hinder technology, especially in the case of developing countries without financial resources to garner licenses for critical technologies.[1]

SDG 13 (Climate change): Green technology often includes patented aspects with respect to renewable energy solutions and carbon capture technologies. While this patent system allows for innovation in the field of green technology, it could additionally restrict access to crucial technologies that mitigate climate change and allow for adaptation to climate change. Many developing nations lack the capacity to utilize patented green technologies, slowing progress toward the global target of climate resilience.[2]

SDG 15: Life on Land: These regulations on access to genetic resources and biotechnologies have an influence on the conservation of biodiversity. IPR govern the access to, use of, and exchange of plant species and genetically modified organisms, as well as agricultural innovations. However, in some cases, when companies patent genetic materials, access to such materials by indigenous communities or small-scale farmers is hindered.[3]

CASE STUDIES ON IPR AND SUSTAINABILITY

The Case studies are:[4]

Open Source in Greentech: Some initiatives advocate for the open sharing of sustainable technologies. In this regard, Tesla released its electric vehicle patents to get the whole industry accepted and promote clean transportation.

Access to Medicines in South Africa: Legal prescription battles over drug patents took place in the context of the HIV-AIDS crisis. Countries like South Africa encouraged the concept of compulsory licensing to allow the development of generic drugs to enhance access.

[1] International Institute for Trade and Sustainable Development, 'Sustainable Development Effects of the WTO TRIPS Agreement' (IATP)
[2] World Trade Organization, 'Climate Change and TRIPS' (WTO)
[3] World Intellectual Property Organization, 'WIPO and SDGs' (WIPO)
[4] World Intellectual Property Organization, 'Patents and the SDGs' (WIPO)

Innovation in Agriculture and Conflicts over IPR: Corporations patenting genetically modified crops have raised fears for food security and farmers' rights. Some nations resist strict enforcement of IP to protect indigenous agricultural practices.

Analysis of existing IPR Systems: Intellectual Property Rights (IPR) systems-a group of rights, including patents, copyrights, and trademarks offer protection from the possibility of a commercial market value. These policies assure the inventor or creator of the cost benefits of a certain invention.

- Patents protect inventions from being made, used, or sold by others for a certain number of years (generally 20 years).[5]
- Copyright protects only following original authorship-from its writing to music and from software permission to be issued for reproduction and distribution.[6]
- Trademarks delineate the products or services of one business from others, enforcing a business identity and establishing consumers' trust[7].

However, the flip side of such exclusivity may provide restricted access, especially if the case is about inventions of high importance, such as life-saving medicines, clean energy technologies, and digital advancements. Overzealously strict extraterritoriality can eliminate the nature of true competition and monopoly, increasing costs and narrowing opportunities for new innovators, especially in developing countries[8].

Identifying Policy Gaps: Typically, Intellectual Property Rights (IPR) classes favour growth and technological innovation. The involved USA, Canada, and others are set to a universal standard related to intellectual property under the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement, overseen by the World Trade Organization (WTO). However, IPR regulations somehow fail to incorporate the notion of sustainability, posing barriers to the diffusion of technology across countries that are essential for achieving the Sustainable Development Goals (SDGs).[9]

[5] World Intellectual Property Organization, 'What is a Patent?' (WIPO)
[6] World Intellectual Property Organization, 'Copyright and Related Rights' (WIPO)
[7] World Intellectual Property Organization, 'What is a Trademark?' (WIPO)
[8] Carlos M Correa, *Intellectual Property Rights and Sustainable Development: Issues and Challenges* (Oxford University Press 2021).
[9] International Institute for Trade and Sustainable Development, 'Sustainable Development Effects of the WTO TRIPS Agreement' (IATP)

If one thinks of the patent system, for instance, the rights given to inventors can extend up to 20 years, thereby limiting access to vital innovations in the renewable energy, pharmaceuticals, and biotechnology areas, among others. Although patent protection in itself enables more investment in research and development (R&D), the effect is to separate innovation to a point where control of the information is dominated by patent holders.[10]

BARRIERS TO THE DEVELOPMENT OF INNOVATION IN DEVELOPING COUNTRIES

The developing countries face several challenges while accessing technologies under various patents further narrowing down the scope for sustainable innovation. The cost of licensing is among the furthest mentioned barriers that interfere with the adoption of climate-friendly technologies essential for medicine technologies. Most developing countries rely on the import of patented technologies, which tend to be prohibitively expensive, thereby slowing down sustainable development projects.[11]

Another challenge is the ruggedness of international IPR agreements that increase in rigidness to protect only those interests of patent-holding companies hailing from high-income countries. TRIPS permits compulsory licensing provisions allowing governments to authorize the use of a patent without the consent of the patent holder only under extreme conditions. [12]Were there a country intending to utilize this provision in relation to environmental technologies or saving lives by helping medicines, they would have to break into a bureaucratic step trailing down important innovations.

Furthermore, the absence of appropriate local research and development (R&D) infrastructure continues to challenge developing countries in creating or adapting patented technologies. Since a good number of patents lie within the domain of multinational corporations, local enterprises and research institutions often have little to offer in terms of human resources needed to broker an equitable licensing deal or develop alternatives. Thus, the digital divide

[10] World Trade Organization, 'TRIPS and Its Impact on Green Technology Transfers' (WTO)
[11] Carlos M Correa, *Intellectual Property and Climate Change: The Need for Reform* (Oxford University Press 2021).
[12] United Nations Conference on Trade and Development, 'Barriers to Solar Technology Access in Developing Nations' (UNCTAD)

sets in, with wealthy countries forging ahead with developing sustainability solutions while their impoverished counterparts lag.[13]

In closing these gaps, thought must be given to the very possibilities of renegotiating the provisions to provide favourable environments for technology transfers, technically more equitable licensing agreements, and extensively invested local infrastructure in R&D capacity-building in the developing regions.

INTERNATIONAL FRAMEWORKS AND THEIR LIMITATIONS

International frameworks like the TRIPS Agreement and WIPO treaties govern international IPR policies. While they favour a consistent way of intellectual property protection, they often fail to support sustainability initiatives.

The TRIPS Agreement provides for strong patent protection but does not expressly accommodate technology transfers and innovations that are a step toward mitigating climate change.[14] Thus, companies dealing in renewable energy in developing countries often find themselves in a fix when accessing patented solar, wind, and battery storage technologies.

WIPO has also recognized the need for reform and has already started its initiatives by registering the WIPO Green Program, which connects innovators to sustainable technology users to assist licensing agreements.[15] However since it is voluntary, its effectiveness is still limited. Many green technologies will remain out of reach for those who need them the most since sustainability-driven IPR policies do not have legally binding mechanisms to impose adherence to them.

Bilateral and multilateral trade agreements themselves tend toward a great deal of complexity, which becomes the bane of equity in the transfer of technologies. By and large, high-income countries usually negotiate stricter IPR protections in trade deals, making it hard for developing countries to follow flexible provisions that allow for things like compulsory licensing or parallel imports.[16]

[13] World Health Organization, 'Compulsory Licensing and Public Health Policies' (WHO)
[14] World Intellectual Property Organization, 'TRIPS and Green Technology Licensing' (WIPO Magazine)
[15] United Nations Framework Convention on Climate Change, 'Technology Transfer in the Paris Agreement' (UNFCCC)
[16] World Trade Organization, 'Bilateral Trade Agreements and Their Effect on IPR' (WTO Research)

RECOMMENDATIONS FOR ALIGNING IPR WITH SDGS

Innovative Licensing Models -

The adoption of innovative licensing models that promote equitable access to sustainable technologies is a key way to align IPR with SDGs.

Green Patent Pools: A green patent pool is a mechanism that allows a few patent holders to collectively license their patents for easier access to environmentally friendly technologies. anels and carbon capture systems-especially for developing countries. For example, the UN-backed "WIPO GREEN" platform connects technology providers with users to facilitate green innovation dissemination.[17]

Voluntary Licensing: In the case of voluntary licensing agreements, patent holders allow third-party manufacturers or organizations to use their technology at lower costs or on the basis of open sourcing. This model is generally called upon in the pharmaceutical sector and it is particularly relevant in the context of global health emergencies such as HIV/AIDS and the COVID-19 pandemic, which has allowed generic drug manufacturers to distribute life-saving medicines at lower prices.[18] The model could, however, be turned to renewable energy technologies as well in accordance with that purpose.

Policy Reforms for Equitable Technology Transfer -

For a clear policy, one should introduce corresponding reforms of the relevant IPR policies and SDG citations by governments and international organizations to make access to relevant innovations in sustainability equitable.

Compulsory Licensing: The policy allows governing powers to grant licenses for patented technologies without the patent owner's consent when the public health application dictates it. Such a licensing recourse has benefited the pharmaceutical industry; extending it to green technologies could ensure wider access to essential innovations to mitigate climate change.[19]

[17] World Intellectual Property Organization, 'WIPO GREEN: A Marketplace for Sustainable Technology'
[18] Suerie Moon, 'Medicines as Global Public Goods: The Role of Voluntary Licensing' (2017) 5(2) *The Lancet Global Health* e150.
[19] Carlos M Correa, 'Compulsory Licensing: Global Trends and Future Prospects' (2019) 22(3) *Journal of Intellectual Property Law* 299.

Patent Waivers: When the global crisis is urgent, waivers of IPR protections can allow for the mass production of essential technologies. A recent example is seen in the TRIPs waiver for COVID-19 vaccines, where select countries have argued for temporary suspension of patents to allow for broader vaccine manufacturing. Waivers of that ilk for renewable energy patents could similarly hasten the transition to sustainable technologies.[20]

Technology Transfer Agreements: The UN Framework Convention on Climate Change and motivations with more stakes have brought up pointed support towards making the Technology Transfer Mechanisms work whereby developing countries could approach and adapt patented green technologies. But there are no enforcement mechanisms so far. In practice, these will require much stronger regulatory steps and respective enforcement.[21]

Innovative Facilities Engaged by the Public and Private Sectors -

It can be a powerful means of enhancing sustainable innovation through the use of resources, expertise, and capabilities available to government institutions and private corporations.

Government-Industry Collaborative R&D: Joint programs managed by the government and industry can allow the two to share knowledge, provide a greater common financing capability toward innovation, and hasten the development of green technologies.[22] For instance, initiated by 24 countries, the Mission Innovation Project aims to raise clean energy R&D investments through public-private partnerships.[23]

Greater Exposure to Open Innovation: Governments can provide companies with tax reduction schemes, subsidies, or grants for corporations that embrace open innovation models under which sustainable technologies are shared using fair licensing agreements. This model is very striking and successful in the agriculture sector, where open-source seed patents have helped improve food security for developing countries.[24]

[20] World Trade Organization, 'TRIPS Waiver for COVID-19 Vaccines: Challenges and Future Prospects' (2022)
[21] United Nations Framework Convention on Climate Change, 'Technology Mechanism Report: Bridging the Innovation Gap in Developing Countries' (2021)
[22] Organisation for Economic Co-operation and Development, 'Public-Private Partnerships for Sustainable Innovation: Policy Recommendations' (2020)
[23] Mission Innovation, 'Accelerating Clean Energy Innovation Through Global Partnerships' (2023)
[24] William Lazonick and Mariana Mazzucato, 'The Risk-Reward Nexus in Open Innovation: Policy Implications' (2013) 42(5) *Research Policy* 1024.

Inevitably, this will create global knowledge hubs enabling the sharing of experiences, best practices, R&D results, and policy frameworks among countries.[25]

Global Knowledge Hubs: The establishment of global knowledge-sharing platforms such as the International Renewable Energy Agency (IRENA) allows countries to exchange best practices, research findings, and policy frameworks, stirring up innovation diffusion.[26]

CONCLUSION

This paper underscores the need for IPR policy reforms to align with sustainability goals. By promoting equitable access to technology and fostering international cooperation, IPR can catalyze achieving SDGs. Effective policy adjustments, including innovative licensing models and strategic public-private partnerships, are necessary to ensure that intellectual property systems do not hinder sustainable development but rather support equitable technological progress.

Additionally, the role of international organizations, such as WIPO and WTO, must be reinforced to facilitate smoother technology transfers and create a more inclusive innovation ecosystem. Sustainable technology diffusion should be prioritized through mechanisms such as compulsory licensing, patent pools, and technology-sharing agreements, enabling broader global participation in green innovation.

Future research should focus on case-specific studies and empirical evaluations of policy implementations, particularly in developing economies where innovation access remains a critical challenge. Further studies could explore the potential of alternative IP frameworks that balance the interests of inventors with the urgent need for environmental and social sustainability. A reformed IPR system that aligns with SDGs will not only drive economic growth but also support long-term sustainability and global well-being.

[25] Jack Kloppenburg, 'Seed Patents and Open-Source Agriculture: A Path Towards Food Security' (2014) 130 *Agricultural Systems* 30.
[26] International Renewable Energy Agency, 'International Knowledge Sharing in Renewable Energy Policy' (2022)