

# IPR, Sustainable Development and SDGs: Examining the Intersection from Legal and Policy Perspectives

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## ABSTRACT

*The dynamic intersection of Intellectual Property Rights (IPR), sustainable innovation, and the UN's Sustainable Development Goals (SDGs) demands close examination, especially in the face of grand challenges such as climate change. Contemporary issues like clean and renewable energy require multidimensional and creative approaches grounded in sustainable development, corporate sustainability, and systems thinking. Sustainable innovation, positioned on the triple helix of people, planet, and profit, involves deliberate modifications to products, processes, and services to generate long-term value while balancing economic, social, and environmental priorities. Its inclusive and collaborative nature enables co-creation among diverse actors and extends to fair labor practices, inclusive design, and accessible solutions. While IPR has traditionally propelled innovation, current practices must evolve to fully support sustainable innovation. The dominant profit-driven logic of IPR often conflicts with the moral and societal imperatives of sustainability, raising questions about alternative protection mechanisms or revised IP strategies that enhance access and ensure responsible use of inventions. Patents, trade secrets, design rights, and trademarks can be strategically deployed to advance climate-friendly and green solutions. Experiences from the COVID-19 pandemic demonstrate how open licensing, shared knowledge pools, and coordinated efforts—such as the WIPO-WTO-WHO collaboration and initiatives like WIPO GREEN—can generate impactful, sustainable outcomes. Against this backdrop, the paper analyses the legal and policy dimensions shaping the interaction between IPR, sustainable innovation, and SDGs.*

**Keywords:** *Intellectual Property Rights (IPR), Patents, Sustainable Innovation, Sustainable Development Goals (SDGs), World Intellectual Property Organisation (WIPO).*

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## **1. Introduction**

Contemporary challenges like climate change need creative and innovative solutions secured through intellectual property rights (IPR). IPR is conventionally considered the prime driver of innovation, but its applicability to sustainable innovation remains contentious. It raises the question whether the profit-driven IPR imbibe the value-driven concept of sustainability. Sustainability lies at the intersection of 'people, planet, and profit', establishing a harmonious relationship between social, environmental, and economic considerations. Intellectual property (IP) protection incentivizes sustainable innovation, similar to other innovations; however, IP practices (e.g., exclusive licensing and monopoly over platform technologies) may not align with sustainability. Sustainable innovators have two options: either to resort to alternative protections/solutions that do not rely on IPR or to approach IPR with different strategies to improve access and control of innovation. It also led to the inquiry into different IPR frameworks, such as patents, trademarks, trade secrets, copyright, and industrial design, regarding the adaptability and compatibility of sustainable innovation.

IPR can provide creative and innovative solutions to grand challenges such as poverty, hunger, climate change, and food security, and therefore, it can help achieve the SDGs. However, whether it needs government support, policy interventions, and the participation of all the stakeholders, including national and international institutions, needs a comprehensive analysis. The COVID-19 pandemic exemplifies collaborative strategies, including IP licensing strategies that worked well during the pandemic. Though many IP issues (e.g., IP waiver) remained contentious, practices like collaborative agreements, patent pledges, and non-exclusive licensing in the IP domain exhibited great promise. However, the pertinent question is how these practices can be extended to non-pandemic situations, such as climate change, as sustainable solutions? Against this backdrop, the research article examines the intersection of IPR, sustainable innovation, and SDGs from a legal and policy perspective. It examines the viability of different IP strategies and collaborative agreements, as well as the role of international organisations, especially the World Intellectual Property Organisation (WIPO), in promoting sustainable innovation and achieving SDGs, considering current practices and practical intricacies.

## **2. Sustainability Gaze into IPR and Innovation**

Sustainability is an evolving concept that has passed through various stages and has been shaped and reshaped by 'economic, social, political, and cultural influences'.<sup>1</sup> The

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<sup>1</sup> See generally, Jeremy L. Caradonna, *Sustainability-A History* 22-53 (Oxford University Press, New York, 2022).



current thrust on sustainable development goals, as defined by the United Nations, recognizes the interdependence of environmental, economic, and social sustainability.<sup>2</sup> This interdependence resulted from the growing realization of economic and social determinants of development. Technological development has challenged the approaches to sustainability. The disruption caused by technological innovation brings new solutions to the world that may improve economic and social conditions. Yet, it may not be sustainable in its broadest sense. How to make technological innovation sustainable needs pre- and post-innovation policy. Laws and policies are essential in making innovation sustainable by prioritizing and streamlining it with social and economic necessity.

Intellectual Property Rights and sustainability can be considered friends and foes depending on various perspectives in a contextual setting.<sup>3</sup> The long interaction between IPR and innovation has been contentious. However, there is a general perception that IPR is a prime driver of innovation. Yet, in many cases, the conventional approach and existing mechanism of IPR are not yielding the desired results (for example, in the cases of antimicrobial drugs and drugs for neglected diseases, IPR is not rewarding, and the R&D investments are going down). In these sectors, policymakers opt for alternative models for research and innovation (e.g., the UK subscription model).<sup>4</sup> Further, innovators have a short-sighted vision that focuses on short-term economic profit.

The United Nations came up with 17 Sustainable Development Goals (SDGs), which are interdependent, and promoting one promotes others too. These goals require sustainable development that demands a harmonized approach focusing on economic, social, and environmental considerations. A report in the science magazine *Nature* reflects a meager progression of sustainable development, as only 20 percent of targets are on track against the target of achieving all 17 SDGs by 2030. The underlying reason cited for the slow progress is the inadequate efforts by the nations to achieve these goals. The report creates hope that if adequate financial and governance reforms occur, we can achieve the SDGs by 2050.<sup>5</sup>

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<sup>2</sup> United Nations Department of Economic and Social Affairs: "Sustainability", *available at*: <https://sdgs.un.org/goals> (last visited on April 21, 2025).

<sup>3</sup> Carolina Castaldi, "Sustainable Innovation and Intellectual Property Rights: Friends, Foes or Perfect Strangers?" in Cosmina L. Voinea, Nadine Roijackers & Ward Ooms (eds.), *Sustainable Innovation: Strategy, Process and Impact* 229–238 (Routledge, New York, 2021).

<sup>4</sup> See Kshitij Kumar Singh, "Innovation Conundrum in Antimicrobial Sector: A Curious Case for Intellectual Property Rights" 29(6) *Journal of Intellectual Property Rights* 507-515 (2024); Andrea Morales, Kshitij Kumar Singh, *et.al.* (2022) "Using the International Pandemic Instrument to Revitalize the Innovation Ecosystem for Antimicrobial R&D" 50(S2) *Journal of Law, Medicine & Ethics* 47-54 (2022).

<sup>5</sup> Francesco Fusco Nerini, Mariana Mazzucato, *et.al.*, "Extending the Sustainable Development Goals to 2050—a road map" 630 *Nature* 555-558 (2024) *available at*: <https://www.nature.com/articles/d41586-024-01754-6> (last visited on April 21, 2025).

### **3. Sustainable Development and Sustainability**

Sustainable development has its roots in forest conservation.<sup>6</sup> Still, it became explicit in the Brundtland Report 1987, which defines it as a development that aimed "to meet the needs of the present without compromising the ability of future generations to meet their own needs".<sup>7</sup> Sustainable development is based on realizing planetary integrity and catering to the needs of the economy, environment, and social well-being. Sustainability and sustainable development are two distinct concepts, as the former is a situation/goal that SD is aimed to achieve through various principles and tools: "*Sustainability* is often thought of as a long-term goal (i.e. a more sustainable world), while *sustainable development* refers to the many processes and pathways to achieve it."<sup>8</sup> Sustainability sets for people "a social goal to exist on Earth over a long time and can guide global, national, and individual decisions."<sup>9</sup>

Many allege that sustainable development is a utopian and contradictory concept as sustaining infinite economic growth on a limited planet is impossible. However, it is a premature understanding; it must be understood in a purposive context. As mentioned earlier, sustainability lies at the intersection of economy, society, and environment, carrying all three dimensions. The basis of sustainability is an environment that ensures the existence of society and the economy. This basis led us to prioritize the environment and to ensure that no compromise should be allowed at the cost of environmental protection. Since sustainability lies on the three pillars: social, environmental, and economic, it necessitates strengthening all three pillars. If any of them remain weak, the sustainability structure falls apart.<sup>10</sup> Policymakers are duty-bound to strategize policies that harmonize and maintain all three pillars.

### **4. Sustainable Innovation- The Conceptual Framework**

Innovation brings something new to the concerned field, whether a useful product or process, focusing on problem-solving. We encounter problems that an individual effort cannot solve in the contemporary world. Instead, they demand cumulative and collaborative efforts. These are termed wicked problems with broad impacts, such as climate change, pandemics, and water and air crises. These problems require creative and innovative

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<sup>6</sup> *Supra* note 1.

<sup>7</sup> United Nations, "Sustainability" available at: <https://www.un.org/en/academic-impact/sustainability> (last visited on April 21, 2025).

<sup>8</sup> UNESCO, Education for Sustainable Development-Source Book, UNESCO, Paris France, 2012, available at: <https://sustainabledevelopment.un.org/content/documents/926unesco9.pdf> (last visited on April 21, 2025).

<sup>9</sup> See Purvis, Ben; Mao, Yong; Robinson, Darren, "Three Pillars of Sustainability: in Search of Conceptual Origins" 14 (3) *Sustainability Science* 681–695 (2019); Ramsey, Jeffrey L., "On Not Defining Sustainability" 28 (6) *Journal of Agricultural and Environmental Ethics* 1075–1087 (2015).

<sup>10</sup> *Ibid.*



solutions, making sustainable innovation increasingly important. Sustainable innovation depends on “sustainable development, corporate sustainability, and system thinking and resides on the triple helix of 'people, planet, and profit’.”<sup>11</sup> Sustainable innovation requires intentional changes in companies about their products, services, or processes “to create long-term value by balancing economic, social and environmental considerations.”<sup>12</sup> Given its focus on social sustainability and value creation, sustainable innovation also requires fair labour practices, inclusive design, and cost-effective solutions.<sup>13</sup> Co-creation is a prominent modality through which sustainable innovation could be triggered, along with inclusive and collaborative approaches involving diverse individuals and groups.<sup>14</sup> There is a growing market for sustainable products and services, given the consumer demands for the same. Consumers are ready to pay the price to manage their lifestyles and stay committed to and support sustainable development. We have a general perception that innovation, in any case, is good. This perception is the outcome of our avoidance of the impact assessment of the concerned innovation.<sup>15</sup>

## 5. IPR and Sustainable Innovation- The Interplay

IPR is conventionally considered an indicator of innovation (e.g., the status of the IPR of a company may attract investment, reflecting that it is an innovative company). However, it raises the question of whether it could also be considered an indicator of sustainable innovation. It involves some apparent contradictions as the 'profit logic of IPR with appropriation strategies contrasts the moral or societal value logic emanating from sustainability,<sup>16</sup> which is the core of sustainable innovation. Policymakers suggest two options in this regard: first, should we replace IPR with alternative strategies to find alternative solutions/protections that do not rely on IPR (as discussed earlier), and second, do we need to reframe our IP strategies to improve access and control the invention's responsible use?<sup>17</sup>

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<sup>11</sup> Kaisa Oksanen and Antti Hautamaki, “Sustainable Innovation: A Competitive Advantage for Innovation Ecosystems” 5(10) *Technology Innovation Management Review* 24-30 (2015), available at: <https://timreview.ca/article/934> (last visited on April 22, 2025).

<sup>12</sup> Ju Young Lee, “What is Sustainable Innovation” *Network for Business Sustainability* October 19, 2021, available at: <https://nbs.net/what-is-sustainable-innovation-and-how-to-make-innovation-sustainable/> (last visited on April 22, 2025).

<sup>13</sup> Elizabeth Green, “Sustainable Innovation & Its Principles” *Sigma Earth* (December 5, 2023) available at: <https://sigmaearth.com/sustainable-innovation-its-principles/#:~:text=Reduce%2C%20Reuse%2C%20Recycle%3A%20The,to%20reduce%20the%20carbon%20footprint> (last visited on April 22, 2025).

<sup>14</sup> *Supra* note 11.

<sup>15</sup> *Ibid.*

<sup>16</sup> *Supra* note 3 at 229.

<sup>17</sup> *Ibid.*

## *IPR, Sustainable Development and SDGs: Examining the Intersection from Legal and Policy Perspectives*

IPRs, such as patents, trademarks, copyrights, and industrial designs, form an organisation's "structural capital, enhancing an organization's sustainable innovation process and environment-related activities."<sup>18</sup> IPR provides an economic incentive to the inventors and creators to reward their efforts. However, every IPR is also destined for well-defined policy goals. Despite having a proprietary element, IP is an artificial creation of states that works through states' policy levers. Even if it is exercised in the private domain, it does not make the IP owners immune to their irresponsible behaviour. The obligation of the patentee is earmarked in the IP laws that contain numerous flexibilities to address the accessibility and affordability of innovation. However, the pertinent question is, can these flexibilities help make innovation sustainable? Can it be done through voluntary mechanisms or state actions, even if possible? A related concern is whether it can also be promoted and ensured through the institutions in the IP domain.

The answer is contextual and mixed. On the structural level, given the conventional role of IPR, it provides a guarantee to investors that they can recoup their investment costs by securing relevant IPR that provides them exclusivity in the market. Therefore, IP-led incentives can attract investors in the given field. On the same logic, if sustainable technologies, for example, green technologies and green marks/expressions, are enclosed with IPR, it may lead to sustainable innovation. But what should be the motivation for promoting green/sustainable innovation? It goes beyond the IPR framework and needs a push from the government and policymakers. Administrative reforms and governance reforms are the key to promoting sustainable innovation. In the IPR domain, collaborative agreements through IP licensing can help develop sustainable technologies. IP licensing can also facilitate technology transfer for sustainable development.

### **6. Impact of IPR on Sustainable Innovation**

The discussion of the impact of IPR on sustainable innovation involves different viewpoints. Many believe that IPR provides a relatively "weak incentive to develop green technologies due to the time lag between green technological invention and their first commercialization."<sup>19</sup> Invention spurs invention and leads to innovation, making the diffusion of the same quintessential. However, given the collaborative nature of green technologies, many companies hold patents on different components that may stake up the

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<sup>18</sup> Pratheeba Vimalnath, Frank Tietze, *et al.*, "Responsible Intellectual Property Strategy for Sustainability Transition-An Exploratory Study" 73 *World Patent Information* 102195 (2023), available at: <https://www.sciencedirect.com/science/article/pii/S017221902300025X?via%3Dihub#bib6> (last visited on April 22, 2025).

<sup>19</sup> *Ibid.*



licensing fee and increase transaction costs. As a result, IPR may block the diffusion of green technologies.<sup>20</sup> The monopoly through the robust IP protection on sustainable technologies may block others from accessing IP-protected technologies.

On the other hand, another viewpoint establishes that IPR promotes sustainable innovation. As an organization's structural capital, IPRs such as patents, copyrights, trademarks, and industrial design can enhance “the sustainable innovation process and environment-related activities.” However, IPR and sustainability interrelation appears complicated due to the profitability motive of IPR. Nevertheless, it may promote sustainable innovation through openness and sharing of IP through broader mechanisms like “patent commons, pledges, and open source”. The Sustainability-IPR interface has been less discussed, though, and the existing literature lacks a structured debate as to how the IPR regime is catching up with the concept of sustainability.<sup>21</sup>

Though companies focus on maximizing profit and securing their innovation through IP protection, given the awareness and dissemination of sustainable innovation, companies adopt sustainability as a strategy to gain a competitive advantage.<sup>22</sup> Companies can adapt ownership claims and licensing strategies that facilitate access and control the responsible use of their innovation. Sustainable innovation imbibes sustainability in “the entire value chain, from suppliers to distributors”. The growing interdependence of one organization on another to innovate makes sustainable innovation more appealing. One of the motives of sustainable innovators is to promote it by not filing IPR on innovation.<sup>23</sup> Different IPs need different approaches to absorb and promote sustainability within the IP framework.

## 6.1 Patents and Sustainable Innovation

Patents are government documents issued by the national government to an inventor for an invention, conferring exclusive rights to the inventor regarding the invention for a limited period. This time-bound monopoly is limited to certain exemptions and inherent flexibilities that put a check on the use of these rights. While granting exclusive rights to incentivize the inventor, patent law demands public disclosure. It balances patentees and third parties and leads to a public good. Patents offer manifold scope for sustainable technologies. first, while picking up a green technology for patenting, it secures the inventor/investor to recoup the investment and economic incentive; this guarantee secured

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<sup>20</sup> *Ibid.*

<sup>21</sup> *Ibid.*

<sup>22</sup> *Supra* note 3 at 229.

<sup>23</sup> *Id.* at 229-230.

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through patents influences other inventors to invest in green technologies, and therefore, patents “can promote the development of green technologies, fostering environmentally friendly innovations”. Sustainability is also linked with the affordability and reliability of innovations. However, patents on platform technologies relating to the environment may create barriers to accessibility and affordability of innovation, having a chilling effect on the follow-up innovation. Here, licensing strategies and collaborative mechanisms such as non-exclusive and open licensing (both licensing-in and licensing-out) and patent pledges with numerous commitments can play crucial roles.<sup>24</sup> In recent years, constant progress has been witnessed in this context (for example, Eco patent commons was introduced by “Sony, Microsoft, Nokia, and others with the World Business Council”, developing a unique ecosystem).<sup>25</sup>

Licensing indicates the inability of the owner to make her invention commercially workable on her own or her dependence on others to innovate. Innovators can address this inability through licensing to one or more third parties. A patentee may devise licensing strategies to effectuate innovation by assessing her peculiar position and the purpose at hand. She may go for licensing-in or licensing-out options. Licensing-in or in-licensing could be a viable option to derive the value of sustainable technologies when she is placed with “a limited scale of resources to translate the technologies into actual products and services.” Moreover, licensing-in is based on collaboration with other companies. Licensing other companies' sustainable technologies enables “opportunities for new ventures with the right business model to use these technologies in the markets.”<sup>26</sup> Licensing-out is the strategy through which a company generates revenue by licensing its technology to other companies on mutually agreed royalty. In-licensing out strategy, companies can contribute to sustainable innovation by exercising non-exclusive, fair, reasonable, and non-discriminatory practices relating to green technology. An inventor may opt for a licensing-out strategy for numerous reasons, given that many patents remain unused.<sup>27</sup>

Companies can also donate patents on sustainable technologies for free to public entities, including universities, or they can participate in the patent commons to share technologies for free. Companies come forward with patent pledges of green technologies. For example, Tesla announced “that it would open its patent portfolios to boost technological

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<sup>24</sup> *Id.* at 234.

<sup>25</sup> Jo Bowman, “The Eco-Patent Commons: Caring Through Sharing” *WIPO Magazine*, June 3, 2009, available at: <https://www.wipo.int/en/web/wipo-magazine/articles/the-eco-patent-commons-caring-through-sharing-36818> (last visited on April 22, 2025).

<sup>26</sup> *Supra* note 3 at 234.

<sup>27</sup> *Ibid.*

<sup>28</sup> *Ibid.*



advances in battery technology”. The green patent initiative is another significant initiative.<sup>28</sup> International treaties on IPR and national IP laws do not provide for sharing green patents. IP systems do not explicitly make any distinction between environmentally friendly green technologies and other technologies. Innovators can apply patent pledges to all kinds of technologies, including green technologies, but their establishment and organization remain challenging for green technologies as it requires interdisciplinary coordination of scientists, legal professionals, and business professionals and support from industry. In addition to this, the prime challenge is the governance of these technologies in the absence of any standard criteria. The regulation of green technologies and the validity of pledged patents relating to green technologies also remain challenging.<sup>29</sup> The Paris Agreement, 2015 calls for "an effective technology mechanism to facilitate the technology development and transfer in support of climate change mitigation and adoption."<sup>30</sup> In this context, green patent pledges offer an effective mechanism of collaboration and knowledge sharing that may work within the existing IP legal regime in the implementation of the Paris Agreement: “[t]he governance of green patent pledges should be provided by an international organization where credibility and legitimacy can serve to resolve many concerns.”<sup>31</sup>

Patent Commons is a platform for sharing technology featuring a collection of free-to-use patents provided by major industry players. Such a model may help with sustainable innovation, unlike the enclosed model fencing technologies through IPR. It's a little fuzzy, though, how and to what extent sustainable innovators strategize IPR in a specific way, 'first to file and protect and then share or make it open for others.'<sup>32</sup> Sustainable innovation may be interpreted in numerous ways, but sustainability, as commonly understood in line with the SDGs, indicates a harmonious innovation considering all three dimensions—"environmental, social and economic sustainability". It includes product, process, and service innovation. Consumers can adopt sustainable product innovation translated into tangible products for sustainable consumption and by innovative companies/innovators to implement sustainable production. On the other hand, sustainable processes entail "making changes to production and organizational processes that are in tune with sustainability (e.g., rethinking value chains like circular economy initiatives such as recycling and upcycling)". It indicates system thinking and organizational transformations in the innovation value chains. Sustainable service innovations include novel business models that have a more intangible nature and provide "novel solutions to meet the specific needs of users".<sup>33</sup>

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<sup>29</sup> Bassem Awad, "Patent Pledges in Green Technology" in Jorge L. Contreras and Meredith Jacob (Eds.), *Patent Pledges-Global Perspectives on Patent Law's Private Ordering Frontier* 95-96 (Edward Elgar Publishing, Inc., Massachusetts, 2017).

<sup>30</sup> *Id.* at 98.

<sup>31</sup> *Ibid.*

<sup>32</sup> *Supra* note 3 at 230.

<sup>33</sup> *Id.* at 230-31.

## 6.2 Trademarks and Sustainable Innovation

Trademarks offer significant space for green innovation or sustainable innovation. The conventional role of trademarks is twofold: first, to enable the trademark holders to establish the identity of their goods and services through distinct marks and sustain their goodwill in the market. From the consumer's perspective, it enables them to go with their choices while selecting the goods and services of a company and not be misled by the deceptive competing products/services. Distinctiveness and indication of source are the two essential elements of trademarks; they are expressions that inform consumers regarding the quality of the products. Take the example of certification marks, which are governed by standardizing organizations. Notably, trademarks are not only indications of source or origin but reflect views of broader significance that go beyond business, informing buyers categorically about products and processes covered by them. Trademarks can indicate “if the product is 'green,' 'sustainable', and 'environmentally friendly.’” The terms 'green' and 'eco' can reflect whether the product is eco-friendly. It also reflects the environmental responsibility of buyers, and in the information age, buyers are influenced by these phrases.<sup>34</sup>

In the trademark domain, “firms have strong incentives to maintain the informational value of their trademarks.” Therefore, they can engage in activities to strengthen the signal. Sustainable products are characterized by “the information asymmetries, where suppliers hold the full information on the whole production chain, but consumers cannot even fully experience the sustainability of products after purchase”.<sup>35</sup> However, companies can adapt numerous ways “to deliver a trustworthy claim that consumers can rely upon”. Companies can either design their own sustainable brands or private labels and protect them with trademarks or rely on third-party organizations' labels. It could be issued by “multiple commercial parties or by an independent organization (e.g., Marine Stewardship) that monitors if the companies comply with the certification schemes”. In this context, greenwashing practices are pervasive, “when a greenwashing company associates a trademark to its practice, this gives a weapon of retaliation to (non-greenwashing) competitors and activist organizations that represent civil society”.<sup>36</sup> Many litigations took place where trademark claims around sustainability have been challenged in court. Many of the NGOs use “name-shaming or brand-shaming as a strategy to expose misconduct”.<sup>37</sup> One of the contentions relating to trademarks is that they are used as a

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<sup>34</sup> See Kathryn Park, “Green Trademark and the Risk of Greenwashing” *WIPO Magazine*, December 13, 2022 available at: <https://www.wipo.int/en/web/wipo-magazine/articles/green-trademarks-and-the-risk-of-greenwashing-42943> (last visited on April 23, 2025).

<sup>35</sup> *Supra* note 3 at 234.

<sup>36</sup> *Id.* at 235.

<sup>37</sup> *Ibid.*



commercial strategy, and therefore, they conflict 'with the collaborative nature of the collaboration'. Sustainable innovation entails moral sustainability-driven drivers of innovation that apparently seem incompatible value with commercial appropriation. However, if trademark owner companies follow strategic practices aligning with sustainability, they can derive long-term economic benefits.

### 6.3 Design and Sustainable Innovation

Design rights are primarily used to protect the visual appearance of products and commercialize the aesthetic value of a product. It enhances the value of the article over which it is applied. However, designers can use these aesthetic creations to promote sustainable innovation. It can help promote sustainable innovation as “the whole idea of 'eco-design' revolves around the transformational role that design can play in rethinking the processes and practices behind products and services”.<sup>38</sup>

### 6.4 Trade Secrets and Sustainable Innovation

Trade secrets can also be aligned with sustainable innovation; it incentivizes the innovators and business entities to innovate without spending much time and capital in seeking protection through other IPRs, such as patents. However, it depends on the strategic choice, keeping in mind the risks of leaking information. Trade secrets protect any information with a trade value, and its value resides in its secrecy rather than disclosure. In the context of sustainable technologies, innovators can focus on the advancement of technology rather than spending more money on its protection.<sup>39</sup>

### 6.5 Copyrights and Sustainable Innovation

Copyright protection has been conventionally given to different forms of original expressions, including literary, musical, artistic, and dramatic expressions. Gradually, the scope of copyright has been extended to accommodate new entrants containing expressions based on information technology (e.g., software, databases, digital technologies). Scientific literature and research outputs, including data, can be crucial in promoting sustainable innovation. In this context, copyright can promote green technology by disseminating information regarding sustainable innovation through open licensing of scientific literature. It can also be aligned with “programming and data analysis that can help enhance current

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<sup>38</sup> *Ibid.*

<sup>39</sup> See “WIPO Guide to Trade Secrets and Innovation-Strategic Roles of Trade Secrets in the Innovation Ecosystem” available at: <https://www.wipo.int/web-publications/wipo-guide-to-trade-secrets-and-innovation/en/part-ii-strategic-roles-of-trade-secrets-in-the-innovation-ecosystem.html#:~:text=Appropriate%20trade%20secret%20protection%20will,and%20maintain%20a%20competitive%20edge> (last visited on April 23, 2025).

technology in an ecologically friendly way and generate new technology in the context of green technology”. Therefore, copyright can effectively help promote innovation and education aligned with sustainable development. Taking inspiration from open science, it can share and disseminate scientific knowledge and research findings and data for triggering innovation as “solutions to grand challenges such as climate change and pandemics.”<sup>40</sup> It can also make copyrighted material accessible through different licensing arrangements. Open educational resources influence copyright licensing strategies that align with sustainable innovation.<sup>41</sup>

## **7. SDGs, IPR, and Innovation**

IPR and innovation are closely linked to almost all the SDGs, poverty, health, and environment, but one of the SDGs, SDG-09, Industry, Innovation, and Infrastructure, is directly related to innovation. Though it does not mention IPR, it imbibes the connection between IPR and innovation. SDG-09 requires the interaction and collaboration of different stakeholders (Academia-Industry-Government complex and public-private partnerships) in promoting sustainable innovation. Despite the specific mention of innovation in SDG 9, the impact of IPR and innovation on other goals is well-reflected by the WIPO:

-it is through human ingenuity that “...it will be possible to promote new solutions that eradicate poverty; boost agricultural sustainability and ensure food security; combat disease; improve education; protect the environment; and accelerate the transition to a low-carbon economy, increase productivity and foster business competitiveness.”<sup>42</sup>

As IPR impacts SDG-09, it can also help achieve other SDGs, as the goals are interdependent, and fulfilling one may help fulfill the other.

One of the main features of SDGs is an inclusive and participatory approach; it involves co-creation and allows the participation of diverse groups, making them realize a sense of ownership. Another feature of SDGs is their universal nature, as, in principle, they apply equally to both developed and developing countries. However, it needs to adapt to the relative conditions of developing countries as they are placed on different pedestals, and

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<sup>40</sup> International Federation of Library Associations and Advocacy: “Copyright and Sustainable Development-Part1: How a Balanced Copyright Framework Supports Delivery of the 2030 Agenda” *Library Policy and Advocacy Blog*, October 12, 2021, *available at*: <https://blogs.ifla.org/lpa/2021/10/12/copyright-and-sustainable-development-part-1-how-a-balanced-copyright-framework-supports-delivery-of-the-2030-agenda/> (last visited on April 23, 2025).

<sup>41</sup> *Ibid.*

<sup>42</sup> Claudia Cara, “Intellectual Property is an Undisputed Support for Sustainable Development Goals” *PONS IP* May 13, 2024, *available at*: <https://ponsip.com/en/ip-news/news/intellectual-property-is-an-undisputed-support-for-sustainable-development-goals/> (last visited on April 23, 2025).



achieving these goals may need a distinct approach. SDGs are a wider global commitment to grand challenges such as climate change, poverty, water, and peace. The interrelation between IPR and SDGs still remains contentious, and it depends on how IP practices are carried on; however, at the theoretical level, IPR is aligned to provide creative and innovative solutions to the contemporary grand challenges, and they have the potential to translate ideas into a real-world solutions. IPR can be a useful tool to help achieve SDGs if applied diligently with a sustainable approach and meaningful policy interventions.

## 8. WIPO and SDGs: Initiatives and Commitments

Global organizations can play a pivotal role in flagging SDGs and exemplifying the best practices to help countries to align their IPR policies well with SDGs. WIPO took numerous initiatives in this regard. IPC green inventory<sup>43</sup> is a database that enables searches for patent information in environmentally sound technologies. Another initiative is based on a collaborative model that provides a platform for technology transfer and co-creation. It is termed as 'WIPO GREEN',<sup>44</sup> which creates an online platform for technology exchange that extends support to global efforts addressing climate change by connecting providers and seekers of environmentally friendly technologies. It also facilitates “legal aid to organizations in developing countries with respect to green innovations on a pro-bono basis.”<sup>45</sup> A WIPO publication, “WIPO and the Sustainable Development Goals: Innovation Driving Human Progress,” highlights SDGs' interdependence and innovation's role in achieving them.<sup>46</sup> To make the system more inclusive of gender and marginalized classes, WIPO launched 'WIPO in Green', an interview series regarding women's participation in the green tech innovation sector.<sup>47</sup>

WIPO adapted the theme of World IP Day, "IP and SDGs: Building our common future with innovation and creativity" highlighting the crucial role of IP in providing critical incentives for innovation and creativity. It reflects WIPO's commitment to “the UN Sustainable Development Goals.”<sup>48</sup> Given the inclusive and interdependent nature of

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<sup>43</sup> WIPO Knowledge Repository: “IPC Green Inventory”, *available at*: <https://tind.wipo.int/record/28644?ln=en&v=pdf> (last visited on April 23, 2025).

<sup>44</sup> “WIPO Green-The Marketplace for Sustainable Technology”, *available at*: <https://www3.wipo.int/wipogreen/en/> (last visited on April 23, 2025).

<sup>45</sup> See “WIPO Green-Pro Bono: Legal Services Through WIPO Green”, February 3, 2021, *available at*: [https://www3.wipo.int/wipogreen/en/news/2021/news\\_0001.html](https://www3.wipo.int/wipogreen/en/news/2021/news_0001.html) (last visited on April 23, 2025).

<sup>46</sup> See “WIPO and the Sustainable Development Goals-Innovation Driving Human Progress” *available at*: [www.wipo.int/edocs/pubdocs/en/wipo\\_pub\\_1061\\_2021.pdf](https://www.wipo.int/edocs/pubdocs/en/wipo_pub_1061_2021.pdf) (last visited on April 23, 2025).

<sup>47</sup> See “WIPO in Green” *available at*: <https://www3.wipo.int/wipogreen/en/womeningreen/index.html> (last visited on April 23, 2025).

<sup>48</sup> See “WIPO: Sustainable Development Goals and Intellectual Property”, *available at*: <https://www.wipo.int/en/web/sdgs> (last visited on April 23, 2025).

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sustainable development, the IP commitment needs to come on all levels, including individual inventors, companies and other organizations, and the government to regulate and govern sustainable technologies. There is a need to apply the IP with a collective capacity to translate sustainable ideas into sustainable solutions.<sup>49</sup> WIPO exemplifies real-world examples and good practices of “implementing the SDGs in national intellectual property systems (e.g., the research study by the WIPO Japan office in collaboration with WIPO's Special Representative on the UN SDGs reflects best IP practices).”<sup>50</sup> WIPO also presents key findings of research analytics exploring the SDGs through patents, and the research establishes that patents represent 13 out of 17 SDGs. Of these, SDG 9- Innovation, Industry, and Infrastructure- leads in terms of the highest number of patents. In addition to this, SDG-13, Climate Action, and SDG-07 - Affordable and Clean Energy, are slowly catching up with patents. The latter trend demonstrates a growing awareness and consumer preference for green technology. The Innovation Maturity Index also indicates that in addition to SDG-13 and SDG-07, SDG-12, Responsible Consumption and Production has also registered a significant presence in contemporary debates and related patents. Given the interdependence of SDGs, SDG01 No Poverty, SDG-04 Quality Education, SDG-06, Clean Water and Sanitation, SDG-14, Life Below Water, and SDG-15, Life on Land garnered the utmost attention from a patent perspective.<sup>51</sup> Patents also help promote the development of medical technologies and pharmaceuticals by securing the investment and rewarding the inventor and by disseminating lifesaving innovation and therefore aligning with SDG -03 Healthcare and Wellbeing.<sup>52</sup>

Despite the high-level discussion and much emphasis on SDGs, IPR, in some situations, poses challenges in achieving the SDGs, for example, ensuring accessibility and equitable distribution of innovations, essential technologies, and medicines. Do the advancements secured through IPR reach those who need it the most? Is it still a complex question in the context of sustainable development? It depends on the IP policies and practices that strike a balance between IP protection and access to innovation on equitable terms. Sustainability has been pitched and accepted as a universal principle guiding the IP and innovation interplay to help achieve SDGs. In this context, SDG-17, 'Partnerships for

<sup>49</sup> *Ibid.*

<sup>50</sup> WIPO: “Intellectual Property Offices and Sustainable Innovation-Implementing the SDGs in National Intellectual Property Systems” *available at*: <https://www.wipo.int/edocs/pubdocs/en/wipo-pub-rn2023-10-en-intellectual-property-offices-and-sustainable-innovation.pdf> (last visited on April 23, 2025).

<sup>51</sup> WIPO: “Key Findings: Exploring the SDGs Through Patents”, *available at*: <https://www.wipo.int/web/patent-analytics/key-findings-exploring-the-sdgs-through-patents> (last visited on April 23, 2025).

<sup>52</sup> Akos Cserkuti, “The Power of Intellectual Property in Achieving the Sustainable Development Goals” *Patent Renewal*, September 12, 2024, *available at*: <https://www.patentrenewal.com/post/the-power-of-intellectual-property-in-achieving-the-sustainable-development-goals> (last visited on April 23, 2025).



the goals' and its thrust on forging global partnerships, is the key in the IP domain, where collaborative licensing agreements can bring sustainable IP practices. It also emphasizes the collaborative and cumulative solutions in the partnership of governments, international organizations, companies, and innovators.<sup>53</sup>

## 9. Lessons Learned from the COVID-19 Pandemic

COVID-19 presents many approaches that may help achieve SDGs; it exposes the gaps in the system while setting an example of how the public-private-government partnership can lead to collaborative solutions to a global problem, i.e., the pandemic. Can these approaches be included in the sustainable innovation domain and lead to achieving SDGs? This needs further research. The pandemic highlights the strength of open and collaborative licensing strategies to find solutions to grand challenges. The pandemic exemplifies that IP rights with open and collaborative licensing strategies and the contribution of stakeholders to common knowledge pools can provide viable solutions (patent pledges, C-TAP, etc., though they started well but ended up less effective).<sup>54</sup> It also reflects how to prioritize innovation in each situation, e.g., during the pandemic, the emphasis was on social impact innovation, including innovating vaccines and PPEs. It indicates that, on the same line, we need to prioritize green innovation to address climate change and achieve decarbonization goals. One of the features of a pandemic is that it requires an immediate and emergent response; this urgency needs to be attached to grand environmental challenges. A notable aspect of the pandemic was institutional collaboration and solidarity. During the pandemic, the collaboration of WIPO with WTO and WHO demonstrates an integrated effort to help provide sustainable solutions in an emergent situation.<sup>55</sup> The relevant question is whether these approaches, which worked well in emergent situations, can be continued to non-emergent situations (though sustainability also needs emergent solutions) to solve grand challenges such as climate change.

The pandemic period transcends a sense of realization of the importance of SDGs in crises. The policy responses to green recovery set a great example where “green refers to rebuilding after the COVID-19 crisis in a way that tackles climate change and aligns with the SDGs.”<sup>56</sup> It triggers an “interconnected and comprehensive approach to policy

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<sup>53</sup> *Ibid.*

<sup>54</sup> See Kshitij Kumar Singh, “Patent and Pandemic: Exploring Duties Obligations and Responsibilities” in Raman Mittal and Kshitij Kumar Singh (eds.), *Relevance of Duties in the Contemporary World-With Special Emphasis on Gandhian Thought* 380-384 (Springer, Singapore, 2023).

<sup>55</sup> *Ibid.*

<sup>56</sup> Kalterina Shulla, Bernd-Friedrich Voigt, *et.al.*, “Effects of COVID-19 on the Sustainable Development Goals (SDGs). 2:15 *Discover Sustainability* (2021), available at: <https://link.springer.com/article/10.1007/s43621-021-00026-x#citeas> (last visited on April 23, 2025).

implementation and planning”,<sup>57</sup> tackling climate change. Countries aspiring for green economies must be inclusive and equitable, focusing on “poverty reduction and growth, creating new jobs and encouraging stakeholders to act environmentally responsibly”.<sup>58</sup> The pandemic exemplifies governments' ability to respond effectively to global challenges during crises. This potential could be handy in accelerating progress on climate change if governments take inspiration from the short-term decrease in global greenhouse gas emissions during COVID-19.<sup>59</sup> On numerous levels, e.g., decisions, policies, and actions taken during COVID-19 can help achieve the SDGs if adapted in a contextual setting.

### **10. IPR and Sustainable Innovation: Practical Insights and Current Trends**

The foregoing discussion suggests that IPR could empower sustainable innovators through different ends; in addition to profit-making, innovators can align with the social impact and a well-crafted IPR strategy (using different licensing models). However, there is a dearth of literature that could establish systemic evidence on the actual practices of IPR use by sustainable innovators and their desirability from a societal point of view. The previous experience suggests that incremental patents are only filed for strategic use, raising some pertinent questions: "Whether smaller and less experienced firms still have proper access to IPR systems;<sup>60</sup> are sustainable innovators able to leverage the opportunities of IPR systems." In addition to this, it also reflects that IP practices do not often conform to sustainability and act as impediments, for example, 'exclusive contracts forced by original equipment manufacturers frustrate attempts to refurbish and extend lifecycles.' Nevertheless, the right to repair is gaining momentum in the USA, Europe, and India, where 'trademark or patent protected spare parts could still thrive next to unprotected ones in a situation where consumers would be empowered to choose their preferred option'.<sup>61</sup> Sustainable innovation and IP interplay can be better shaped by possible governance solutions.

An inclusive and collaborative approach with significant policy intervention and governmental support can better shape IP practices in tune with sustainability: 'There may be ways to better align private and public incentives through institutional changes at norms and/or legislation levels.' We must explore a 'much broader range of ways of leveraging IPRs than the most common practices biased towards closed models.' There is a need to broaden the geographical reach of current studies to accommodate the concerns of the Global South: "More inclusive studies capturing the experience of the Global South not only as a victim or

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<sup>57</sup> *Ibid.*

<sup>58</sup> *Ibid.*

<sup>59</sup> *Ibid.*

<sup>60</sup> *Supra* note 3 at 236-37.

<sup>61</sup> *Id.* at 237.



laggards but as providing frugal solutions tweaked in environments where actors can rely on strong IPRs."<sup>62</sup> There is a demand for a conceptual framework on responsible IPR that could build upon firm- level theories such as resource dependence or institutional economics to understand motivations and processes." Such a framework acts as an organizational tool to be utilized by companies to make their IP practices responsible and integrate them into their aim to fulfill SDGs.<sup>63</sup>

## 11. Conclusion

IPR leads to innovation by offering the protection that secures investment returns and, therefore, encourages creators, inventors, and investors to invest in innovation. However, in numerous fields, this interrelation has become complicated, which leads to pondering over alternative strategies to conventional IP approaches. Sustainability, understood in line with the current discourse of sustainable innovation and SDGs, lies in the intersection of environmental, social, and economic aspects. Sustainable innovation demands a harmonious approach between economic, social, and environmental considerations. On a superficial level, the profitability-driven IP conflicts with the value-driven sustainability/sustainable innovation. However, the broader understanding of the IPR-sustainability interplay suggests complementarity among them. The ultimate purpose of IPR is to promote scientific and technological progress and creativity in society and promote social good. IP law permits numerous exemptions and licensing strategies that can help promote sustainable innovation, too. Patent pledges, non-exclusive licensing, eco-designs, and eco-friendly marks as trademarks are gaining momentum. Grand challenges necessitate collaborative efforts to innovate by adopting licensing-in and licensing-out strategies by different companies and innovators. Companies can provide open platforms to collaborate, which can build up their image, reflecting their commitment to green innovation. It could also have a long-term economic benefit, given consumers' growing awareness and preferences regarding environmentally friendly products and processes.

Government can also play a pivotal role in promoting sustainable innovation by formulating policies and facilitating mechanisms regarding green innovation. On the international level, the role of WIPO is also crucial in setting the global agenda of environmentally friendly innovation and enabling mechanisms for the same. WIPO's thrust on using IPR as a tool in achieving SDGs may go well given the interdependence of SDGs, as fulfilling one influences the fulfillment of others, too. SDG-09 does not mention IPR but emphasizes innovation, infrastructure, and industry, reflecting an inclusive and collaborative

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<sup>62</sup> *Id.* at 238.

<sup>63</sup> *Ibid.*

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approach to finding sustainable solutions. The COVID-19 pandemic sets a great example of addressing the grand challenges through cooperative efforts with and without IP. The urgency and immediacy of the pandemic should continue with the grand challenges such as climate change. Policymakers must learn from the best practices witnessed during the pandemic and adapt them to provide sustainable solutions to contemporary problems.