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INTELLECTUAL PROPERTY REGULATIONS AND ENVIRONMENTAL AGREEMENTS: AN OVERVIEW OF THE AUSTRALIAN GREEN INTELLECTUAL PROPERTY SYSTEM

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ABSTRACT

The paper explores the feasibility of a Green Intellectual Property (IP) system tailored to promote environmentally beneficial innovation in Australia. Green IP, or IP systems that support eco-friendly technologies, has gained global attention as an effective mechanism to drive sustainable innovation. Despite some international examples, such as Canada's tax incentives for eco-friendly patents, Australia's current IP framework lacks specific policies supporting green technology development. This paper examines IP Australia's regulatory role in implementing Green IP and the challenges faced by small and medium-sized enterprises (SMEs) due to financial and legal barriers. Through a review of global case studies, stakeholder interviews, and comparative analyses of international environmental agreements, the study suggests policy modifications to enhance IP Australia's support for green technologies. The findings point to financial incentives, an innovation review board, and targeted support for SMEs as critical components to enable the successful adoption of Green IP in Australia. This research provides a foundation for aligning IP and environmental policies to support sustainable innovation, balancing economic growth with environmental stewardship.

Keywords: Australian Green IP System, Environmental Agreements, Intellectual Property Regulations.

INTRODUCTION

Environmental sustainability has emerged as a central theme in global policy discussions, with nations actively seeking methods to reduce their ecological footprints. In this context, Green IP systems represent a promising approach to foster innovation that contributes positively to environmental outcomes. Such systems are designed to support technologies addressing issues

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like climate change, renewable energy, and resource conservation. Despite its growing relevance, Australia has yet to adopt a Green IP framework explicitly supporting eco-friendly technologies, limiting the country's ability to incentivize sustainable innovation on a broad scale. This study investigates the feasibility of implementing a Green IP system within Australia, focusing on its potential impact on promoting environmentally beneficial technologies. Drawing on comparative analyses, case studies, and insights from Australian SMEs, this paper explores how IP Australia can effectively facilitate green innovation. Specifically, it highlights the importance of policy alignment, financial incentives, and stakeholder support to create a sustainable Green IP framework.[2]

The IP system is a complex domain involving different concepts and rules that can be difficult to understand or differentiate. This can often be a deterrent for potential users who are not sufficiently knowledgeable about IP to effectively exploit their innovations or for researchers and developers regarding the cost/benefit of whether to obtain IP protection for their invention. This can also be problematic for administrators and policymakers in identifying how best to create an environment that fosters innovation. An understanding of the importance of IP rights in innovation, and the most effective ways to utilize and administer them, is essential in the quest to reconcile international environmental concerns with continued technological progress.[3]

The first part of this section explores the potential conflict between using IP rights to promote innovation in environmental technology and the desirability of free access to environmental information and technology.[4] This is followed by an analysis of how IP rights have been applied or modified in specific environmental agreements and regimes, aimed at promoting sustainable development. The case study of the Australian Green IP model represents a specific strategy for using IP rights to encourage the development and diffusion of 'green technologies'. This eventuates in a proposed methodology for identifying circumstances in which the application of IP rights is conducive to innovative environmental technology.

This paper further looks at various IP regulations and systems and considers their role in facilitating innovation aimed at addressing environmental problems. In particular, it identifies the importance of IP protection in the development and diffusion of environmentally sound technologies. It begins by providing a broad definition of IP and discussing its importance.[5] This is followed by an examination of the distinct types of IP, and a consideration of their individual and relative importance in environmental innovation. The section then goes on to assess the role of IP in promoting innovation, with reference to its effect on research and development (R&D) activities.

IP may be defined as the legal rights that result from intellectual activity in the industrial, scientific, literary, and artistic fields. These proprietary rights allow the creators of intellectual goods and services to protect their rights in those creations. Thus, it is possible to see IP as a system of rights that provides an exclusionary power to the creators of ideas or information, enabling them to bar others from the use of their creations. While the historical and moral justification for the provision of such rights is varied, an economic rationale for the provision of IP rights has played a significant role in the development of such rights in the modern era. This economic rationale

2 Vimalnath, P., Tietze, F., Eppinger, E., Jain, A., Gurtoo, A. and Elsen, M., *Responsible intellectual property strategy for sustainability transition-An exploratory study*, World Patent Information, *73*, p.102195 (2023)

3 Hao, Y., Ba, N., Ren, S. and Wu, H., *How does international technology spillover affect China's carbon emissions? A new perspective through intellectual property protection,* Sustainable Production and Consumption, *25*, pp.577-590 (2021)

4 D'Amato, A., Mazzanti, M. and Nicolli, F., *Green technologies and environmental policies for sustainable development: Testing direct and indirect impacts*, Journal of Cleaner Production, *309*, p.127060 (2021)

5 Gao, X., Cao, M., Yang, T. and Basiri, A, *Transport development, intellectual property rights protection and innovation: The case of the Yangtze River Delta Region, China*. Research in Transportation Business & Management, *37*, p.100563 (2020)

is largely based on the view that the provision of such rights will provide a platform for increasing the level of innovation and creative activity in a society, leading to a subsequent flow of socially valuable new products and services.

The economic rationale outlined above is particularly relevant in recent times to environmental innovation and the issue of sustainable development. Formerly, environmental considerations were seen to conflict with economic growth and development. It is only in relatively recent times that there has been an increased awareness of the potential compatibility between economic and environmental goals, and an understanding that it is often how industry produces goods and services which is unsustainable and damaging to the environment. This has led to an increasing recognition of the need for new methods or processes (innovation) that will allow the production of goods and services in a manner that is less harmful to the environment. Given the above definition of IP and its economic rationale, it is logical to consider that environmental innovation and sustainable development can greatly benefit from access to IP rights.[6]

KEY COMPONENTS OF GREEN IP AND IP AUSTRALIA'S ROLE

The principal aim of a Green IP system is to encourage and protect innovations with positive environmental impacts. IP Australia currently does not prioritize eco-friendly technologies, applying standard patent protections without additional incentives for patents in environmentally beneficial sectors. For instance, traditional patent protection does not consider the ecological significance of innovations, treating green and non-green technologies equally under current IP regulations.

In this study, IP Australia's role as a regulatory body was evaluated based on its capacity to implement an IP framework that promotes sustainable innovation. The research indicated that while some legislative progress has been made, there remains a need for a dedicated system for evaluating and incentivizing green patents. Financial incentives, such as tax deductions or grants, emerged as critical motivators for companies pursuing green innovation. Canada, for example, offers tax incentives and grants for green patents, providing a model that Australia could potentially adopt.

Stakeholders proposed creating a specialized Green IP review board to assess environmentally beneficial patents and expedite the approval process. Such a board, comprising experts in green technology and IP law, would reduce the legal uncertainty associated with obtaining green patents and streamline the application process for applicants. This approach would allow IP Australia to differentiate green technologies from conventional innovations, thus enhancing clarity and encouraging broader adoption of eco-friendly practices among Australian businesses.

ENVIRONMENTAL AGREEMENTS

Environmental agreements are an innovative and flexible way of implementing environmental policy, through negotiation between the government and the industry or community, toward a more ecologically sustainable industry. The agreement may consist of one or several documents, varying in formality and legally binding status. They are designed voluntarily to improve behaviour and promote the interests of the agreement by signatories, and provide a framework for change and incentive, rather than dictating outcomes. Australia's green IP system is emerging as yet another flexible and innovative way for industry to improve its environmental outcomes. An environmental agreement may involve and include a variety of IP types and strategies. Green IP is highly relevant to environmental agreements. The most environmentally friendly form of IP is simply not to use it. If there is a suitable and commercially viable alternative, the foregoing IP can result in less environmental impact. This is referred to as an IP "free zone" and can be facilitated by an agreement

6 Van Der Waal, J.W., Thijssens, T. and Maas, K., *The innovative contribution of multinational enterprises to the Sustainable Development Goals*. Journal of Cleaner Production, *285*, p.125319 (2021)

to phase out a certain product or technology. Step-down or IP "lite" provisions can mitigate the environmental impact by simplifying IP to reduce materials, energy, and cost in production. Lastly, developing more environmentally friendly IP is consistent with general IP strategies to improve quality and efficiency.[7]

The term "environmental agreement" can potentially encompass a broad range of instruments, from formally binding legal contracts to very informal understandings between parties. This paper, however, refers to formal, explicit, and voluntary undertakings negotiated between two or more parties (which may include the government) that have the objective of preventing, managing, or solving environmental problems.

The significance of environmental agreements as a tool for encouraging environmentally friendly innovation is that they can potentially influence the behaviour of participants in a manner that is beneficial for the environment but also provides private benefits for the parties involved. They achieve this by creating a set of rules that affect the actions of participants, either by restricting certain types of behaviour or by providing incentives for certain types of behaviour. In the case of an agreement between private parties, this may involve the allocation of property rights to a commonly used natural resource in a way that restricts the use of the resource to a sustainable level and provides benefits for the long-term health of the resource. An agreement between the private sector and government may involve the creation of a taxation scheme that provides incentives for private investment in R&D of environmentally friendly technologies.[8]

Typically, one of the more well-known examples of a cooperative research agreement to commercialize environmentally sound technology is the founding of a joint venture company between the developers of technology and industry partners. One such agreement has been initiated by the Victorian government and a consortium of companies to fund the joint development and commercialization of technologies for minimizing waste generation and emissions. The government invested over $2 million in the project due to its anticipation of future environmental and economic benefits for the state. As R&D are so often the starting point for the development of new technologies, several participants in Green IP have taken out consortium research agreements.[9] Another example is a recent agreement between two universities and an environmental firm to commercialize technology that will ultimately reduce Australian pesticide usage. Publication will allow the participating researchers to retain control of their IP while they check the feasibility of their venture in bearings of market response.

Several examples of environmental agreements occur in Australia within the context of the Green IP System. Since Green IP involves multiple stakeholders and a variety of regulatory tools, the types of agreements discussed below can have wide applications. Also, it should be noted that for many of these agreements, the Green IP System is only one part of a much larger initiative towards environmentally sustainable outcomes. For others, Green IP provides the main vehicle for collaboration between researchers and industry, within the framework of IP management, to strive for the commercialization of environmentally sound technologies.

Benefits and challenges of environmental agreements

The potential for the green IP system extends beyond the realm of individual projects. Environmental agreements between governments, industry, and other stakeholders present another

7 *Supra* note 2.

8 Jager, N.W., Newig, J., Challies, E. and Kochskämper, E, *Pathways to implementation: Evidence on how participation in environmental governance impacts on environmental outcomes*. Journal of Public Administration Research and Theory, 30(3), pp.383-399 (2020).

9 Pal, A., Kakran, S., Kumar, A., Youssef, A.B., Singh, U.P. and Sidhu, A., *Powering squarely into the future: A strategic analysis of hydrogen energy in QUAD nations*, International Journal of Hydrogen Energy, 49, pp.16-41 (2024.)

pathway to promote the development and diffusion of environmentally sound technologies. These agreements are based on a collective decision to improve the quality of the environment and to provide a framework for achieving this goal. They can take various forms, ranging from policy statements to full-fledged contractual agreements, and may involve a mix of economic, regulatory, and voluntary approaches. Focusing on the voluntary end of the spectrum, there are numerous potential synergies between such agreements and the strategic use of IP. For instance, IP elements can feature in the agreement itself, for example about a moratorium on certain types of patents or the pooling of patents to create a common technology platform. In the broader context, environmental agreements can act as a pull-through mechanism for green technologies by creating an increased demand for innovations that help signatories meet their environmental targets. For firms looking to exploit their green technologies in the agreement's target market, this can represent an opportunity to gain a first-mover advantage and create a positive image concerning their environmental capabilities.[10]

THE AUSTRALIAN GREEN IP SYSTEM

Australia's Green IP system is an initiative to encourage resource and energy conservation and environmental sustainability in the development of new and existing technologies. The IP Australia and the Australian Department of the Environment and Water Resources together developed the system, taking into consideration the interests of both IP rights owners and the environment. This initiative puts Australia at the forefront of the sustainability movement and is an important step for Australia's stigmatized reputation as an environmentally unfriendly user and developer of new technology. The system is a positive step for Australia and has the potential to be a leading example for other developed countries. The Green IP system has been developed to account for a broad range of technologies and users, which may or may not have a direct or indirect impact on the environment.[11] This approach recognizes that not all inventors will have a positive impact on the environment, and therefore the system is designed to allow inventors to make an informed choice on how to best integrate the environment into their innovation process.

The Australian Green IP System (the System) integrates the IP and environmental policies of the Australian Government. It has been developed to ensure that innovation in environmental technology is harnessed to improve the environment and to promote further R&D in this field. The System is designed to provide a framework for the development of IP management strategies for environmentally beneficial technologies and to facilitate the exchange of best practices in green innovation between Australia and other nations.[12]

Green IP refers to the application of IP laws patents, trademarks, copyrights, and trade secrets—to technologies and products that have a positive environmental impact. It emphasizes the creation, protection, and dissemination of technologies that contribute to sustainability, including energy-efficient products, clean technologies, and environmentally friendly industrial practices.

At a more practical level, the System is designed to assist IP rights holders trying to determine the most suitable means of IP protection for a particular technology. Promoting the exchange of best practices in green innovation between Australia and other nations will assist rights holders in considering the global implications

10 Lin, Z., Liao, X. and Yang, Y., *China's experience in developing green finance to reduce carbon emissions: from spatial econometric model evidence*, Environmental Science and Pollution Research, 30(6), pp.15531-15547 (2023)

11 *Supra* note 2.

12 Cheng, W., *Intellectual property and international clean technology diffusion: pathways and prospects*, Asian Journal of International Law, 12(2), pp.370-402 (2022)

of IP protection of their green technology.[13] The relevant stakeholders and the general public will be informed and educated about the importance of IP strategies in the development and diffusion of green technology.

At the policy level, the System is designed to encourage the development of IP management strategies for technologies that are environmentally friendly in that they reduce the detrimental impact on the environment. By adopting such strategies, industries engaged in environmentally beneficial technologies will be able to secure a competitive advantage and attract foreign investment. Domestic and foreign IP investment in R&D of green technology will be promoted through incentive measures provided under the System.

Objectives and principles

The increased recognition of emerging environmental issues and the impact of industry and consumption have led to a direct link between the environment, innovation, and IP law. IP laws and policies can influence the development, diffusion, and transfer of cleaner technologies and the more sustainable use of resources, although not always in a positive way. An environmental agreement can be seen as a specific type of informal legislative act and can encompass a wide range of aims and methodologies. These may include 'soft-law' declarations, resolutions, and strategies, or more formal commitments to alter, introduce, or repeal existing legislation. While often in the shadow of Trade-Related Aspects of Intellectual Property Rights (TRIPS) and other more 'mainstream' IP agreements, it is possible for environmental agreements to directly influence the substance of IP law. The TRIPS Agreement is widely considered to be the most influential multilateral agreement on IP. Changes to domestic IP legislation and policy to comply with TRIPS have affected the way environmental policies and legislation are formulated.[14] While TRIPS does allow for certain flexibility to 'protect public health, nutrition, and the development of other sectors', in general, the agreement has been criticized for constraining the ability of nations to freely determine their domestic public health policies and to access technologies that are subject to patents. This may have negative implications for environmental protection and the promotion of sustainable technologies.

The concept of sustainability, as established by the Brundtland Commission's report in 1987, is the guiding principle behind both green IP and environmental agreements. These tools were developed to promote sustainable development, which seeks to meet the needs of the current generation without compromising the ability of future generations to fulfill their own needs. This ideology is rooted in the belief that environmental protection and economic growth can coexist through innovative and sustainable practices.

Key components of the system

Initially, the system had three core components aimed at encouraging companies to develop eco-friendly technologies and enable the transfer of such innovations to developing nations. Over time, a fourth component emerged, emphasizing the role of litigation and policy development in reinforcing green IP objectives. The first three components are the granting of IP management incentives, a facilitation mechanism, and a technology transfer component.

IP Management Incentives: Recognizing IP as a powerful tool for green technology development, Australia implemented incentives by providing additional IP rights for green technologies. This includes simplified patent and trademark processes and reduced fees for green technology patents. Short-term rewards, such as prizes for sustainable designs, offer alternatives to patent

13 Viglioni, M.T.D., Calegario, C.L.L., Viglioni, A.C.D. and Bruhn, N.C.P., *Foreign direct investment and environmental degradation: Can intellectual property rights help G20 countries achieve carbon neutrality?* Technology in Society, 77, p.102501 (2024)

14 Averchenkova, A., Fankhauser, S. and Finnegan, J.J., *The impact of strategic climate legislation: evidence from expert interviews on the UK Climate Change Act*, Climate Policy, 21(2), pp.251-263 (2021)

rights, motivating environmentally responsible innovation.

Facilitation and Technology Transfer: The system promotes technology transfer through reduced costs and access to extended IP rights. Initiatives like "Innovation Patents" and extended protection for green trademarks create incentives for companies to focus on sustainable solutions. Reduced examination fees further support inventors and firms to bring eco-friendly products to market at a faster pace.

Litigation and Policy Development: The fourth component highlights the role of legal frameworks and policy in supporting green IP. Policy reforms aim to balance IP rights with environmental goals, thus aligning innovation incentives with sustainable practices.[15]

INTEGRATION OF INTELLECTUAL PROPERTY REGULATIONS AND ENVIRONMENTAL AGREEMENTS

Australia has actively integrated its environmental goals within IP regulations, aligning with international environmental agreements like TRIPS (Trade-Related Aspects of Intellectual Property Rights). While TRIPS promotes innovation by protecting IP, environmental concerns highlight that unrestricted patents may lead to resource exploitation. Effective integration of IP and environmental regulations encourages green innovation by allowing technology-sharing frameworks, such as licensing agreements for eco-friendly solutions. The Agreement on TRIPS was established in 1995 and extensive reading of this agreement can be found in subsequent GATT panel reports which can be accessed at the website of the World Trade Organization (WTO). TRIPS is an agreement between all WTO members that lays down minimum standards of regulation to be used by the members. TRIPS tends to promote technological dissemination and emphasizes on increased innovative activity by conferring patents. This has caused concern for many environmentalists as it is believed that increased patents will lead to an increase in environmental degradation as there will be more protected and profitable exploitation of natural resources. This could further lead to an intellectual trade war to gain access to exploit and use other countries' biological diversity.

Relationship between IP and environmental agreements

Before we begin to look at the relationship between IP rights and environmental protection, it is important to understand what is meant by IP rights in terms of environmental laws. IP rights cover patents, trademarks, copyrights, trade secrets, etc. These rights are meant to protect the creations of the mind which can be reflected in various forms of innovation and creativity. All these creations, however, also have the potential to be harmful to the environment. This was evident during the Industrial Revolution where there was huge technological advancement, but also an increase in pollution of air, water, and soil. His Holiness the Dalai Lama, speaking at an Environmental Summit Conference in Montreal in 1990 said "Today more than ever before, life must be characterized by a sense of Universal Responsibility, not only nation to nation and human to human, but also human to other forms of life." [16] The meaning here is that mankind should take responsibility for its actions and their impact on the environment for all living things.

Green IP and environmental agreements are both terms that evolved around the same time. The Brundtland Commission's report in 1987 set forth the definition and mechanisms of sustainability and sustainable development. The paper states that sustainability is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

15 Xu, D., Abbas, S., Rafique, K. and Ali, N., *The race to net-zero emissions: can green technological innovation and environmental regulation be the potential pathway to net-zero emissions?,* Technology in Society, 75, p.102364 (2023)

16 Gaikwad, A., Dhokare, C.S. and CMA, A., *A Study of intellectual property rights and its significance for business*, Journal of Information and Computational Science, 10(2), pp.552-561 (2020)

Creating timeless thinking to expand the life and capability of resources, the goal of sustainability at first was expressed through means of international environmental law and trade law.

Sustainability was then to be achieved through sustainable development, "the development that meets the needs of present generations without compromising the ability of future generations to meet their own needs."[17] This was a reduction of the term into context for the World Commission on Environment and Development (1983-1987) meetings in Oslo and Geneva. The final transition would turn into clearer aspects of cooperation and mixture between developing and developed nations to bind further equality and time expansion of resources. At the United Nations Conference on Environment and Development, activity in Rio de Janeiro 1992, 27 universal principles and three conventions were set forth. This essentially provides the backdrop and reason for previous IP regulations and the introduction of change towards environmentally positive reactions in IP.[18]

The relationship between IP and environmental agreements lies in the intersection of innovation and environmental protection. Environmental agreements often incorporate IP strategies to foster the development and deployment of green technologies. For example, IP can be managed within the framework of an environmental agreement to encourage the sharing of technologies that reduce environmental impact, such as through patent pools or licensing arrangements. Additionally, environmental agreements can create market opportunities for firms developing green technologies, thus encouraging innovation in this field.

Synergies and Conflicts

The interaction between IP rights and environmental protection yields both synergies and conflicts:

Synergies: IP protection fosters innovation in green technologies by creating protected markets for eco-friendly inventions. This secure framework incentivizes R&D investments in sustainable technology, motivating businesses to innovate and disseminate green technologies. The TRIPS Agreement contains numerous instances of potential synergies between IP rights and environmental goals. For example, the promotion of access to new environmentally sound technologies is often best achieved through the creation of a protected market for the products of those technologies. This is precisely what IP rules are intended to do - by providing an exclusive right to the inventor or innovator to exploit his technology in the market, it allows the patentee to derive profit from his invention. This in turn provides an incentive to invest in R&D and to disseminate information about the technology, since these activities are prerequisites to obtaining value from the patent.[19] If the environmentally sound technology is the subject of a patented invention, then one would expect that an international agreement to phase out the use of said technology would provide a strong incentive for countries to ratify the matter in their domestic law and implement it effectively, to prevent circumvention of the international agreement through imitation of the technology.

Conflict: Environmental agreements may sometimes conflict with IP rules. For instance, trade secrets in green technology may conflict with agreements requiring transparency. Waivers or adjustments to IP protections may be needed to ensure that environmental objectives are not undermined. The TRIPS Agreement requires member countries to give a minimum standard

17 World Comm'n on Env't & Dev., Our Common Future 43 (1987)

18 Emelie, C., 2020. UNITED NATIONS CONFERENCE ON THE ENVIRONMENT AFTER THE RIO DEJANEIRO OF 1992: ITâ€™S IMPLICATIONS FOR ENVIRONMENTAL PROTECTION. *Chukwuemeka Odumegwu Ojukwu University Journal of Private And Public Law*, 2(1).

19 Jaelani, A. K., Handayani, I. G. A. K. R., & Karjoko, L, *Development of tourism based on geographic indication towards to welfare state*, International Journal of Advanced Science and Technology, 29(3s), 1227-1234, (2020)

of protection to undisclosed information that is secret, has commercial value because it is secret, and has been subject to reasonable steps to keep it secret. This is not inconsistent with environmental goals and may be supportive of them, given that pollution prevention and the development of environmentally sound technologies are both best achieved through internalization of the cost of environmental protection measures.[20] However, in a situation where an environmental agreement involves later disclosure of information that may be relevant to a patented technology or trade secret to set a standard or permit monitoring of compliance, there may be a conflict with the relevant IP right. An optional waiver of the agreement would involve the patentee or trade secret holder in the decision as to whether, given the loss of exclusive right in the IP concerned, to change to the invention in which the waiver would be relevant.

Case Studies of Successful Integration

Costa Rica's Biodiversity Project offers an example of successful IP-environment integration. Through biodiversity conservation initiatives, Costa Rica engaged in agreements with private firms to conserve ecosystems while enabling biodiversity prospecting. The project promotes both economic and environmental goals, illustrating how IP frameworks can support conservation efforts. The project, begun in 1992, involves a consortium of research institutions, environmental organizations, and the government of Costa Rica in a program to provide financial incentives for the conservation of biodiversity. The cornerstone of the project is a joint initiative in which Costa Rica has agreed to retain a substantial portion of its national park system as a genetic reserve to conserve the biodiversity of both plants and animals. Simultaneously, a research network has been formed to conduct biodiversity prospecting throughout the various ecosystems in search of species with commercially valuable genetic and biochemical properties. The consortium has sought to develop market-oriented mechanisms to achieve its dual goals of conservation and sustainable use of biological diversity. Among the steps taken that directly address the issue of IP are bioprospecting agreements between INBio and several private firms and a trust fund project conducted by the World Wildlife Fund-US which involves a debt for nature swap combined with biodiversity prospecting.[21]

However, there are challenges. The TRIPS Agreement, which sets international standards for IP rights, has been criticized for potentially impeding the dissemination of green technologies, particularly in developing countries. While TRIPS aims to protect and promote innovation through patents and other IP rights, these protections can limit access to crucial environmentally friendly technologies, especially when countries with fewer resources face difficulties in affording or acquiring these technologies.

To mitigate these challenges, mechanisms like IP management incentives and technology transfer programs under Australia's Green IP System provide models for how IP law can be leveraged to promote sustainability. By offering extended IP protection for green technologies, reducing filing fees for environmentally beneficial patents, and incentivizing research and development in this sector, the system aims to align economic and environmental interests. In conclusion, the integration of IP regulations with environmental agreements offers a powerful tool for driving sustainable development. By fostering collaboration between governments, industries, and innovators, these frameworks can facilitate the creation and deployment of green technologies while balancing economic growth with environmental protection.

20 Bronckers, M. and Gruni, G., *Retooling the sustainability standards in EU free trade agreements*, Journal of International Economic Law, 24(1), pp.25-51 (2021)

21 Montero, A., Marull, J., Tello, E., Cattaneo, C., Coll, F., Pons, M., & Vargas, M, *The impacts of agricultural and urban land-use changes on plant and bird biodiversity in Costa Rica (1986–2014)*, Regional Environmental Change, 21(2), 48. (2021)

IMPACTS AND OUTCOMES OF THE AUSTRALIAN GREEN IP SYSTEM

Australia's Green IP System promotes eco-friendly practices by offering stronger IP protection and reduced costs for green innovations. This approach is expected to drive cleaner technologies across various industries, benefiting both local and global environmental sustainability. In recent times, there has been a lot of pressure for industries to become more environmentally friendly and develop greener methods of production, particularly in response to climate change concerns. The Green IP system provides incentives for companies to develop new technologies and innovations with reduced environmental impacts. By offering extensions of patent terms and patent fee reductions, IP Australia is improving the economics of environmentally friendly innovations. This will reduce uncertainties of patent infringement and result in more cross-licensing and patent sales of green technologies.[22] With a clearer path for green technology, there are expectations of greater transfer and dissemination of green technologies both nationally and internationally. This is most beneficial for developing countries that may legally use patented green technology to improve their environmental state, which is something not previously considered under the TRIPS agreement.

The development of an environmental initiative that is government-driven has raised a great amount of interest and a certain degree of skepticism concerning its potential effectiveness. To measure the likely success of the Green IP system, we can look at both direct and indirect impacts and outcomes. Impacts and outcomes fall under three categories: environmental benefits (6.1), economic implications (6.2), and legal and regulatory framework (6.3), which shall be discussed in further detail in the following sections and conclude as to advantages and disadvantages that the new system is likely to bring. The expected outcomes of the system include:

Environmental Benefits

The primary goal of the Australian Green IP system is the reduction of environmental impacts. Increased R&D in green technology leads to innovations in waste reduction, pollution control, and resource efficiency. By embedding environmental goals into IP management, the system cultivates an eco-conscious mindset across industries. The benefits of this system range from the immediate positive contributions in reducing waste and pollution and minimizing resource-use to gaining momentum as companies begin to focus more on the development of environmentally sound technology. These further developments in green technology are incentivized as the IP system provides methods to protect and utilize these innovations. An environment-specific approach to decision-making will be encouraged across the board as IP management can assist firms in aligning their IP portfolios to their environmental goals. An overall increase in the awareness of the importance of environmental sustainability concerning technology is likely to be one of the greatest long-term benefits of the Green IP system. This is significant as changes in mentality arising from the prolonged implementation of Green IP could potentially facilitate environmentally conscious decisions in fields of innovation and technology that are outside the scope of the IP system.[23]

Economic Implications

The Green IP system was not established to improve the economic welfare of green technology rights holders directly, nor was it established to improve the allocation of resources to green innovation. While the primary goal is environmental, the economic impact of the system includes indirect benefits like resource-efficient technology transfer. By making green innovation more profitable, the system aligns economic incentives with environmental progress. Instead, it was established to ensure that the environmental

22 Vimalnath, P., Tietze, F., Jain, A., Gurtoo, A., Eppinger, E. and Elsen, M., *Intellectual property strategies for green innovations-An analysis of the European Inventor Awards*, Journal of Cleaner Production, 377, p.134325 (2022)

23 *Id.*

benefits of green innovation are realized.[24] This means that the economic implications of the Green IP system should be evident in the relative costs and benefits to society of mitigating environmental damage through technology transfer of cleaner production methods, as compared to using command and control regulation or paying damages for environmental harm. This will lead to a relative increase in the profitability of green innovation as compared to brown innovation, but whether it leads to an increase in the total level of innovation remains to be seen.

At this stage, it is difficult to determine the exact economic implications of the Green IP system in Australia. As noted in Section 3.3, there is currently very little data or studies available on green innovation, while the Green IP system is still evolving, and the impact of the system is yet to be discerned. Any economic analysis at this point must be speculative. However, based on our understanding of the operation of the IP system and economic theory, we can anticipate the likely direct and indirect economic implications of the Green IP system.

Legal and Regulatory Framework

It is generally accepted that IP regulations are necessary for the development and commercialization of new environmentally beneficial technologies. This is confirmed by commentators about the initial 1996 IP Australia report, which is widely recognized as the first call for the development of a green patent. It was identified that the primary problem preventing environmental technologies from reaching the market and providing an environmental benefit is the worldwide lack of clear IP protection, which reduces the incentive for private companies to invest in new technologies. As the new Section 49 of the Patents Act allows for the extension of term for a patent that has experienced regulatory delay, the general patent system continues to provide a strong incentive for the development of technology (Cayton, 2020). This is reaffirmed by the fact that the standard patent, which is the normal pathway to patent protection, is not substantially different from a patent on any other type of technology. The real incentive for the development of environmental technologies comes from the much higher potential for public good and philanthropy derived from preventing further damage to the environment or restoring what has been lost.

The Australian Green IP System serves as a model for fostering sustainable development by harmonizing IP law with environmental responsibility, providing a framework that could inspire similar approaches internationally.

CRITICISMS AND LIMITATIONS OF THE GREEN IP SYSTEM

The Green IP system has come under scrutiny from various stakeholders, the most prominent being criticisms from the industry. These criticisms include the belief that IP processes within the existing system fail to support the acquisition of high-quality IP relating to environmental innovation, the costs of utilizing the Green IP system are too high, and the possibility that using the Green IP system will not result in increased diffusion of environmental innovation (Mazzucato, 2024). There is a danger that if these criticisms are well founded, the Green IP system may fail to achieve its objectives and policymakers may need to turn to other instruments to regulate the market failure surrounding the environment. An in-depth understanding of these criticisms is important because it offers insight into the performance of the Green IP system relative to the Intellectual Property Protection (IPP) and Intellectual Property Rights (IPR) By understanding the failures of previous attempts to regulate market failures regarding environmental innovation and the reasons why using IP processes failed to support the acquisition of high-quality IP, the Green IP system may avoid these pitfalls and effectively regulate the current market failure.

24 Guo, R., Lv, S., Liao, T., Xi, F., Zhang, J., Zuo, X., & Zhang, Y, *Classifying green technologies for sustainable innovation and investment*, Resources, Conservation and Recycling, 153, 104580, (2020)

Criticisms from Stakeholders

Several businesses interviewed by IP Australia expressed concerns about the lack of policy-driven rationale in how the Australian Government should promote and assist environmentally beneficial innovation. Currently, these businesses feel that sustainability is merely an additional criterion for granting patents, rather than being part of a comprehensive strategy. The Green IP website provides limited information on how IP Australia might assist those aiming to innovate sustainably. Many stakeholders believe financial incentives are essential to motivate green innovation, citing the Canadian Government's support through special tax incentives and direct funding for environmental R&D as an effective example. Any adjustments to IP policies should be part of a coherent and coordinated innovation and industry policy, particularly to encourage sustainable practices among small and medium-sized enterprises (SMEs).

A 2006 Master's thesis surveyed managers in SMEs in industries with significant environmental impact, revealing mixed attitudes and practices concerning eco-innovation among Australian SMEs. The study found that financial constraints and the risks associated with developing new technologies were key obstacles to eco-innovation. Additionally, IP policies that add legal uncertainty or increase patenting costs may further discourage eco-innovation in traditional SMEs. Addressing these concerns in IP policy changes specifically aimed at sustainable technology development would be essential for the effective adoption and dissemination of environmentally beneficial technology.[25]

Challenges in Implementation

Implementing the Green IP system entails significant challenges, as it represents a major philosophical shift for certain industries particularly those traditionally considered polluting, such as resource extraction and manufacturing. These sectors do not usually associate IP protection with environmentally beneficial innovation. Further complicating matters, many technologies eligible for Green IP incentives are in early development stages, with unclear environmental benefits. This uncertainty might increase transaction costs for IP owners aiming to qualify, potentially discouraging some from applying for Green IP benefits.

Complex eligibility issues arise when a technology has both positive and negative environmental impacts or when a patent contains conventional and eco-friendly elements. Evaluating such patents requires clear and possibly expensive administrative guidance. Additionally, ascertaining the eligibility of software and biotechnology patents may prove particularly challenging. For some, the costs associated with determining eligibility, coupled with the delayed realization of environmental benefits, might reduce participation in the Green IP program. Eligibility disputes between IP owners and the government could also lead to litigation, potentially diverting public funds away from eco-innovation and towards legal fees.[26]

Potential Improvements

While the Green IP system is a promising initiative, ongoing research and adjustments are necessary to improve its quality and effectiveness. Stakeholders have suggested a variety of improvements, with a consensus on the need for specific legislation addressing environmental benefits. Such legislation would provide clarity on what constitutes environmentally friendly innovation and guide patents through the IP process with reduced legal uncertainty.

To further support green innovation, establishing an innovation review board with a dedicated focus on sustainable technologies has been proposed. Realigning the board's priorities would strengthen both political and economic

25 de Klerk, S., Scheepers, M. D. V., McIntyre, K., & Lawley, M., *Collective entrepreneurship and sustainable innovation: case Studies of regional Australian agribusinesses*, Journal of Small Business & Entrepreneurship, 1-25. (2023)

26 Denter, N. M., Seeger, F., & Moehrle, M. G., *How can Blockchain technology support patent management? A systematic literature review*, International Journal of Information Management, 68, 102506. (2023)

backing for green IP initiatives. Additionally, introducing financial support mechanisms, such as subsidies or tax reliefs, for businesses engaging in green innovation would further reduce barriers to entry and incentivize a broader adoption of environmentally sustainable practices.[27]

CONCLUSION

This paper examined the potential for a Green IP system in Australia, focusing on IP Australia's regulatory role and the challenges associated with implementing such a framework. Through an in-depth analysis of stakeholder feedback, global case studies, and comparative IP systems, the research identified key areas for improvement within Australia's current IP framework. The findings highlight the importance of financial incentives, dedicated review boards, and cross-sectoral collaboration in creating a sustainable Green IP system.

Ultimately, this paper underscores the need for a coherent approach that aligns IP and environmental policies to support eco-friendly innovation. By integrating financial incentives and SME-specific support, IP Australia can create a conducive environment for green innovation, balancing economic development with environmental preservation.

Summary of Findings

This project explored the feasibility of a Green IP system and its potential to enhance corporate environmental performance. The analysis highlighted how economic incentives and regulatory measures, particularly concerning patents, could support the adoption of environmentally sound technologies. SME-specific considerations were made, given the sector's significant role in green innovation. Comparisons with global agreements, such as the TRIPS agreement and the Paris Climate Accord, were drawn to identify best practices in supporting eco-innovation. The study also gathered perspectives from IP stakeholders in Australia to assess the practicality of the Green IP system.[28]

Recommendations for Future Research

Future studies should examine the potential for a Green IP system that effectively aligns Australia's IP and environmental policies with international agreements such as the Kyoto Protocol and the Asia-Pacific Economic Cooperation. Research could investigate how to make these policies more accessible to smaller firms and lower-income entrepreneurs, possibly through the development of a patent pool specifically dedicated to eco-friendly technologies. Moreover, exploring strategic adjustments to IP policies to mitigate adverse environmental impacts could provide a balanced approach to sustainable IP practices. Recognizing the growing importance of eco-conscious policies, it is vital for Australian businesses, particularly in high-impact sectors like construction, to proactively adopt green technologies to avoid future liabilities and ensure resilience amid evolving environmental regulations.[29]

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28 *Supra* note 21.

29 *Supra* note 17.

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