

Intellectual Property Rights as Ethical Response to Global Climate Change Crisis

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ABSTRACT: *Debate regarding the contribution of Intellectual Property (IP) rights to lessening climate change is intensifying. On one side, IP optimists emphasize their function in encouraging investment in Research, Development and Commercialization. However, alternative view, principally associated with developing countries, sees the monopoly rights embodied in IP as a barrier to technology adoption and international transfer and this has led to a dilemma in IP rights ethically responding to global climate change. The role of intellectual property rights with regards to climate change has remained a divisive issue. Not only has no agreement been reached in this area, but even the path to a constructive and meaningful discussion seems elusive. Unless the role of intellectual property is addressed in a constructive and balanced manner, the potential for achieving sustainable and realistic outcomes from the climate talks could be compromised. This article explored the complex relationship between IP rights and climate change through technology-based reductions in emissions and with reference to sustainable development laws. It also considers the role IP rights can play in delivering technological change to abate the issues of climate change crisis by arguing that climate change is legally disruptive, with existing legal doctrines and frameworks forced to confront, respond, and perhaps even evolve to respond to climate change, beyond the application and incremental development of existing rules and doctrines written in the context of linkages between private international law and public international law. It concludes by outlining some plausible strategies that are necessary in resolving the dilemma associated with IP rights ethically responding to global climate change.*

KEYWORDS: intellectual property rights, climate change, patent, technology, innovation.

INTRODUCTION

The fight against climate change is undoubtedly one of the most defining challenges we will face in the modern era. Going into the future, innovation and technology will continue to play a vital role in creating an effective and adequate response to climate change.¹

¹ <https://medium.com/llh477-innovation-and-ip-law/the-predicament-of-intellectual-property-rights-and-climate-change-2017-and-beyond-47de1627f1a6>

Technology is one of the ways of addressing, responding to and seeking to manage climate change. This can be seen in international instruments, national legislation and policy activity. Yet technology is often developed as a result of private sector innovation and creativity and it may be the subject of Intellectual Property (IP) rights. These rights confer the power to restrict use by others of the results of this innovation and creativity. As a result, technology which could assist in addressing climate change, for the benefit of all, could be under the control of a few.

The relationship between climate change and technology is a polycentric problem. There are rich debates regarding ethical and governance approaches to be taken by different actors at international, state, local and private levels and regarding the place of IP in encouraging innovation. In the context of significant wider political, scientific, social and legal discussion, this article addresses a legal problem through legal solutions. The approach taken is in some ways wide, in some narrow. It explores the spread of laws relating to the IP and climate change interface, with a focus on the relationship between them and the different public and private perspectives they raise.

Measures to mitigate climate change and measures to adapt to the impacts of climate change have implications for Intellectual Property Rights (IPRs) and vice versa. IPRs affect access to technologies to mitigate and adapt to climate change, particularly in developing countries. As a result, there is an important debate regarding the need to modify laws relating to IPRs in order to remove obstacles to international technology transfer.

The role of intellectual property rights (IPRs) in responding to global climate change has become highly contentious. Effective responses to global climate change require technological innovation, including innovation directed toward mitigating and adapting to climate change. Furthermore, many argue that IPRs specifically patents right is necessary for technological innovation. Michelle Lee, the Director of the United States Patent and Trademark Office (USPTO), writes: “a strong patent system is essential to fostering the innovation that drives our economy.”² In defense of this claim, patent proponents argue that technological innovation requires significant private investment in research and development and that firms will invest only if they are guaranteed the possibility of obtaining a return on their investments through strong patent protection. Thus, on this view, responding effectively to global climate change requires strong patent protection.

At the same time, many others, particularly representatives of developing countries argued that strong patent protection is an inherent obstacle to dealing with climate change in an effective and ethical manner. Technological innovation is important, but it is not sufficient. Combating climate

² <http://www.uspto.gov/about-us/news-updates/speaking-truth-patents-case-betterpatent-system>. Accessed 18th May 2022.

change effectively and ethically requires that Climate Change Technologies (CCTs) be disseminated widely and affordably. Strong patent protection, however, allows patent holders to charge monopoly prices for their technologies, which can put them out of reach to many, especially inhabitants of the Least Developed Countries (LCDs). On this view, strong patent protection is seen as an inherent barrier to technology transfer and affordable access.³

Implicit in this disagreement over the proper role of IPRs in dealing with climate change is a perceived dilemma which can be stated as follows:

1. Responding ethically to global climate change requires as technological innovation that is accessible to everyone.
2. Strong patent protection is necessary for technological innovation.
3. Ironically, strong patent protection makes it unlikely that patent protected technologies will be accessible to everyone, particularly those in developing countries.
4. Thus, it appears that responding ethically to global climate change is unlikely.

In some respects, the IP rights dilemma in responding to global climate change is similar to dilemmas that result from patenting in general. Patents can incentivize innovation, but the monopolies provided by patents make it difficult for the poor to access those innovations at prices that they can afford. The patent dilemma in medical research, particularly as it pertains to access to medicines in developing countries, is an example of this. But the patent dilemma in global climate change involves a moral challenge that is absent from other patent dilemmas, because the climate change to which developing countries are being forced to respond is caused in large part by human activity in developed, industrialized nations. It is a serious moral failing that developed nations have allowed millions in developing countries to die of diseases that could be cured by patented medicines. But it would be even more blameworthy to create technologies that could help developing countries respond to the climate impacts that we in the developed world have caused, and then to allow patents to inhibit access to those technologies.

As noted above, the IP right dilemma in responding to global climate change is important not only for theoretical reasons, but for practical reasons as well. For example, it has impeded actual climate change negotiations, such as in the United Nations Framework Convention on Climate Change (UNFCCC) conferences. Representatives of developed countries insist that strong patent protection is essential for the technological innovation is that required to combat climate change,

³ Latif, Ahmed Abdel, Keith Maskus, Ruth Okediji, Jerome Reichman, and Pedro Roffe, (2011). Overcoming the Impasse on Intellectual Property and Climate Change at the UNFCCC: A Way Forward.” International Centre for Trade and Sustainable Development, Policy Brief No. 11.

and representatives of developing countries insist that strong patent protection is an inherent obstacle to the just distribution of new technologies. Given this impasse, progress in climate negotiations has been impeded.

Despite the importance of the IP dilemma in responding to global climate change, little research has been done on this. In this paper, the writer presents the dilemma in detail and opine that the widespread perception of this dilemma is ethically significant and outline some strategies for resolving it.

CLIMATE CHANGE AND IT ASSOCIATED IMPACTS

Assessing the impact of climate change is, at best, an extremely complex exercise with uncertainty about both the degree of future global warming and the subsequent impact on global activity. There are clearly some benefits as well as costs as the planet warms. There is also the unknown of how technological progress will respond and potentially alter the path of global warming

The temperature of the global climate is rising. Once the subject of considerable debate, the fact of global warming, both natural and anthropogenic; human-induced, is now nearly universally accepted. Most states in the international community are members of the United Nations Framework Convention on Climate Change (UNFCCC), an international treaty aimed at the reduction of global warming. Members of the UNFCCC are thus aligned in their commitment to combat the change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.”⁴ Significant strides made in the direction of reaching international consensus on the problem of climate change are due in part to the availability of reliable scientific information on the causes and effects of global warming.⁵

In particular, the reports of the Intergovernmental Panel on Climate Change (IPCC) contain assessments and projections about climate change which are regarded as authoritative by the international community. The IPCC is an intergovernmental scientific organization established by the UN Environment Program and the World Meteorological Organization (WMO), that reviews and assesses available information on climate change in order to provide “rigorous and balanced scientific information to decision makers.”⁶

Addressing and working with climate change is a key issue for the 21st century. Debates abound about the extent to which climate change is a new issue brought about or enhanced by human

⁴ Ibid

⁵ Ibid

⁶ Ibid

activity or is part of the expanded cycle of nature.⁷ In any event, it is clear that climate change is having consequences for society.⁸ Notably, greenhouse gas emissions are having an impact on temperatures.⁹ This has led to the rising of sea levels with implications, for example; the Polar ice cap,¹⁰ low-lying islands in the Pacific,¹¹ and the west coast of Scotland.¹² There are also concerns about droughts,¹³ new diseases¹⁴ and detrimental impact on human health.¹⁵

THE NEXUS BETWEEN INTELLECTUAL PROPERTY RIGHTS AND CLIMATE CHANGE

The links between Intellectual Property Rights (IPRs) and responding to Climate Change have strong echoes of the technology. Patents can be relevant to development and dissemination of renewable energy;¹⁶ designs can be relevant to elements of delivery of the renewable energy and copyright and database can be relevant to data sets of changes in temperature¹⁷ and manuals and information sets.¹⁸ Patents¹⁹ and copyright can be obtained or exist in respect of software, which can be valuable for moving power around the grid. They confer an ability to control similar to that of IP rights.

⁷ Cinnamon P Carlane, Kevin R Gray and Richard G Tarasofsky (eds), (2016). *The Role of Science in Climate Law Change Making*. The Oxford Handbook of International Climate Change Law, Oxford University Press.

⁸ Intergovernmental Panel on Climate Change, 'Global Warming of 1.5° Celcius' (2018) <https://www.ipcc.ch/sr15/> accessed 20th May 2022.

⁹ David Hunter, (2016). *Climate Science and Policy Responses* (Hunter) in Joshua D Sarnoff (ed) *Research Handbook on Intellectual Property and Climate Change*, Edward Elgar Publishing, (Sarnoff) 16.

¹⁰ WWF, 'Arctic Climate Change'

http://wwf.panda.org/knowledge_hub/where_we_work/arctic/what_we_do/climate/ accessed 20th May 2022.

¹¹ WWF, 'Time is running out for low-lying islands in the South Pacific'

http://www.wwfpacific.org/what_we_do/climatechange/ accessed 20th May 2022. .

¹² Jim Hansom, F Maxwell, Larissa Naylor and M Piedra, (2017). *Impacts of sea-level rise and storm surges due to climate change in the Firth of Clyde* (Scottish Natural Heritage Commissioned Report 891..

¹³ Bruce Stokes, Richard Wike and Jill Carle, (2015). *Concern about climate change and its consequences*. <https://www.climateactproject.org/blog/facts-about-climate-change-and-drought> accessed 23rd May 2022. .

¹⁴ Jasenka Piljac Zegarac, (2017). *Climate Change: Effects on the Incidence and Distribution of Infectious Diseases* (Infectious Diseases Advisor, 14 December 2017) <https://www.infectiousdiseasadvisor.com/emerging-diseases/climate-change-and-infectious-disease/article/713190/> accessed 1st June 2022.

¹⁵ UNFCCC, 'Human health and adaptation: understanding climate impacts on health and opportunities for action. Synthesis paper by the Secretariat' FCCC/SBSTA/2017/2.

¹⁶ Eric Lane, (2013). *Legal Aspects of Green Patents* in Andree Kirchner and Iris Kirchner-Freis (eds) *Green Innovations and IPR Management* .3–65.

¹⁷ NASA, 'GISS Surface Temperature Analysis' <https://data.giss.nasa.gov/gistemp/> accessed 1st June 2022.

¹⁸ Michael Carroll, 'Intellectual Property and Related Rights in Climate Data' in Sarnoff n5, 384 398.

¹⁹ European Patent Convention (EPC) art 52(2)(c) and (3), and UK Patents Act 1977 (PA), s1(2)(c).

There has long been awareness at international level of possible tensions between IP and the addressing of environment-related questions.²⁰ From the Earth Summit, Agenda 21 calls for consideration of the role of patents and other IP rights, and their impact on access to and transfer of environmentally sound technologies regarding developing countries, while also calling for consideration of fair incentives to innovate. Agenda 21 does note that much useful technological knowledge is in the public domain and is not the subject of patents. Agenda 21 also calls for international technology to be combined with local innovations to generate alternative technologies to those covered by private rights.

The CBD stresses that when there is IP, access is to be provided on terms which are consistent with the adequate and effective protection of IP. Further, states are to cooperate to ensure that IP shall support and not run counter to the objectives of the CBD, and in particular that states' implementation of the Agreement on Trade-Related Aspects of Intellectual Property Rights ('TRIPS'), the IP provisions of the World Trade Organization (WTO). This last complex relationship²¹ is also reflected in the CBD's Nagoya Protocol on Access and Benefit Sharing of 2010. This has IP as one way of rewarding those who are involved in providing and protecting raw resources; but there are others, including paying fees for sample taking, research funding, admittance to datasets, and food and livelihood security benefits.²² Further, the Kyoto Protocol provides that states are to create an enabling environment for the private sector to promote and enhance the transfer of, and access to, environmentally sound technologies.²³

This engagement, particularly in the Kyoto Protocol, shows a recognition of a possible conflict between private rights and state goals, and between the private power conferred by IP rights and state responsibility under international agreements. The extent to which there exist a problem has been the subject of significant scholarly debate, including empirical work and policy analysis.²⁴ This was particularly so prior to the UNFCCC Copenhagen meeting in 2009, when states sought to create a post-Kyoto regime. There were arguments about the need for a UNFCCC declaration requiring sharing of IP rights in respect of environmentally sustainable technologies,²⁵ which

²⁰ Abbe Brown, (2018). Intellectual Property and Climate Change' in Justine Pila and Rochelle Cooper Dreyfuss (eds) Oxford Handbook of Intellectual Property Law (Oxford University Press).

²¹ Tania Bubela and Richard Gold (eds), (2012). Genetic Resources and Traditional Knowledge: Case Studies and Conflicting Interests, Edward Elgar Publishing.

²² Nagoya Protocol, Annex 'Monetary and Non -monetary Benefits.

²³ Kyoto Protocol, art 10(c).

²⁴ John H Barton, (2017). Intellectual Property and Access to Clean Energy Technologies in Developing Countries: An Analysis of Solar Photovoltaic, Biofuels and Wind Technologies.

²⁵ Kuei-Jung Ni, (2015). Legal Aspects (Barriers) of Granting Compulsory Licenses for Clean Technologies in Light of WTO/TRIPS Rules: Promise or Mirage? World Trade Review 701.

would have reflected developments at the WTO regarding IP and public health.²⁶ There is a view that such interventions are not warranted as the most effective means of addressing climate change through more technical approaches by reducing the use of coal and cement,²⁷ and that, as will be discussed, interfering with the power of IP owners could be counterproductive by discouraging the development of technology.²⁸ Ultimately, as noted, the Copenhagen meeting led to the Technology Mechanism and not to a declaration on IP and climate change.

Arguably, the Copenhagen approach seeks to address the substantive issue of bringing about technology transfer. It has been suggested that regard to IP may be merely a distraction²⁹ and notably IP was absent from the International Law Association 2014's Declaration of Legal Principles Relating to Climate Change. Argument has continued, however, at the UNFCCC and also at the WTO³⁰ regarding the need for greater intervention with the power of IP in relation to climate change crisis.

Notably, in a negotiating position adopted before the UNFCCC meeting leading to the Paris Agreement, IP was seen as key in developing technologies.³¹ Yet a change was seen in 2018 prior to the UNFCCC meeting in Katowice. The EU called for a declaration on IP and climate change to assist in climate action in developing countries, similar to that made at the WTO/TRIPS in respect of public health.³² Further, when India ratified the Paris Agreement in 2016, it was based on the fact that there would be support from developed countries regarding technology.³³ This 2016 UNFCCC meeting led to the Marrakech Action Proclamation for climate and sustainable development. This called in turn for an increase in improved capacity and technology, including

²⁶ Duncan Matthews, (2011). Intellectual Property, Human Rights and Development: The Role of NGOs and Social Movements (Edward Elgar Publishing).

²⁷ Keith Culver, 'Low Carbon Futures for All? Strategic Options for Global Availability of Environmental Technologies in Brown n78.

²⁸ Jon P Santamauro, 'Failure Is Not an Option: Enhancing the Use of Intellectual Property Tools to Secure Wider and More Equitable Access to Climate Change Technologies' in Brown n78.

²⁹ Navraj Singh Ghaleigh, 'The Puzzling Persistence of the Intellectual Property Right/Climate Change Relationship' in Brown n78.

³⁰ WTO, 'Climate change and TRIPS' https://www.wto.org/english/tratop_e/trips_e/cchange_e.htm accessed 2nd June 2022.

³¹ Communication from the Commission, 'The Paris Protocol – A Blueprint for tackling global climate change beyond 2020' COM (2015) 81 final see in particular sections 4 and 7.

³² European Parliament Resolution 2018/2598(RSP) para 69 referring to the Declaration on the TRIPS agreement and public health (2001) WT/MIN (01)/ DEC/2; and see n117.

³³ Government of India, 'India will Protect the Interests and Strongly Present the Viewpoint of Developing Countries at Cop22 in Morocco': Environment Minister (1 October 2016)

from developed to developing countries but it did not refer to IP.³⁴ Finally, in 2017 South Africa's position regarding implementation of the Paris Agreement included that climate technologies need to flow, without hiding behind the issue of Intellectual Property Rights.

THE IMPACT OF THE RELATIONSHIP BETWEEN INTELLECTUAL PROPERTY RIGHTS AND CLIMATE CHANGE

The interlinked legal landscape set out between IP and technology-based responses to climate change has been seen to be wide and evolving. The discussion has noted the potential for a collision between the rights which could be conferred on the IP owner under TRIPS, the obligation of a state to bring about technology transfer under the Paris Agreement, and state responsibilities regarding the rights to share in the benefits of scientific progress and decisions in relation to the Sustainable Development Goals (SDGs). Sometimes this potential is acknowledged, as seen in the Special Rapporteur's challenge to IP. Sometimes it is not, as can be seen from the lack of direct engagement with IP in the climate change framework and in the lack of acknowledgement of problems with IP in the international energy charter.

It can be suggested that this legal position does not matter. There have been valuable steps taken under the umbrella of the climate change agreements and their associated organizations.³⁵ In particular, there has been activity under the Technology Mechanism, providing access to expertise, information and technical assistance, fostering collaboration across country, business and public sector organizations, and providing technology needs assessments. This sees patenting levels and trends as key performance indicators. And again, in a reminder that responses to climate change can go much wider than the technology and human-based activities discussed so far. Yet even with these developments, it does not seem wise to ignore the potential for legal conflict and also for synergy between IP and climate change obligations. The choices made by states in respect of IP rights can be an important part of their decision making. States could create IP laws which enabled wider use of technologies to respond to climate change. Indeed, some countries have introduced compulsory licensing of IP rights for environmental protection. A state could be bold and do more. It could provide that it is not an infringement of IP if the activity will have a significant positive impact on addressing climate change. One could argue that this could be consistent with the flexibilities set out in TRIPS.

³⁴Marrakech Action Proclamation for climate and sustainable development
https://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/marrakech_action_proclamation.pdf
accessed 24th May 2022.

³⁵ Daniel Bodansky, Jutta Brunee and Lavanya Rajamani, (2017). Climate Change and International Law.

International law scholarship provides further contributions. There is an ongoing body of work at international level regarding fragmentation and interaction,³⁶ including the deliberations of the International Law Commission. One theme is regime shifting, the movement of issues from one international forum to another and possible consequences of this, including through different priorities and forms of enforcement. This could cover obligations on climate change and technology transfer being in the UNFCCC rather than TRIPS, or whether it is appropriate for human rights to be included in the Paris Agreement. Further, it has been argued that there should be a meta-rule of integration of IP with other fields of law, which is able to accommodate different relationships and linkages within the pluralism of legal orders.³⁷ Legal pluralism is ‘usually taken to imply more than just a plurality of laws; it can include situations in which two or more legal systems coexist in the same societal field, sometimes in a contradictory way, in which each may have equally plausible claims to authority’.³⁸ A frequent example is the interrelationship between indigenous and colonial law.

These issues at international level are important in themselves. Yet it is through activity at national level where the international obligations discussed will be met or not and where the goals will be delivered or not. Accordingly, it is at national level that the intersection between different fields is really key. The intersections, and its limits, between IP and climate change, and the relevance to human rights and sustainable development, suggests that there is a place for a pluralist approach to be explored here. This could lead to pluralism’s ‘propensity toward equal recognition of different and diverse constituencies and their corresponding legal regimes and a general willingness to recognize and embrace the emergence of such new constituencies and regimes’.

The exploration of intersections at international level just seen is not, however, mirrored at national level. This article argued that there are few effective means by which different legal fields can intersect in practice at national level. Accordingly, national laws of IP, of climate change can remain in parallel in terms of legislation and policy action. This could lead in turn to the international goals and obligations not being achieved and to the international activity discussed so far being negated at a practical level.

³⁶ Margaret A Young, (2011). Climate Change Law and Regime Interaction. 2 Climate Change Law Review 147.

³⁷ Henning Grosse Ruse-Khan, (2016). The Protection of Intellectual Property in International Law Oxford University Press.

³⁸ Sionaidh Douglas-Scott, (2013). Law After Modernity. Hart, 385.

INTELLECTUAL PROPERTY RIGHTS PROTECTION IN RESPONDING TO CLIMATE CHANGE

Responding to global climate change requires technological innovation. It is true that many important steps can be taken with existing technologies, but these will not be sufficient. Most obviously, successful climate mitigation requires more efficient clean energy technologies, such as solar and wind. Perhaps less obviously, successful climate adaptation strategies will also require technological innovation. For example, climate change is likely to exacerbate the spread of diseases such as malaria, dengue, tick-borne encephalitis, and Lyme disease in areas that are already afflicted. As a result, adapting to climate change will require access to patent-protected medicines. Additionally, the effects of climate change include increased droughts and floods; many have argued that we should increase funding for agricultural innovations such as crops that are genetically modified to tolerate such impacts. While there is debate about which particular technologies should be pursued, there is little doubt that a successful response to global climate change will involve technological innovation of some sort, including both mitigation and adaptation technologies.

In today's market economies, one of the primary mechanisms for incentivizing technological innovation is the patent. A patent provides the legal right to exclude others from making, using, and selling an invention in the country in which the patent is held; this right is given in exchange for the inventor filing a patent application that is sufficient to show others who are skilled in the art on how to make and use the invention³⁹. While philosophers have provided a number of potential justifications for IPRs generally including labor-based and personality-based defenses, the most plausible justification for patenting is incentive based. Patents are thought to incentivize Research and Development (R&D) that would otherwise not get done, or not get done as quickly, and to facilitate the transfer of research into the marketplace, which ultimately benefits society. This justification, which is associated with the utilitarian tradition in moral philosophy, has both an epistemic and an ethical component; patents are supposed to incentivize R&D that ultimately benefits society. The justification is widely accepted in the arena of science and technology policy.

In climate change negotiations, representatives of developed nations are steadfast in their view that technological innovation will only happen with strong IP protection. This view, according to many policy analysts, is a persistent source of controversy among parties to the United Nations Framework Convention on Climate Change (UNFCCC), as representatives of developing nations are equally steadfast in their view that IPRs are hindering the transfer of Climate Change

³⁹ The so-called "quid pro quo" of the patent monopoly.

Technologies (CCTs) from North to South⁴⁰. The view that strong patent protection is essential to innovation has led developed nations to prioritize the patenting of CCTs.

STRATEGIES FOR RESOLVING THE INTELLECTUAL PROPERTY RIGHTS DILEMMA IN RESPONDING TO CLIMATE CHANGE

Effective strategies for resolving the patent dilemma will be directed at laws, policies, and institutions, rather than at individuals. This is not to say that individuals are powerless to help; they can lobby universities, firms, and governments to institute appropriate policies.

Strategies for resolving the IPRs dilemma can be divided into three categories: those within the current system of IPRs, those that involve revisions to the current system, and those that require the elimination of IPRs altogether. This paper does not claim to provide an exhaustive list of possible strategies but merely to discuss some of the most obvious ones below;

Push Mechanisms and Legislative Reform

The IP system is not only inducement to R&D, most industrialized countries rely heavily upon national government to fund research, often through a system of competitive grants to university researchers. There are also many non-profit foundations that fund research, typically through a similar system. In many cases, governments and foundations will target R&D that is deemed to be in the national interest and then partner with corporations to develop these technologies. These kinds of inducements are sometimes called ‘push mechanisms,’ because they provide funding for R&D up front and expect that useful technologies will result.

One might think that push mechanisms, especially the system of public funding of university research through competitive grants would represent a way of sidestepping the IPR dilemma. To think this, however, would be to assume that the results of publicly funded research remain in the public domain. In the USA and many other countries, the results of publicly funded research can be or are often patented.

This suggests an obvious strategy repeal the Bayh-Dole Act⁴¹ and other acts that encourage the private appropriation of publicly funded research. While the writer is sympathetic to this

⁴⁰ Latif, Ahmed Abdel, Keith Maskus, Ruth Okediji, Jerome Reichman, and Pedro Roffe, (2011). Overcoming the Impasse on Intellectual Property and Climate Change at the UNFCCC: A Way Forward.” International Centre for Trade and Sustainable Development, Policy Brief No. 11. http://scholarship.law.duke.edu/faculty_scholarship/2480. accessed 1st June 2022.

⁴¹ <https://www.bing.com/search?q=Bayh-Dole+Act&cvid=383ae61411634099868c7a2fd1256743&aqs=edge..69i57j69i59i450l8...8.1469448j0j4&pqlt=299&FORM=ANNTA1&PC=U531> Accessed 3rd June 2022.

suggestion, a number of caveats must be made. The first is that repealing these acts would be politically challenging; they have strong support from industry, and there is currently no serious movement to repeal them. The second, and more substantial, caveat is that simply because universities or governments in developed countries undertake research that is related to CCTs does not mean that corporations would not draw upon this research in order to develop IP technologies. In other words, while repealing acts like Bayh-Dole might represent a good start, ensuring that technologies are developed that are not IP protected would require much more than this. It would require, for example, governments or some other entities to be committed not just to research, but also to the development of technologies that are not IP protected.

Parallel Pull Mechanisms

The first strategy attempts to resolve the IPR dilemma by relying upon push mechanisms to induce the development of CCTs that are not IP protected, and it requires legislative reform as well as other changes in order to succeed. The second strategy involves the establishment of ‘parallel pull mechanisms.’ Pull mechanisms are ways of incentivizing R&D that meets specified criteria of success by rewarding the innovator in some way. A patent is one example of a pull mechanism; others are technology inducement prizes, many of which offer direct financial awards in addition to the possibility of patenting. Many argue that pull mechanisms are more efficient than push mechanisms, because they do not pay for failed or merely mundane projects and because they encourage researchers to work quickly and efficiently. By ‘parallel pull mechanisms,’ the writer mean pull mechanisms that are parallel to the patent system, such that accepting the reward for an innovation precludes one from patenting it.

Historically, technology inducement prizes have played an important role in incentivizing R&D. Perhaps the most famous example is the offer of prizes by the British government in 1714 for the invention of a device that could accurately measure longitude. A prominent recent example is the Ansari-X Prize, which was instituted to encourage innovation leading to commercial space flight. In the area of climate change, the billionaire Richard Branson has offered a prize of \$25 million for an environmentally sustainable and economically viable way to remove greenhouse gases from the environment.⁴²

As suggested above, however, technology inducement prizes do not necessarily resolve the IP dilemma. Many technology inducement prizes do not preclude the possibility of patenting, and many proponents argue that they should not. Adler, for example, argues that given the urgency

⁴² <https://www.virgin.com/about-virgin/virgin-group/news/virgin-earth-challenge> accessed 3rd June 2022

posed by global climate change, incentives in addition to patents are needed.⁴³ In outlining his proposal, he cites approvingly a U.S. National Academy of Sciences study that recommends that, if federal agencies such as the National Science Foundation (NSF) offer technology inducement prizes, then the federal government should “not seek to own or control the disposition of intellectual property developed by contestants in the course of seeking NSF innovation inducement prizes”; rather, the contestants themselves should be able to control the result.⁴⁴ Furthermore, most technology inducement prizes offer no incentive to disseminate technologies in a just manner; the prize is awarded for development, not dissemination, and it is simply assumed that market forces will result in an adequate distribution of the technology.

One way in which technology inducement prizes could represent a solution to the IPR dilemma would be to make acceptance of awards contingent upon the relinquishment of IPRs. To my knowledge, there has been no proposal for a parallel pull mechanism for CCTs. A similar parallel pull mechanism that is tailored to the problem of global climate change could represent a solution to the IPR dilemma.

Compulsory Licensing

A third strategy, which has been discussed in detail in the context of the medicine, is compulsory licensing. The TRIPS Agreement specifies limited circumstances under which patented technologies may be used without the authorization of the patent holder. One of these is when a patent holder ‘refuses to deal.’ In other words, a technology may be used without authorization when “the proposed user has made efforts to obtain authorization from the right holder on reasonable commercial terms and conditions” and when those efforts “have not been successful within a reasonable period of time. The Agreement continues by stating that this requirement may be waived “in the case of a national emergency or other circumstances of extreme urgency or in cases of public non-commercial use.” In all such cases, the right holder “shall be paid adequate remuneration in the circumstances of each case, taking into account the economic value of the authorization.

Many have argued that epidemics of disease such as HIV/AIDS represent circumstances of extreme urgency and hence allow for developing countries to produce medicines without permission from patent holders. One could similarly argue that global climate change in developing countries represents a national emergency that justifies compulsory licensing of CCTs. At the same time, there are at least two reasons why this strategy is unlikely to serve as a general

⁴³ Adler, Jonathan H. (2011). “Eyes on a Climate Prize: Rewarding Energy Innovation to Achieve Climate Stabilization.” *Harvard Environmental Law Review* 35: 1-46.

⁴⁴ Ibid

solution to the problem of affordable access. The first is that compulsory licensing requires a developed industrial base. The licensing of CCTs to firms or public research centers in developing countries can only be beneficial if the firms or public research centers have the intellectual and technical capacities to produce the technologies. Some developing countries have such capabilities, but many LDCs do not. Countries that lack such capabilities are unlikely to benefit from compulsory licensing. The second problem is that developed countries are strongly opposed to compulsory licensing and will apply political and economic pressure to countries that take advantage of it.

Patent Pooling and Other Voluntary Agreements

A fourth strategy is to encourage patent pooling and voluntary agreements, both among patent holders and between patent holders and licensees. Patent pools are agreements between patent holders to share IP and to make it available to others under certain conditions. Proponents of this strategy argue that it could simplify the process of finding CCTs; facilitate upstream research by promoting the sharing of results; reduce the costs and complexity of negotiating license agreement and promote the dissemination of CCTs.

One example of a patent pool that is potentially relevant to the IPR dilemma in global climate change is the agreement between UNITAID, the Medicines Patent Pool (MPP), and Gilead Sciences to increase affordable access to HIV/AIDS medications in developing countries.⁴⁵ UNITAID is an international purchasing facility that aims to increase access to treatments and diagnostics for HIV/AIDS, malaria, and tuberculosis in low-income countries.⁴⁶ MPP is a Swiss foundation, funded by UNITAID, that negotiates licenses with patent holders in order to expand access. Thus far, MPP has negotiated royalty-free licenses with the U.S. National Institutes of Health (NIH) for all NIH-owned patents on darunavir and it has negotiated licenses with Gilead Sciences, one of the world's largest pharmaceutical companies, that allow for the generic production of tenofovir (TDF), emtricitabine (FTC), elvitegravir (EVG), cobicistat (COBI), and a four-drug, fixed dose cocktail of these drugs known as "the quad".⁴⁷ The agreement allows suppliers in India to produce generic versions of these drugs and to sell them in specified low-income countries; Gilead receives three to five percent of royalties from the sales, and it waives

⁴⁵ Cox, Krista (2012). "The Medicines Patent Pool: Promoting Access and Innovation for Life-Saving Medicines Through Voluntary Licenses." *Hastings Science and Technology Law Journal* 4: 293-326.

⁴⁶ <https://unitaid.org/about-us/#en> Accessed 3rd June 2022.

⁴⁷ *Ibid* @52

royalties on pediatric formulations of the products. While some have argued that the agreement is insufficient, it is at least a step in the right direction.

Patent pools and voluntary agreements have the potential to resolve the IP dilemma in global climate change, but at the same time, they are very difficult to enact. Absent strong political and economic pressure, there is little reason for firms to enter into such agreements. The MPP-Gilead agreement, for example, was not signed until 2011, after roughly two decades of intense criticism of the pharmaceutical industry and lobbying efforts by AIDS activists. Even after this criticism and lobbying, Gilead is the only company to sign an agreement with MPP. Moreover, the agreement includes only medicines for HIV/AIDS; medicines for other diseases, for example, tropical diseases have not been included in such voluntary agreements, largely because the activist organizations that target these diseases do not have the power that AIDS activists have. Climate change, of course, is a socially and politically important issue, and the environmental movement that seeks to respond to climate change is growing in strength. But it will take strong and sustained effort to induce patent holders of CCTs to license their technologies affordably in the developing world.

CONCLUSION

The problem of global climate change is time sensitive. Solutions that might be best in an ideal world; the dismantling of the global regime of IPRs are not necessarily adequate for problems that require immediate action. Of course, one cannot know with absolute certainty which strategies will be feasible in the near term; it is possible, for example, that some unforeseen event in the next few years will lead the eradication of IPRs altogether. But though we cannot know the future with certainty, we can hypothesize more or less reasonably about what is likely and what is not. Given our current state of knowledge, we have good reasons to believe that we can begin to implement the strategy in the near term; we should be politically and economically realistic to at least begin to implement a strategy.

The focus on the international transfer of clean technologies to developing nations in order to address climate change has not worked well during the past two decades. Climate change and technological change are converging to make current intellectual property laws, and current debates regarding IPRs and access to technology obsolete.⁴⁸

The role of current international agreements on IPRs in spurring technological innovation is now in question, for two principal reasons.⁴⁹ First, the necessity of IPRs to stimulate investment in

⁴⁸ Bradley J. Condon and Tapen Sinha, (2011). Climate Change and Intellectual Property Rights for Varieties.

⁴⁹ Ibid

innovation has come into question in the economic literature. In this regard, it is doubtful that IPRs are as important for innovation as many suggest. Indeed, faulty IPR regimes may stifle innovation by limiting competition. Even if one accepts that IPRs are necessary to create economic incentives for innovation, those incentives depend on purchasing power that does not exist in many developing country markets.

Second, technological advances are altering the effect of IPRs in practice, particularly in the field of biotechnology. Technological advances in biotechnology are eroding the ability of IPRs to create barriers to entry and barriers to access in two ways. First, technological advances in developing countries heighten the potential effectiveness of compulsory licensing as a policy option under TRIPS and the UPOV Convention, by increasing their scientific capacity to reverse engineer new plant varieties. The Convention on Biological Diversity are difficult to enforce in practice to restrict access to genetic resources in developing countries, but could prove useful as an additional basis for denying patentability of certain biotechnologies or justifying recourse to compulsory licensing. Second, technological advances, notably the speed with which genetically modified plant varieties can be reverse engineered, shorten the de facto term of protection of right holders with respect to the breeder's exemption in the UPOV Convention. As a result, public investments in scientific and technological capacity in developing countries provide an important means to increase access to biotechnology. Therefore, developing countries should resist proposals to extend the monopoly of breeders by introducing a phased in delay of the breeder's exemption.

Several developing countries currently invest significant sums in subsidies for fossil fuels. They would be wise to redirecting these funds to develop scientific and technological capacity in innovations in biotechnology and other climate change mitigation and adaptation technologies. However, such strategies run the risk of violating WTO obligations in the Agreement on Subsidies and Countervailing Measures. Therefore, developing countries should seek to design such programs to comply with this agreement and also push for the reintroduction of environmental exceptions in the same agreement.

On the basis of above discussion, the strategies outlined are evaluated according to these two criteria: near-term feasibility and non-paternalism.

By near-term feasibility, it means that the strategies should be politically and economically realistic to at least begin to implement the strategy in the near term. This criterion is crucial, because the problem of global climate change is time sensitive. Solutions that might be best in an ideal world such as the dismantling of the global regime of IPRs are not necessarily adequate for problems that require immediate action. Of course, one cannot know with absolute certainty which strategies will be feasible in the near term; it

is possible, for example, that some unforeseen event in the next few years will lead the eradication of IPRs altogether. Even though we cannot know the future with certainty, we can hypothesize more or less reasonably about what is likely and what is not. The first criterion demands that, given our current state of knowledge, we have good reasons to believe that we can begin to implement the strategy in the near term.

This second criterion, non-paternalism, should be understood in two reasons; ethical and prudential reasons. Ethically, paternalistic solutions violate the principle of respect for autonomy. For example, many discussions of technology transfer assume that developing countries should want whatever new technologies the developed world produces; they thereby treat citizens of developing nations as passive recipients of technologies from the global north. To this extent, paternalistic strategies are ethically problematic. Furthermore, paternalistic solutions are unlikely to be successful. In order to respond to climate change, many developing countries need to evolve technologically in particular, by reducing greenhouse gas emissions and/or deforestation. But they will not adopt these changes simply because developed countries want them to. Treating them as equal partners in responding to a global threat is a better option, not only ethically, but also prudentially.

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