Journal of Intellectual Property Rights
Vol 23, January 2018, pp 22-26

Climate Change and the Patent Regime: Are Patents the Answer?

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Received: 5 March 2018, *accepted*: 3 May 2018

Next to nuclear annihilation, climate change poses the greatest threat to life as we know it. Climate refugees are becoming a reality and it is expected that by 2050 most of the Pacific Islands will be under water. Forward-thinking nations have made it their agenda to curb the effects of climate change and ensure the reduction in emissions of greenhouse gases.[1] To effectively combat climate change, the deployment of clean energy technologies to combat the effect of carbon emissions from fossil fuelshas been the tool of choice.[2] Accelerated development and deployment of these clean energy technologies is imperative. The public and private sectors must boost the creation and distribution of clean as well as environmentally sound technologies – something along the magnitude and scale of the space race during the cold war. Addressing the threats posed by climate change requires a portfolio of processes such as extensive introduction of new technologies and modification of existing technologies while also creating optimum environments. The role of intellectual property[3] pertaining to clean energy technologies becomes of utmost importance. The patent regime, by its very nature, can either be seen as a hindrance or an incentive for the development of new technology.[4] This means that an argument can be raised that patents would hinder climate change mitigations as clean technology is patented and licensing it would prove costly. On the other hand, patents will incentivize innovation and therefore lead to advanced technologies to combat climate change.[4] The paper, refutes the former and argues that patents are essential and rebut the presumption that patents will increase prices. The paper explains, with examples, how the holy trinity of patent pools, patent databases and compulsory licensing will help make the clean energy technology competitive and accessible. The future and the applicability of fair, reasonable and non-discriminatory (FRAND) licensing to standardised clean energy technology are also discussed. The paper is concluded with an affirmation that patents are the answer to climate change.

Keywords: TRIPS Agreement, World Intellectual Property Organization, RE100, FRAND licensing, greenhouse gases, clean energy technologies, climate mitigation, intellectual property rights, pharmaceutical industry, patent pool, patent databases, compulsory licensing

Why the Former is a Rebuttable Presumption

In addition to the aforementioned, the structures and systems created by IPR laws also have the potential to combine efforts towards the goal of climate mitigation. Opponents of IPR have often argued that patents are inherently restrictive and create problems in the scaling up of clean technology. Reference is made to the costs associated with acquiring a patented technology, on the lines that such costs make it unfeasible to acquire technologies and lead to loss of potential for greater implementation of clean technology.[5] While such arguments seem sound intuitively, they come from an incomplete understanding of IPR and its working. An IPR regime does not create barriers for transfer of technology. In fact, by providing legal clarity, it does the exact opposite – it facilitates the transfer of technology on universally recognised terms and conditions.[6] More importantly, IPR then takes the form of a legal dialogue that allows law-making bodies to retain control over a market of huge significance in the battle against climate change. In the absence of IPR laws, the government would have little or no legal influence over the players in the clean energy market.[7] But by subjecting energy companies and innovators to IPR laws, the government ensures that private interests do not outweigh public interests.[8] For instance, to ensure maximum utility is derived from an innovation, the norms of patent databases, patent-pools and compulsory licensing can be used.[5] These norms have proved highly valuable in the pharmaceutical and technology industries.

It is pertinent to draw inferences from the pharma industry as it is an industry characterized by a never-ending need for innovation. The creation and marketing of new drugs allows companies to build their personal identities and brand. But the R&D involved often amounts to incurring extremely large

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sums which pose great risk to the companies.[9] This makes pharmaceutical companies highly competitive, and unwilling to share any new drug formulae developed. This puts the interests of the larger community on a back-foot, and the economic interests of the organization take precedence. Clean technology may offer similar risks. In the absence of IPR regulation, the pharmaceutical industry would continue to be competitive and exclusionary. Patent pools and compulsory licensing are norms of the IPR regime that nullify the clash between private interests and public interests. They allow for models of regulation which balance the companies' economic interests with the larger benefit the public.

The Holy Trinity

Patent Databases

Effectively, patent databases function as a quasi-technology transfer that allow ease of access to climate technology.[10] Such a database would provide exhaustive details about climate change technologies. Data is gathered from various jurisdictions by governments that arrange and publish the same. Private parties can search for this information for free. A prime example of a public database would be the European Union's patent *Espace* database that enables users to search and learn about climate change technology patents.[11] It provides the user with a fool proof text. Another example would be *PatentScope*,[12] an initiative of the World Intellectual Property Rights Organisation (WIPO) that accumulates patent data from developed as well as developing countries. It has stated that patent information offers a plethora of benefits, claiming it be a 'goldmine' of technology guidance to developing countries, since material extracted from the data could be used and commercialised.[12]

Essentially, patent claims enable a person skilled in the art to reproduce the invention. It is useful to research patents on clean energy technologies to find out whether such patents are protected in a developing country and also whether there are any openings that would facilitate permeations so that any enterprise from such country could operate with immunity. A patent information approach is like saying a third party benefits from someone else's work. Accumulation of patents on various databases comes to the direct benefit of developing countries, since patent laws incentivise foreign direct investment and economic enlistment of a country.

Patent Pools

A patent pool is a cross-institutional licensing agreement. It combines the patented knowledge of different companies into a 'pool', and makes it collectively available on license to willing purchasers. In essence, it combines the economic and R&D resources of different companies, and creates channels for easier dissemination of this knowledge. This also ensures that risk is mitigated across the board, and new medicines are made available from various sources. The Medicines Patent Pool, funded by the UNITAID is one such patent pool organization which deals with HIV, tuberculosis and hepatitis C medicines. It has obtained patented knowledge from as many as eight companies, and licensed it to companies creating generic drugs in developing countries. This has the additional benefit of cutting costs for the consumers, as they do not have to pay for the brand.

A patent pool allows the mitigation of risk across companies and the creation of a collective body of shared knowledge whereby further innovation may be sparked. The possibility of easy licensing of this body of knowledge also creates good prospects for new-entrants in the market. These tools will help incentivise innovations and at the same time ensure that technology is not out of reach for developing nations.

Compulsory Licensing

Compulsory licensing is another such practice that addresses the conflict between public and private interests. Born out of the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement of 1995, a compulsory license is an exception to the general rule of patents – that the patent holder has the exclusive rights to enjoy the patented item.[13] Under compulsory licensing, as per the terms of the enabling law, the government may authorize the licensing of patented information to someone else, without the patent-holder's consent.[13] This is done against the payment of a fee to the patent-holder, which may be pre-determined by the government, or left open to negotiation.[14]

Practical Application

The compulsory licensing debate with respect to granting of pharmaceutical patents has been a point of contention for a significant period of time.[15] On 9 March 2012 India's first compulsory license was issued to *Natco Pharma* by the Indian Patent Office

for producing a generic version of a patented drug – *Nexavar,* manufactured by Bayer Corporation.[16] This drug treats kidney and liver cancer.[17] The grounds for which the Controller decided against Bayer were that the reasonable requirements of the public were not being satisfied, patented product wasn't available to the public at a reasonable and fair price and the patented invention wasn't developed in India. The patent holders position was considered to be irrelevant while granting compulsory licenses, and the sole determining factor for accepting a compulsory license application would be the affordability of the patented product for the public.[17] Pharmaceutical companies therefore are precluded from slithering out of compulsory licensing if their patents are not benefiting of the public due to their excessive cost.[17] The compulsory license thus proves to be a valuable asset to poor countries to secure generic copies of essential medicines.

Switching over to solar power as well as other renewable sources of energy has been undertaken to pursue the ambitious proposal of reducing global temperatures by 1.5 degree Celsius at the 2015 Paris Climate Agreement.[18] Solar thermal power technology, which is used for solar cooking, offers several benefits, including electricity generation and solar home eating.[19] It is extremely cost effective and environment friendly, especially in the rural areas of developing countries.

The patent landscape reports of the World Intellectual Property Organization (WIPO) are a source of remarkable information to augment access to patent information. Broadly, these reports contribute by providing know-how processes and insight on the costs and benefits of essential technologies. The availability of such reports cater to the basic needs of developing nations by providing exhaustive patent information regarding improving health as well as environmental standards. A relevant example of a patent landscape report would be that of the solar cooking technology landscape.

Over the years, patenting activity with respect to solar cookers has constantly risen, with 397 patent family members currently. The majority of these were filed after the 1990s.[19] The highest activity relating to obtaining patents was in the year 2009, with 54 patent inventions. Elaboration of the patent information on such clean technologies, granted patents, licensing costs and technological acumen to apply such patented technologies, would assist government policy makers and potential investors in evaluating the technology. The availability of widespread information through these reports would help to reduce the cost of technology and can be anticipated to be an important source of clean power in developed as well as developing countries.[19]

Comparison with the Pharmaceutical Sector

It is true that the energy sector and the pharmaceutical sector are not identical situations. In the pharma industry, a unique patented molecule can be worth a large amount of money; it has no contenders. But in the energy sector, any new technology developed would already be competing with the existing ones for a market share, driving down its price. This further emphasizes that the tools would serve a beneficial role in making clean energy competitive.[5] What this means is that a patent in the medicine industry is more valuable than one in the energy industry; and since one has seen patent pooling and compulsory licensing work well in the pharma industry, it may be argued that the relatively cheaper patents in the energy industry will be more easily shared and disseminated.[20]

The success of patents in the pharma and information technology industries is a good indicator that they will also be successful in the energy technologies industry. A patent can serve the same purposes in the energy industry as it does in the pharma industry – it can promote innovation, while protecting the investment and also allow for raising funds via licensing. At the same time, legal clarity provided by the patents cut down transactional costs and ensure smoother functioning of the system. Such clarity will also enable the sharing of new technology across the board, on legal terms of remuneration – thus solving both the problem of need for widespread dissemination and need to protect the developer's investment.[21]

A Glimpse into the Future

It is hardly a distant reality to envision private companies like *Tesla* supplying large amounts of renewable energy. *Apple* and *Google* have already emerged onto the energy landscape, along with *Tesla*, whose batteries are turning out to be a huge success. *Apple* and *Google* on the other hand could have a significant impact on the existing energy delivery system. In June 2016, *Apple Energy* was approved by the U.S. Federal Government to sell electricity on the national grid.[22] *Google Energy* also received a similar

approval. Globally, too, several private companies are generating their own electricity and investing significant resources for research and development into renewable energy facilities. There are multiple reasons for this new paradigm, one of them being that the utilities are unable to supply the amount of renewable energy now in demand by large businesses.[22]

According to the 2015 market study by Morgan Stanley, corporations care more about the issue of sustainability than those of previous generations.[23] Around 84% of the investors are identifying with sustainability and recognising its importance when making investment decisions, which can be the primary reason for the shift in outlook of many corporations. *Apple, Google* and 70 other companies from around the world joined the RE100, a collaborative of businesses who are committed to only using electricity generated from renewable sources and to increasing the demand for and access to renewable energy around the globe.[18] These companies have come together to promulgate their common commitment to become 100% renewable by a voluntary date. A significant number of companies plan to use on-site power generation for close to 50% of their power consumption.[18]

This is a welcome move. However, one concern is that this may tend to disrupt the holy trinity model proposed above. This may lead to standards being set that are applicable throughout the clean energy sector. Tesla batteries, for example, may induce such sector-wide standards. Private disruption of what has historically been a highly regulated public service industry could result in a slippery slope of market power and a loosening of consumer protection. Private companies, such as, *Reliance Power* and *Tata Power* in India, are posing a significant threat to Public Sector Undertakings that previously were a state monopoly. This, along with the requisite technologies patents, could mean that requiring a standard-setting body for clean technology may be coming.

In a free market with private companies wanting to make profits, safeguarding consumer protections is the key. As more and more multinational corporations apply to sell electricity on the national grid, national energy regulators ought to step up to implement measures to ensure that consumers are charged fair, reasonable and non-discriminatory rates for electricity and energy products. At this juncture, one may look at the Enron Scandal where the energy rates in California sky-rocketed during the late 1990s.[24]

The regulators have presumably never contemplated that large corporations will be able to demand monopolistic market power in the sale of renewable energy. The way to address this issue is to reorganise the energy sector. This can be done through FRAND licensing. We believe that patents such as the ones discussed above made by these multinational corporations will be the future of clean energy development. To make sure that clean energy technologies are developed in the first place, we need to protect them with patents and subsequently ensure that they are delivered to the public at large with licenses that are fair, reasonable and non-discriminatory.

Conclusion

IT is almost certain that developing countries desperately need greenhouse gas abatement technology. How will that happen? Clean energy is the answer. To get the technology, they'll need to create it themselves or buy it from the patent-holder. The avenues discussed above aim to enable developing countries to shift to clean energy, and thereby to make our planet a greener and safer place to live in. The advent of clean energy technologies is inevitable. The only question that needs to be addressed is how the government will regulate this transition. The faster that developing countries implement the transition, the better for everyone involved. How will that happen? Intellectual property laws are the answer. In this article, by comparing the success of IPR in the pharma and technology sectors, it is shown that IPR is the way forward in the energy sector as well. The trinity of patent pools, patent databases and compulsory licensing will ensure that the interests of all stakeholders are met and that clean energy is pushed forward. At the same time, the importance and benefits of providing a legal framework for transactions in this nascent sector; and that maintaining a level of regulation is essential to meet the aim of providing clean and environmentally-friendly technology are also highlighted. It may lead to a hope to start a conversation with this article and invite people to explore various strategies and policies to mitigate the effects of climate change. Time is of the essence – polar bears are in the path toward extinction in the North Pole as we speak – and any step taken away from fossil fuels, however small, is the way forward.

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