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Patent Compulsory Licensing System on China's Road to Clean Energy Technology: A Solution or Pointless Decoration for Energy Innovation?

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Abstract

Along with the increasing global climate change and ecological damage, energy transformation driven by clean energy technology is an important guarantee to cope with climate change and promote the high-quality and efficient development of a country's economy. Under the principle of common but differentiated country under the Kyoto Protocol, more and more developing countries call for the implementation of a compulsory licensing system for clean energy technology, and the compulsory licensing of patents for clean energy technology refers to the compulsory licensing of patents by the patent administration of a country grants a patent license directly to a third party without the consent of the patentee under specific circumstances and in accordance with the statutory conditions. This paper examines the historical development and current situation of the patent compulsory licensing system for clean energy technologies, studies the implementation of the system and the evolution of the legal system in the United States, reflects on the current situation of China's patent compulsory licensing system and the possibility of extending the licensing content to clean energy technologies, and proposes policies and laws and regulations to solve the corresponding problems, in order to explore the future of China's patent compulsory licensing system for clean energy technologies. The proposed policy and legal proposals aim to explore the conditions for establishing a future Chinese patent compulsory licensing system for clean energy technologies and its practical contribution to China's energy transition and carbon neutrality and carbon peaking.

Keywords: clean energy technology, patent compulsory licensing, energy innovation

1. Introduction

Since the 1950s, along with the development of productivity and the outbreak of environmental problems accumulated since the Second Industrial Revolution, environmental pollution, energy security, and ecological damage have emerged in developed economies to varying degrees. As early as the 1940s, for example, in the 1941 Trail Smelter (U.S. v. Can.) case[1], pollution from energy production technologies and the cross-border disputes arising from them entered international arbitration. The practice of international arbitration has already entered into practice. Related to this is the need not only for the improvement of relevant principles of international environmental law and judicial practice but also for the further optimization and upgrading of current energy production technologies in terms of productivity, the expansion of clean energy use, and the

gradual elimination of backward and highly polluting fossil energy sources. Since the beginning of the 21st century, countries worldwide have reached many significant international treaties or agreements in different regional, intergovernmental, and globalization forums, such as the Paris Agreement on Climate Change, the Kyoto Protocol, the Durban Declaration, and the Glasgow Declaration. Clean energy technologies for climate change mainly refer to environmentally friendly production technologies that can significantly reduce pollution or improve resource production efficiency compared to existing energy production technologies in order to achieve the ultimate goal of zero pollution emissions and increased production efficiency.

A patent is a legal monopoly granted by a country through the patent administration in a particular jurisdiction for a certain period of time (usually 20 years for inventions) to an object that meets the legal licensing conditions (usually novelty, inventiveness, utility). The state incentivizes society to invent at the cost of a fixed period of monopoly rights, which Abraham Lincoln called "the fire of interest for the creative genius". Most clean energy technologies are currently protected by patents, and trade secrets protect fewer. However, from the current situation, developed countries in Europe and the United States occupy the absolute dominant position in this field. In contrast, developing countries are unable to get the technology transfer to the south because of the technology level, trade restrictions, development focus, etc. In addition, developed countries will impose trade restriction measures for technology transfer under various unreasonable pretexts of national security and economic development, which seriously undermines the consistency of global climate change action.

Patent compulsory licensing refers to "a legal system whereby the patent administration authority, under certain conditions, issues a license to a third party without the patent owner's consent, including the production, sale, and import of the patented product and the implementation of the patented method, while the licensee pays a certain compensation fee to the patent owner." (State Intellectual Property Office, 2008) According to the TRIPS Agreement and the judicial practice of various countries, there are three prominent cases of "under certain conditions" in the article, namely, compulsory licensing to prevent abuse of patent rights, compulsory licensing for public purposes, and compulsory licensing to prevent restrictive competition[2].

Making efforts on the R&D track of clean energy technologies and accelerating technology self-research and application are strategic options for significant countries to achieve their emission reduction and carbon peaking targets. The compulsory licensing system of clean energy technologies discussed in this paper is based on the "compulsory licensing for public purposes" under the TRIPS Agreement mentioned above (Zhu Huaizu, 2011), where the authorizer is the national intellectual property administrative authority, the right holder is the patent owner, and the compulsory license is a specific administrative act of a government. According to the provisions of Article 31 of TRIPS, the Contracting State may, in accordance with the country's actual situation, implement compulsory licensing for the corresponding patents in the public interest in situations of national emergency. However, the public interest is not provided for several critical elements in the article, such as the actual situation in the country, national emergencies and other situations. This paper believes that the compulsory licensing system for clean energy technology is in line with the public interest, in line with the TRIPS Agreement, and helps countries, especially developing countries, to achieve the total temperature control goal of the Paris Agreement, to protect human, animal and plant life and health, to promote environmental protection, and to establish a resource-saving and environment-friendly society, in line with the construction of ecological civilization and economic and social development (Cynthia Cannady, 2009). It aligns with the general objectives of ecological civilization and economic and social development. Therefore, this paper conducts a historical examination of the compulsory licensing system for clean energy technologies, analyzes the rationality and benefits of the implementation of the compulsory licensing system for clean energy from a variety of research perspectives, examines the experience of the implementation of the compulsory licensing system in the field of public health, analyzes the legitimacy of the TRIPS Agreement to the implementation of the compulsory licensing system in China, (Yang et al., 2014) and draws on the extraterritorial experience and lessons learned from relevant countries to analyze the establishment of China's. The current situation and space of the compulsory licensing system for clean energy technology in China, and finally try to propose a specific way to establish a clean energy licensing system with Chinese characteristics. The development trend of the global compulsory licensing system for clean energy technologies and China's unique characteristics are explored to provide exploration for promoting the improvement of the system and the formulation of related innovation strategies in China.

2. Compulsory Licensing System Under International Treaties and Negotiations

The minimum protection standard stipulated in the TRIPS Agreement is a prerequisite for countries to join the World Trade Organization, and the applicant party needs to prove that its protection standard meets the TRIPS Agreement standard in terms of intellectual property protection. The purpose of most developing countries to establish patent compulsory licensing is to achieve the minimum protection standard in order to join the WTO.

The earliest written provisions on the compulsory licensing system appeared in Article 5 of the Paris Convention

for the Protection of Industrial Property. The TRIPS Agreement provides for the compulsory licensing system in detail and explicitly (Xuefeng Liu & Minguang Luo, 2012), including clean energy technologies in a broad sense, including green energy technologies, environmentally friendly technologies, alternative energy technologies, energy efficiency technologies, and so on (WIPO, 2010). The patent law stipulates that the object of patent grant should be the patented product or patented product production process technology, and in line with the novelty, inventiveness, and practicality of the three, the premise of clean energy technology mainly refers to the production process of clean energy products, production methods of method patents, supplemented by related equipment, technological innovation, new materials and other product patents (Lin, Cai-Yu, 2004). The TRIPS Agreement requires each WTO member country to include products and production process methods into the scope of patent protection, and also gives the corresponding restrictions, both to prevent the abuse of patent rights, resulting in the expansion of monopoly rights under the legal form, and also to reasonably take into account the rights of third parties under exceptional circumstances, and shall not produce unreasonable conflicts with the normal use of patents, and also for unreasonable damage to the patentee's legal rights[3]. However, as mentioned above, the TRIPS Agreement does not provide for three specific elements: the actual situation in the country, the situation of national emergency, and the public interest. This has led directly to serious controversies in the climate change negotiations between countries regarding compulsory licensing and enforcement (Kong Xiangjun, 2002). A significant milestone in the development of the compulsory licensing system was in the area of public health pharmaceuticals, where the 2001 Doha Declaration provided that countries could issue compulsory licenses for effective drugs that were still under patent protection in the event of a public health crisis[4], allowing third parties to produce generic versions of the medicines and export them to other developing member countries in need. In the subsequent Hong Kong Declaration, the provision as mentioned above was formally added to the TRIPS Agreement, and at the same time, it was stipulated that not only the authorized domestic ministries could carry out third-party copying (Yang Yujing, 2013) but also the producers of other countries could apply for authorization to export the relevant drugs to the original authorized countries if they did not have a production capacity in their own countries. However, in terms of practical effects, the cumbersome procedures and strict application and authorization restrictions have led to limited practical effects.

Article 27 of the TRIPS Agreement provides that member states may exclude the patentability of inventions when they deem it necessary to protect their "public order or morals". It interprets this to mean protecting human, animal, or plant life or health or avoiding severe harm to the environment and that implementing climate-friendly technologies should fall within the protection of the public interest.[5] Because the dissemination of clean energy technologies helps mitigate global climate change, protect the domestic and international ecological environment, promote energy conservation and emission reduction, and promote high-quality and efficient growth of the domestic economy and the development of strategic new energy industries. The provisions of TRIPS bring flexibility and legal operability to the compulsory licensing of clean energy technologies.

2.1 The Power of Country Groups in Climate Change Negotiation Rounds—from Copenhagen to Cancun

The TRIPS Agreement, the Doha Declaration, and the Hong Kong Declaration were produced after dozens of negotiations. Developing countries had to accept the relevant rules of the World Trade Organization and the provisions of TRIPS to enter the globalized market, obtain advanced technology transfer, promote the upgrading of advantageous industries and fill the gaps of disadvantaged industries. Still, with the increasing technological differences, the disadvantages brought by polluting energy to developing countries began to appear. At the same time, after experiencing a period dominated by fossil fuels, developed countries with a comparative advantage in technology level and strong trade position began to pay attention to environmental pollution and climate change brought about by economic development. They began to invest much money to focus on clean energy technology research and development and clean products trade rules. Because of technological advantages, developed countries control 80% of global clean energy technology, but also because of various reasons such as national security, economic stability, restricting technology transfer, preventing corporate acquisitions, and conducting strict foreign investment security reviews, have created serious uncertainties for developing countries and global climate change cooperation.

In multiple rounds of climate change negotiations, developed countries such as the United States have vehemently opposed weakening the level of intellectual property protection within international energy law and intellectual property protection treaties to promote clean energy technology transfer (Ahmed Abdel Latif et al., 2012). They have even introduced a series of provisions through rapid and domestic solid legislation, such as the "High Technology" provision in the Foreign Relations Authorization Act for Fiscal Years 2010 and 2011 (Lawrence A. Kogan, 2010). The Foreign Relations Authorization Act for Fiscal Years 2010 and 2011, for example, provides for "a high level of vigilance in the area of high technology to prevent foreign "public interest" regulations from threatening U.S. intellectual property rights. In the 2009 Copenhagen UN Climate Change Conference, a significant number of developing countries recognized the importance of clean energy

technologies in achieving low-carbon development and energy transition and proposed to reduce barriers to clean technology transfer. The developed countries led by the United States believe that the TRIPS Agreement, GATTS and other international intellectual property trade rules (USITC Report, 2009) do not restrict the transfer of patents on clean energy technologies and other methods and that a considerable degree of intellectual property protection is necessary to encourage technological innovation and guarantee. A substantial degree of intellectual property protection is necessary to encourage technological innovation and ensure research and development investment. Therefore, in recent years, the issue of clean energy technology transfer has reached an impasse in international climate negotiations. (Brit T Brown & Benjamin A Escobar, 2007)

3. The Practice of Clean Energy Technology Compulsory Licensing System in the United States

The patent compulsory licensing stipulated in TRIPS, and Doha Declaration is one of the most essential flexible provisions in the field of patent law, and the implementation of clean energy technology compulsory norms is an important way for the majority of developing countries to achieve the goal of carbon neutrality and energy transition, meanwhile, it is surprising that in developed countries with technology leadership and high level of clean energy technologies, clean energy technology compulsory licensing laws and supporting policies The system is also quite mature.

In order to limit the actual effect of the Copenhagen negotiations in developing countries, the U.S. issued a series of relevant laws, regulations, and executive orders; for example, in the U.S. Clean Energy Security Act of 2009, the seven categories of clean energy technologies were specified in a limited form, but in the actual application of the U.S. Patent Office, it is not bound to these seven categories of objects, although accompanied by a considerable amount of wind, solar, and hybrid power patent applications, but the patent backlog. Although accompanied by many wind, solar, and hybrid power patent applications, the patent backlog, poor quality patents, and administrative inefficiency of the application are particularly prominent. (Keith Maskus, 2010)

Before the 2011 amendment to the U.S. Invention Act, the examination time for invention patents was three years, subject to formal and substantive examination. If a PCT application was filed, the earliest filing period would be another 18 months, which seriously delayed the marketization of new clean energy technologies and products. (Neel Maitra, 2010) The high cost of litigation brings doubts to the choice of clean energy technologies protected by the patent system. In order to solve the above problems and provide institutional protection for the development of clean energy technologies, the U.S. invention law was amended in September 2011, in which clean energy companies and related organizations were instrumental in promoting it. The first-to-invent system was abandoned in the United States in favor of the first-to-file system adopted by most countries in the world, which means that the priority of patent applications is determined by the time of filing the patent, not the time of the actual invention. The switch to the first-to-file system can effectively prevent foreign applicants from crowding the patent market and competing for patent resources in such emerging strategic fields as clean energy technologies, protect the interests of domestic applicants, and avoid the time lag in the research and development of new clean energy technologies in different countries due to information asymmetry. However, the first-to-file system, which is in line with the international mainstream, has also been criticized by small companies for not having a dedicated patent management team for IP management and patent application, information gathering, and limitations in strength that may lead to increased disadvantages in the face of technology monopolies (U.S. Department of Commerce, 2012).

In the field of patent administration, with the reform of the U.S. patent law to be carried out in conjunction with the establishment and improvement of the patent expedited examination system, because compared with traditional energy, clean energy prices are less competitive in the market, the level of technology is low. In contrast, the traditional energy technology requirements are low; pollution does not need to pay, so in the first part of the life of the promotion and generation of clean energy technology, the need to assist with appropriate government administrative measures. As early as 2006 and 2008, the USPTO established the Accelerated Examination Program and the Pilot Program for Green Technologies including Greenhouse Gas Emission Reduction, focusing on the examination of patent applications for clean energy technologies, with the examination time shortened from three years to 12 months.

As a transitional expedited examination mechanism before the implementation of AIA, the Green Pilot Project has made valuable exploration for the implementation of the expedited examination procedure and promoted the transformation and application of clean energy patent technology applications. Meanwhile, as a part of the patent compulsory licensing system, the clean technology compulsory licensing system is carried out in the AIA, the Clean Air Act, and the Bayh-Dole Act, which provide detailed regulations from patent application, patent examination authorization, patent compulsory licensing situations, and compensation for right holders, and there are more examples of using compulsory licensing on the grounds of public interest in practice. In addition, judicial practice and policy actions have been taken to ensure the system’. (Todd R. Miller, 2012)

4. The Current Situation of China’s Clean Energy Compulsory Licensing System and Future Expectations

The clean energy compulsory licensing system is essential to mitigate global climate change, upgrade the clean energy industry, and promote high-quality economic growth. The proposals of developing countries, mainly China, India, and Brazil (Qu Sanqiang, 2006), to implement the compulsory licensing system have met with different degrees of opposition from developed countries in the Cancun and Glasgow rounds, as they are worried that the compulsory licensing system will bring a blow to the incentive of relevant enterprises to innovate and uncertainty to the return of investment. The contribution to climate change cannot be accurately measured either. At the same time, although the compulsory licensing system in the public health sector has been in place for a long time and is well established, with many successful practical examples in India, Thailand, and other countries, no compulsory licensing order has been issued in China. The lack of practical experience is not conducive to the establishment of a compulsory licensing system for clean energy technologies and the transformation and upgrading of the energy industry in China.

In order to overcome the above-mentioned difficulties, promote the realization of China's carbon neutral goal, and establish a perfect clean energy compulsory licensing system, first of all, from the political aspect, in the international climate change negotiations, China's representatives should clarify and insist on the position of establishing a perfect clean energy compulsory licensing system, unite the strength of developing countries such as India and Brazil, and at the same time, introduce relevant policies and implementation methods, and actively work to complete the Paris Agreement In the international climate change negotiations, our representatives should clarify and adhere to the position of establishing and improving a clean energy compulsory permit system, unite with developing countries such as India and Brazil, and introduce relevant policies and implementation methods, and actively work to achieve the temperature control targets of the Paris Agreement, and play the role of international environmental and energy law. In addition, we will organize negotiations with developed countries, OECD and other groups of countries and patent holders, and use platforms such as climate change forums and NGOs to gain support from international public opinion.

Secondly, in the domestic legal system, when the Patent Law is revised, we should try to refine the "public interest purpose" clause in the compulsory licensing of patents and include environmental protection and public policy purposes, such as energy upgrading and transformation, and strategic clean technology industry development, into the public interest purpose, through a limited enumeration and underwriting. The "for public interest purposes" clause provides compulsory licensing for public interest purposes.

Finally, establish a sound enterprise clean technology management system. By setting up a professional IP management team and establishing an internal clean energy compulsory licensing information database, enterprises can grasp the information of target licensees and clarify the layout of clean energy technology R&D direction by linking to the official database such as the clean energy patent platform of the European Patent Office.

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[1] 1941 Trail Smelter arbitral decision (U.S. v. Can.)

[2] Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) Art.27 Sec.2.

[3] Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) Art.31 Sec.1.

[4] Declarations on the Trips Agreement and Public Health Wt/Min (01)/DEC/2.

[5] Ibid 3.